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The Effect of Institutional Perspective on Safety Climate through a Mediating Role of Governance Practice

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Abstract

Bangladesh has encountered several ready-made garments manufacturing (RMG) industry disasters leading to the loss of valuable human lives due to the factory owner's tendency to cut corners on safety. In 2013, the safety issue came into the limelight when Rana Plaza took less than 90 seconds to crumble with the workers inside, killing more than 1,100 and injuring more than 2,500 people. The sudden breakdown of Rana Plaza fetched home the much-needed attention, persuading different institutions to offer corrective steps which can rectify hazardous situations in thousands of factories. Nonetheless, irrespective of various institutions' making effort to improve the safety situation, much remains to be done to ensure industrial safety behaviour and compliance. Recently, Accord Bangladesh Quarterly Report (2018: 3) acknowledged that while making an improvement, *"major life-threatening safety concerns remain outstanding in too many factories and need to be fixed urgently"*. Hence, crucial questions need to be explored: To what extent do institutional perspectives improve organisational safety behaviours? Whether governance mechanism can force organisations to commit and ensure workers safety? While a considerable attention has been paid to the institutional perspectives, existing literature is fragmented and disconnected with safety climate and performance measures. Therefore, this study examines institutional impacts on changing organisational safety climate and its performance, through the mediating role of governance practice. The survey results of 256 RMG workers from128 garments factories in Bangladesh with a usable response rate of 72.31% and satisfactory indices (e.g. Chi-square x^2/df=1.620, RMR=.012, SRMR=.051, RMSEA=.049, CFI=.982, IFI=.983) demonstrate each component of safety climate is significantly associated with at least two institutional perspectives. This study suggests that regulations and laws only provide procedural instructions and guidance rather than definitive protocols. While norms and culturally established standards are decisive to the establishment of safety practices. Additionally, making organisations more accountable and/or obedient towards lawful practices can guarantee management's commitment to safety and create a compulsion to pledge safety practices. Furthermore, accountable and ethical organisational behaviours motivate workers to actively participate in safety activities that ultimately result in fewer accidents and injuries. Interestingly, the study found that culturally established norm of safety is perceived as taken-for-granted by the workers, which refrain them from participating in voluntary safety activities. In general, establishing organisational safety climate can be considered as a socialised activity that is much contingent on the institutional pressures to comply with specific requirements and the organisational intention to uphold their legitimacy. The findings shed light on the way in which different types of institutional influence could be better exercised to facilitate safety improvement; reconditioning and reinforcing government policy can resolve sporadic safety climate level of the industry. While the study has gone some way towards enhancing our understanding, it also arises several questions that need further investigations. Finally, further research is needed to determine the impact of improvement mechanisms on workplace safety performance, such as how workplace design, safety training programmes, and institutional enforcement policies protect the well-being of workers.

Research Note

Parts of this thesis have been presented in the following conference

1. Fahad Ibrahim & Raphael Akamavi (2018). *Relationship between institutional perspective and safety performance: A case on ready-made garments manufacturing industry*. British Academy of Management (BAM), Human Resource Management SIG Annual Conference. 15th June 2018. Birmingham Business School, University of Birmingham.

Dedication

This dissertation is dedicated

To my parents, ***Sanwar Hossain*** and ***Dilruba Banu***, who made me the person I am today. They supported me unconditionally and always encouraged me to have faith in myself. I could not have completed this thesis without their inspirations.

To my beloved wife and best friend, ***Jisan Afrin***, whom I owe an incalculable debt. Along with perusing her own PhD studies, her sacrifice for me and our daughter Ariyana Amaya Ibrahim made it possible for me to complete this work. Without the unwavering support of this wonder women, I would never have come so far.

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To all those ***workers*** who died, become injured and disabled, and the ***families*** who are in great misery due to workplace accidents. My hope is that with responsible decision-making, we can put ourselves on a direction toward a safer industry that admires the value of each worker's life and enable them to finally lift themselves out of the extreme deprivation they currently endure on a daily basis.

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Chapter 1

Introduction

1.1 Introduction

The present symbiotic global business environment forcing multi-national companies (MNC's) towards offshoring their productions to achieve competitive advantages (Andreff, 2009). In most cases, offshoring of labour intensive manufacturing production has been directed towards lower cost emerging/developing economies (Andreff, 2009; Satyaki, 2009; Dey et al., 2012). Especially, due to this trend of outsourcing, apparel manufacturing and export has become one of the main sources of remittance for many countries. In this process, Bangladesh has also gained extensive benefits and experienced substantial growth in the ready-made garments (RMG) manufacturing industry (Berg et al., 2011). The sectorial growth is so extensive that is less than a decade, the RMG sector has become the major contributor to Bangladesh's foreign export earnings (US$28.14 billion, 81% of total export), which accounts for almost 13% of the country's total GDP (Islam, 2017; BGMEA, 2018). In addition, the RMG sector has enormously contributed to the socioeconomic development of Bangladesh in terms of employment. Therefore, the RMG industry has become the mainstay of the Bangladeshi economy and acts as a catalyst for the development of the country. However, despite its remarkable contribution to economic and social development, the RMG industry has thrown up many social compliance challenges.

The RMG sector of Bangladesh has not achieved to a noticeable development in working conditions and social compliance issues. According to the ILO (2013), the poor working conditions are one of the most important concerning issues, particularly for millions of workers in the Bangladeshi manufacturing industry. Besides, an ILO (2018) data source titled "*World Employment and Social Outlook: Trends 2018*" shows that 57.45% of Bangladeshi industry workers (36.6 million out of 63.7 million total employed) are exposed to vulnerable employment. These workers are unlikely to have any formal work

arrangements and likely to have poor and risky working conditions. In addition, lacks of attention to working rights and standards, ineffective laws, limited role of stakeholders and compliance administrations, ignoring fair labour practices, and prohibiting trade union activities have further aggravated the situation (Ahamed, 2013).

In contrast, due to the focus on employers' economic benefit, the main industrial attention is to higher production and better economic returns (ILO, 2002; Atal, 2013; Brown & Buncombe, 2013). Therefore, very little importance has been given to the social costs of workers' welfare (ILO, 2013). In addition, regulative compliance and associated organisational costs are considered as constraints on production. Hence, rules and regulations are regularly overlooked by the management. Moreover, due to a variety of administrative problems, rules are hardly applied and monitored by the government (Ahamed, 2013). Consequently, occupational health and safety considerations remain ignored and this ignorance evidently jeopardises many valuable lives.

In recent years, several industrial accidents in Bangladesh have prompted widespread calls inside and outside the country for better safety measures in the RMG sector (Alamgir et al., 2013). These shocking accidents identified a serious need for pivotal and cooperative action to construct a safe and secure working environment. Therefore, various social institutions (e.g. Government, NGOs, civil society, and other stakeholders) are collectively working together to develop and monitor new rules, regulations and guidelines for workplace safety improvement arrangements. Hence, it is crucial to explore the degree of new institutional arrangement compliance within the RMG manufacturing sector. Moreover, there are few studies or reports, which reveal the effectiveness of institutional initiatives for preventing accidents and enhancing employee welfare to comply with health and safety issues. Even though a few studies on occupational safety and hazard issues have been conducted in Bangladesh (e.g., Khan et al., 2006; Bhuiyan & Haq, 2008; Ahmed & Hossain, 2009; Nahar et al., 2010; Ahamed, 2013; Wadud et al., 2014), this remains a substantially under-researched area and is in need of further extensive exploration. The current study

attempts to identify the effect of the institutional environment on workers safety and health-related issues. Thus, the study explains whether new institutional arrangements on workers' health and safety issues can provide a conducive working environment for employees to protect their welfare in Bangladesh.

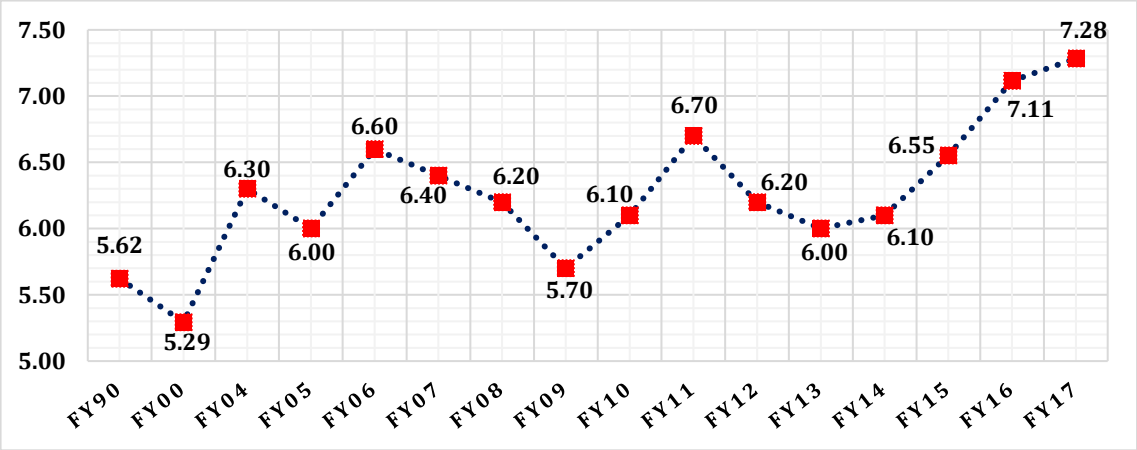
1.2 Bangladesh's Economy and Contribution of RMG sector

Globally, low-income countries climb up the ladder to become middle-income countries through the process of industrialisation (Yunus & Yamagata, 2012). With a poor land-person ratio, Bangladesh was unlikely to flourish through agricultural growth alone (Yunus & Yamagata, 2012). Hence, industrial development has played an important role in driving Bangladesh's economic growth. According to BBS (2016), the contribution of the industrial sectors, and especially, the manufacturing industry is the most significant benefactor (17.91% of total GDP) of Bangladesh's economic development. Even though Bangladesh was once regarded as a "bottomless basket" regarding the possibility of starvation occurring in 1971 (Foreign Relations of the United States, 2005), it has now become a "basket of miracles". With its limited resources, Bangladesh has yielded thriving economic growth and has made remarkable social and human development.

During 1950-1970, the GDP growth of Bangladesh was 3.2%, while it has been increased up to 4.0% between 1971-1990 and achieved an even higher trajectory of 5.0-5.8% during 1990-2000 (The World Bank, 2013). During the last decade, Bangladesh has maintained an average of 6.0% growth with occasional deviations from the trend, while in financial year (FY) 2016 it reached 7.11% GDP growth for the first time. Figure 1.1 shows that between FY2011-2015 Bangladesh's economy experienced fluctuating fortunes, but in FY2017, GDP went up to 7.28%, which is better than the typical average 4.9% progress of emerging market and developing economies (The World Bank, 2018; IMF, 2018). Based on the progress, Bangladesh aims to become a middle-income country by 2021. To achieve the target, several policy reforms have been in enacted to revitalize the industry with the intention of establishing a strong manufacturing base in the Bangladeshi economy (Yunus

& Yamagata, 2012). As a result, Bangladesh has mainly developed its specialisation in the garment manufacturing sector and exerted efforts to strengthen the export-oriented production (ILO, 2013).

Figure 1.1: Overall GDP Growth % of Bangladesh from 1990–2017



Sources: BBS (2016), The World Bank (2018)

The RMG sector has a dominant influence on the national economy, in terms of foreign exchange earnings, employment and poverty reduction. With favourable government policies and strategies, Bangladesh receives 88.73% of national export earnings through RMG exports and has become the second largest RMG exporter in the world (5.1% of global export) (The World Bank, 2015; Mirdha, 2016; BBS, 2017). While exports increased almost threefold from 2005 to 2013, the number of companies grew by approximately 32% from 4,220 to 5,600 during the same period of time (The Economist, 2013; Ghosh, 2014; Stotz, 2017). With the ever-increasing number of factories, employment opportunity has been created for 5.1 million people, which is more than 100% growth over the period of 1984-2013 (BGMEA, 2014; Labowitz & Baumann-Pauly, 2015). Additionally, almost 20 million people are directly and indirectly linked with this RMG sector (BGMEA, 2014). Nonetheless, despite all these impressive efforts and contributions, the RMG sector has several problems, especially in terms of working conditions, due to sub-standards and non-compliance issues. In addition, the 'Rana Plaza' tragedy in Bangladesh has brought much-needed attention to the safety and stability of the garment manufacturing factories (Marsh Risk Management Research, 2013). Hence, before going further into the responses to this 'Rana Plaza' tragedy

or the industry's future, the working conditions of the Bangladeshi RMG sector itself warrant recalling.

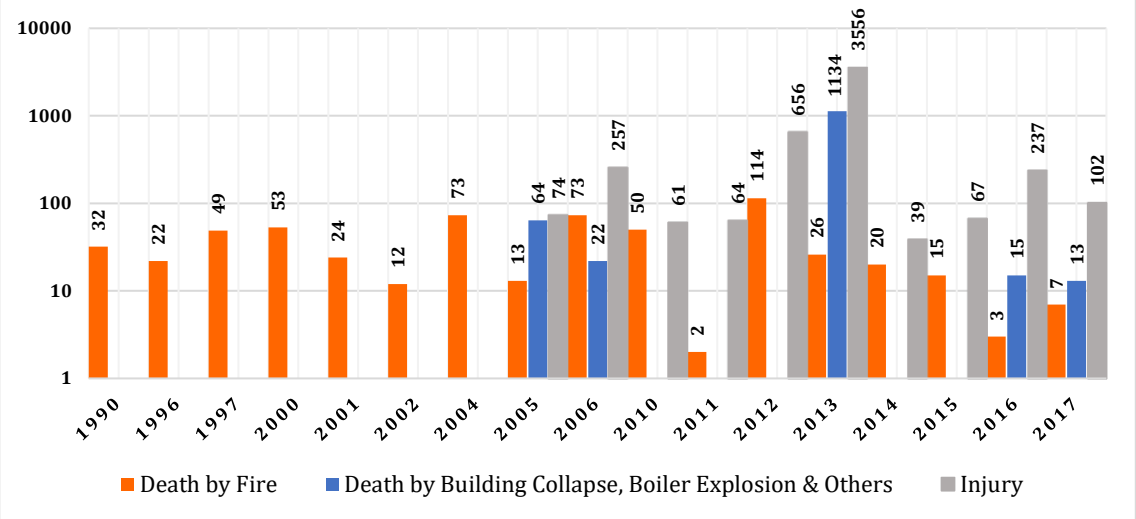
1.3 Working Condition of Bangladesh RMG Sector

Human resources are one of the most important elements in industrial establishments. They constitute an important factor to increase productivity and quality, while cheap labour is required to reduce costs in order for firms to survive in competitive world (Yunus & Yamagata, 2012). As an abundant source of low-priced labour, international buyers have identified Bangladesh as a potential destination for the offshore production of their garment products. As a result, within a short period of time, the RMG manufacturing industry became Bangladesh's main foreign remittance earning source. However, the rapid success of the RMG industry also came at a heavy cost, leading to the development of an industry where cheap garments were made in hazardous conditions, with low wage structures, and by workers whose mental and physical well-being was put under constant pressure. Despite the importance of the industrial workforce, still, millions of workers in Bangladesh, employed by the garments industry are labouring in precarious conditions (APPG, 2013). According to the Clean Clothes Campaign (2012), Bangladesh has one of the world's worst safety records in the RMG sector. Additionally, the New York University (NYU) Stern Center for Business and Human Rights has found an interesting industry record that indicates one of the major problems in Bangladesh's garment industry. While official records estimate the number of garment factories at between 4000 and 5,600, NYU's research team precisely documented the establishment of 7,000 factories in Bangladesh (Labowitz & Baumann-Pauly, 2015). This means that these additional factories are uncounted, unregulated and largely informal, and these tend to be the most dangerous. In such a scenario, millions of workers who work in those unregulated factories fall outside the protection of safety and are exposed to risk factors in a country where unsafe working conditions are a persistent issue.

In the last two decades, numerous apparel factories have encountered tragic accidents

like fire, building collapse, boiler explosion etc. For instance, in November 2012, almost 117 workers died in a fire at Tazreen fashion garments, while almost 1,145 workers died in the Rana Plaza tragedy in April 2013, a factory building collapse incident, regarded as one of the worst industrial disasters on record in the world (ILO, 2013). More recently, 15 people died, and 72 people were injured in the TEMPAC garments boiler explosion in September 2016. Additionally, according to the fire department of Bangladesh, between 2006 to 2009, almost 213 factory fires led to the death of more than 400 workers and 79 workers lost their lives in 21 different documented events in 2010 (Clean Clothes Campaign, 2012). Furthermore, in this period, several thousand workers were injured due to workplace accidents. Figure 1.2 illustrates the major accidents in the RMG sector of Bangladesh. Hence, doing business at the cost of human life is the greatest challenge to compliance with international standards. As a result, in this serious state, the Bangladeshi RMG industry needs essential restructuring and new arrangements to ensure the welfare of employees.

Figure 1.2: RMG Industry Accident Record



Source: Factory accidents data has been compiled from different sources including Bangladeshi newspapers published in both English and Bengali, Clean Clothes Campaign (2012), CBC News (2013), Safety & Rights Society (2013, 2014, 2018), Soliderity Center (2018), NYU Stern Center for Business and Human Rights (2018)

Nevertheless, for the betterment of the workers' well-being, various social institutions (e.g., government, BGMEA, ILO, different international buyers, and stakeholders) have started working together to develop a unique set of conduct for a sustainable, viable and competitive RMG sector. Several long-term action plans with different task forces have been

implemented to prevent any further loss of life, limb and property due to any work-related accidents. The Government of Bangladesh has established two task forces: The Social Compliance Forum (SCF) and the Compliance Monitoring Cell (CMC) to encourage compliance and ensure labour welfare in the RMG sector. BGMEA has initiated a "Safety Cell" to safeguard against any disaster regarding fire issues. In addition, the Government of Bangladesh and representatives of Bangladesh employers' and workers' organisations have signed an integrated National Tripartite Plan of Action to ensure fire safety and structural integrity in the garments sector of Bangladesh. Furthermore, a variety of international organisations and NGO's have launched various initiatives to improve safety in the Bangladesh RMG sector. For instance, "Accord on Fire and Building Safety in Bangladesh" is a five-year (ends 2018) legally binding agreement between the ILO, various NGO's, and 50 apparel corporations from 20 countries to maintain minimum safety standards in the Bangladesh RMG industry. In addition, "The Alliance for Bangladesh Worker Safety" is another five-year initiative (ends 2018) by 26 North American apparel companies and retailers, and eight international associations to develop Bangladeshi workers' safety initiatives. All the above initiatives are in the implementation stage to measure compliance, ensure minimum wages and other basic labour rights and to monitor the application of Labour Law in RMG factories.

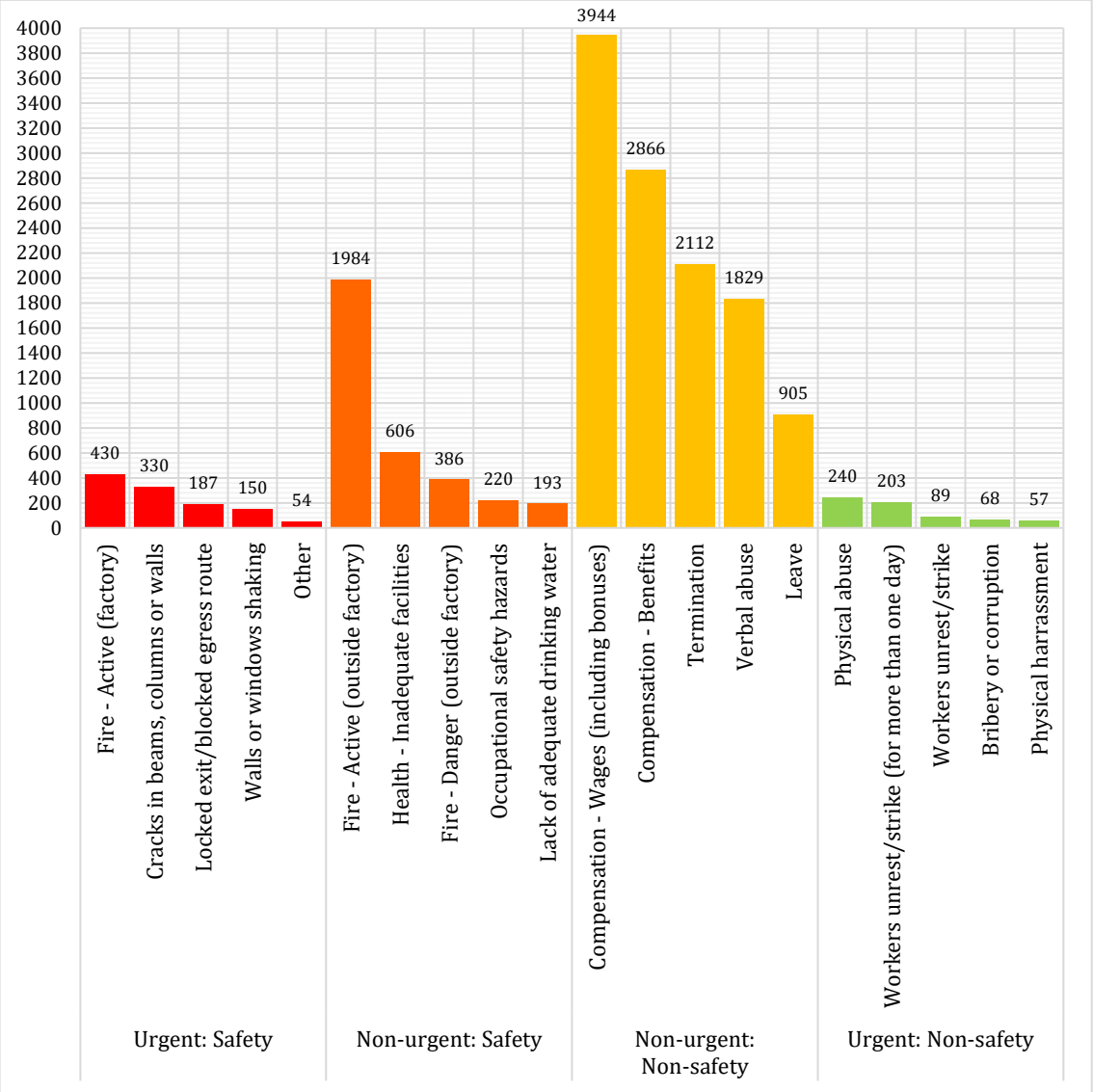
Despite all the above initiatives, research by the Alliance for Bangladesh Worker Safety (2014), showed that only 2% of surveyed workers could correctly identify common hazards, and 39% lacked basic knowledge in an emergency situation. Additionally, 54% of surveyed workers felt a limited sense of responsibility for safety and health issues at work, while 73% of people perceived that some fatal accidents cannot be prevented. The results also illustrated that existing training events had a very partial effect on workers, as 45% of workers were not trained in fire safety and almost 87% of the participants described training as inadequately designed. Furthermore, 25% of workers felt unsafe in their factories. The report also illustrated that even though worker committees existed, they were not necessarily active or inclusive and thus insufficiently motivated workers' participation

in safety and health issues in the workplace. In addition, supervisors demonstrated little knowledge of responsibilities regarding the responsiveness of risk avoidance. Moreover, the report identified substantial risks that workers whistle-blowing regarding safety concerns would not get adequate reactions or follow-ups (Alliance for Bangladesh Worker Safety, 2014).

Moreover, recent data from the Alliance for Bangladesh Worker Safety on commonly reported substantive issues between December 2014 to June 2018 in 779 factories shows the industry situation five years after the Rana Plaza tragedy. In this time period, the Alliance has received reports of issues related to fire, cracks in the building structure, safety hazards, wage, termination, verbal and physical abuse, harassment, and bribery or corruption. Figure 1.3 demonstrates the most commonly reported substantive issues in Bangladeshi RMG factories. In addition, according to the Alliance for Bangladesh Worker Safety (2018), only in July 2018 alone, they received 131 substantive calls regarding safety issues, among which 21 were urgent. Although various institutions are working to improve workers' safety, the study from the "Alliance for Bangladesh Worker Safety" shows that progress has been agonizingly slow. In addition, a Quarterly Report from The Accord on Fire and Building Safety in Bangladesh (2018: 3) acknowledged that while there has been some improvement, *"major life-threatening safety concerns remain outstanding in too many factories and need to be fixed urgently"*. Therefore, the effectiveness of the new institutional environment is doubtful. Does the new institutional environment make any difference to the workers' safety perception? If not, why and what are the reasons behind these failures? Therefore, there is a need to analyse the impact of institutional aspects in terms of employee workplace health and safety issues. Moreover, in the context of Bangladesh, not a single study has been conducted regarding the effectiveness of institutional aspects, which ultimately have an impact on workers' welfare issues. Therefore, this study will assess whether institutional aspects (e.g., rules, regulations, guidelines, laws and policies) influence workers' safety perception and wellbeing matters. In addition, this study will also evaluate whether

governance mechanism(s) act as a mediating factor(s) to implement workplace safety and ensure workers' wellbeing.

Figure 1.3: Most Commonly Reported Substantive Issues in Bangladeshi RMG factories between December 2014 to June 2018



Source: Alliance for Bangladesh Worker Safety (2018)

1.4 Research Rationale

In the era of 'Fast Fashion', the global apparel industry aggressively seeks a low-price approach to manufacturing coupled with unlimited cheap labour, high-volume production, and pliable regulations. As a provider of such amenities, Western brands gravitated to Bangladesh and emphasised 'cut-and-make' orders to produce basic clothes such as T-shirts, which rapidly made Bangladesh one of South Asia's success stories (Saxena, 2014).

Consequently, the *"Made in Bangladesh"* tag has become one of the celebrated global brands. The success came in various forms: increase in GDP, enhancement in development opportunities, and social empowerment. However, the achievements of Bangladesh also came at a high cost. Weak regulatory apparatus and small profit margins aggravated the tendency of Bangladeshi factory owners to cut corners on factory safety. As a result, decades of industrial disasters led to the loss of many valuable human lives. Eventually, the collapse of Rana Plaza has brought the much-needed attention, which persuaded 250 global brands and retailers to join collective initiatives to offer corrective steps to rectify hazardous situations in thousands of factories. Nonetheless, irrespective of various institutions' making effort to improve the safety situation, much remains to be done to ensure industrial safety compliance and behaviour. Hence, the big question remains, to what extent are institutional elements effective in making a difference in improving organisational safety practices? In other words, what makes an organisation to conform these institutional efforts?

Institutional perspectives offer a vital theoretical lens into the organisational motives to conform to the societal effort that influences and drive the application of preventive occupational health and safety measures (Rocha, 2010). The institution as a concept is characteristically heterogeneous, due to its different conceptualisation and application (DiMaggio & Powell, 1991; Scott, 2001). While institutions have been conceptualised differently, a widely accepted proposition is that 'institutions matter' (Kaufman, 2011). The fundamental concept of the institutional perspective is that institutions set the "rules of the game" (North, 1990: 3). In doing so, institutions regulate behaviours, shape the social order and establish the basis of economic activities (North, 1990; DiMaggio & Powell, 1983; Park & Luo, 2001). Thereby, institutions facilitate or constrain the activities of different actors within a particular social environment (Peng & Heath, 1996; Oliver, 1997; Scott, 2001). As such, institutional settings affect the organisational activities within various types of social environment (Peng & Heath, 1996; Park & Luo, 2001; Douma et al., 2006). Several studies have emphasised the effect of institutions on organisational structure, behaviour, and

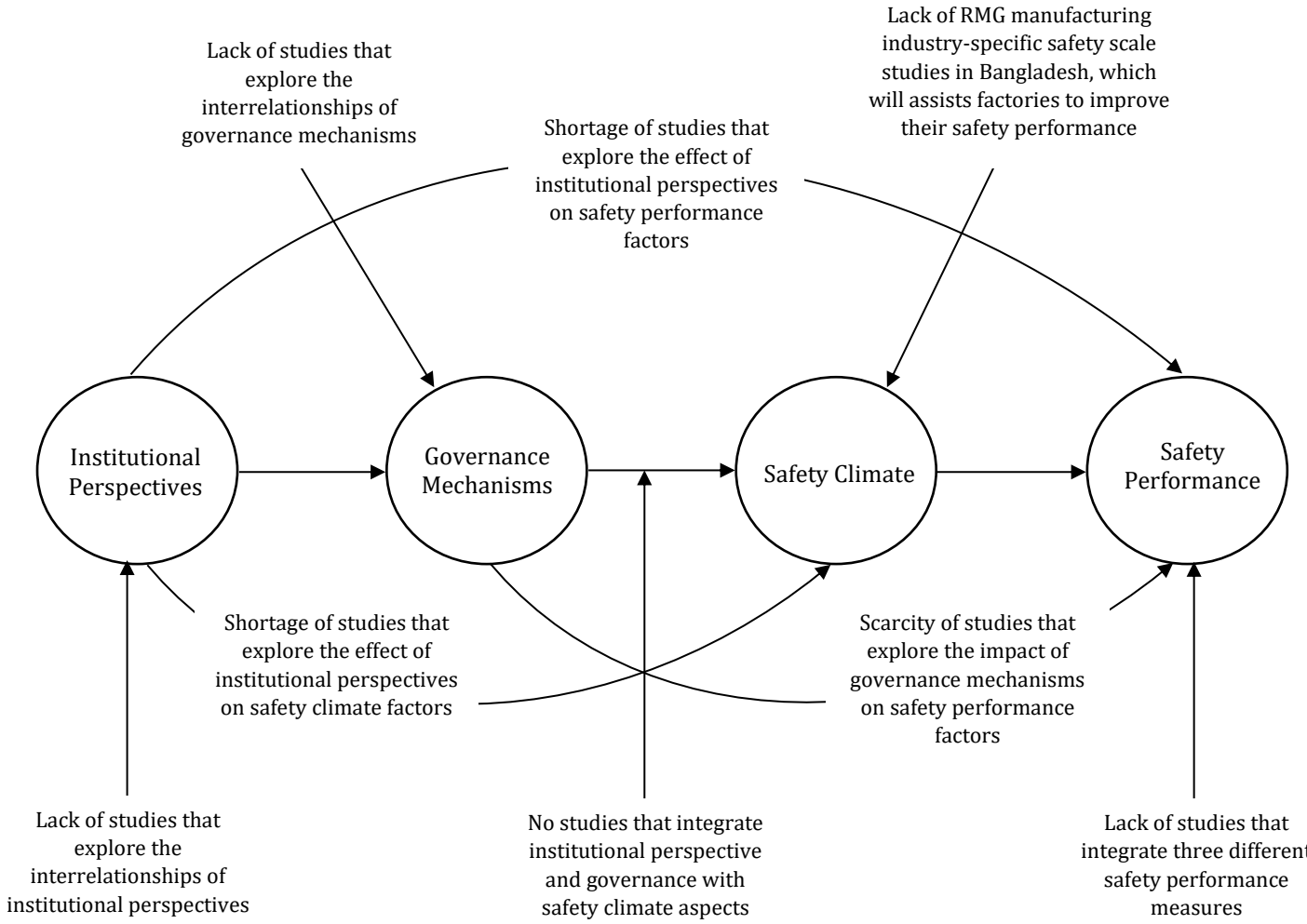
business performance (e.g., Powell & DiMaggio, 1991; Scott & Meyer, 1994; DiMaggio, 2001; Hall & Soskice, 2001). While institutional studies focus on different organisational aspects, until recently, the existing literature has ignored the role of the institution on safety climate and safety performance issues. In addition, due to organisational and individual embeddedness in institutional settings (Busenitz et al., 2000; Orr & Scott, 2008), there is a need to understand how institutional perspectives influence the functions of organisations' and employees' safety activities. Therefore, to minimise the gap in existing literature, the current study will examine the role of different institutional perspectives on implementing safety climate and developing employee safety behaviours.

Then the second question arises regarding the motives that can force organisational conformity to institutional safety directions. Due to organisational embeddedness in institutional settings, the institutional perspective suggests that organisations attempt to acquire legitimacy (Meyer & Rowan, 1977; DiMaggio & Powell, 1983) for contextual conformity and, thus, increase the likelihood of survival (Rocha, 2010). Then the question remains, why do organisations often deviate from institutional requirements? In this scenario, the agency theory provides important insights into organisations' motives to react in certain ways that are not prescribed by their surrounding institutions (Eisenhardt, 1989; Hill & Jones, 1992; Davis et al., 1997). Agency theory prescribes governance as a mechanism that can provide an explanation and solution for organisational flouting of institutional requirements safety practice issues in Bangladesh. A number of studies (Beasley et al., 2000; Chen et al., 2006; Locke et al., 2007; Filatotchev & Wright, 2011; McCall & Pruchnicki, 2017) have shown the effect of governance mechanisms on limiting the unacceptable behaviours and practices of individuals or organisations. However, despite the importance of governance mechanisms in shaping organisational behaviour, the concept of governance and its relationship with organisational safety climate and employee safety behaviour has been ignored. Hence, the relationship is yet to be explored empirically in management literature. Therefore, the current study intends to show how governance

mechanisms are corresponding through the institutional elements at the macro and micro levels of an industry.

Although, the RMG manufacturing industry in Bangladesh has been under constant scrutiny, to date, too few attempts have been made to study empirically the impacts of institutional perspectives and governance on safety climate and it's subsequent improvement of performance. In the past decades, researchers (Payne et al., 2009; Payne et al., 2010; He et al., 2016; Hong et al., 2018) have striven to understand organisational safety practice issues in the Asian context. Yet, they have been deficient in identifying an integrative framework that combines fragmented observations and exposes the macro and intermediate aspects of implementing safety practices in the Asian organisations. Specifically, researchers lack a systematic understanding of safety practices in Asian organisational context, which belongs to an unpredictable and dynamic institutional environment, encompassing a range of challenging situations. Therefore, the current study uses the Bangladeshi RMG manufacturing industry context to assess governance mechanism as a mediating factor to evaluate the relationship between institutional perspectives and organisational safety climate and performance. The author believes that Bangladesh deserves attention, not only because it is the world's second-largest RMG manufacturer and its economic stability depends on this sector, but also because the working condition concerns affecting its workers also affect garment-manufacturing workers around the world. To further understand the existing literature gaps, the study has performed a systematic literature review (SLR) on institutional perspectives and safety climate. The following chapter provides more details on various gaps identified from the extensive literature review; however, Figure 1.4 provides a brief representation of different gaps that the current study identifies and intends to address.

Figure 1.4: Synopsis of the Research Gaps



1.5 Research Aim and Objectives

The main aim of this research is to investigate the effect of an institutional perspective on organisational safety climate and safety performance through a mediating role of governance practices. A conceptual model is developed for this purpose with the help of institution theory[1], safety climate[2], agency theory[3] and social exchange theory[4]. To attain the abovementioned research aim, the following research objectives have been formulated consequently.

1. Examine how institutional perspectives systematically influence the safety climate of Bangladeshi RMG manufacturing industry?
2. Investigate how institutional perspectives affect organisational safety performance?
3. Examine the role of governance mechanisms in adoption of the organisational safety climate in Bangladeshi RMG manufacturing industry.
4. Investigate the role of governance mechanisms in enhancing organisational safety performance.

These research objectives assist to develop the research framework.

1.6 Significance of the Research

The current study aims to enrich the existing literature in the organisational behaviour and management field by making several significant contributions to theoretical development and practical implications. The current study also provides an important opportunity to advance the understanding of safety research.

Firstly, the SLR performed in this study reveals that the existing literature is deficient in identifying the relationship between institutional perspectives, governance mechanisms,

For detail discussion on these topics please see
[1] Institutional Theory, Chapter 2, P.23-39,
[2] Safety Climate, Chapter 2, P.68-71
[3] Agency Theory, Chapter 3, P.145, 167-168
[4] Social Exchange Theory, Chapter 3, P.153-154

safety climate and safety performance issues. From two different systematic review on institutional perspectives (58 studies) and safety climate (95 studies) articles published in 3* and 4* and peer reviewed journals based on ABS journal ranking guide reveals that only two articles have used institutional isomorphism to assess Occupational Health and Safety (OHS) adoption in university and safety climate in the construction industry. Hossain et al. (2015) examined the relationship between external institutional pressure (i.e. mimetic, normative and regulative) and OHS adoption intention of university management, while He et al. (2016) explore the association between institutional pressure and safety commitment and employee involvement, the application of safety procedures and work practices, and perceptions of responsibility for safety and health. However, these two articles failed to address the effect of institutional settings on different safety climate factors. Additionally, the studies only vaguely postulated the safety climate factors for a specific industry. Furthermore, these studies have failed to address the agency cost that appears between institutions and organisations during the institutionalization process. Finally, the studies were limited in identifying the effect of institutional perspectives and governance mechanisms on safety performance outcomes. Hence, the current study provides a comprehensive explanation regarding the associations among these four concepts.

Secondly, in terms of theoretical development, the current study extends the domain of institutional and agency theory by empirically validating their applicability to the safety climate context. Notably, a fusion of both institutional perspectives and governance mechanisms into the research framework reveals the external influencing instruments that alter organisational safety behaviours. Furthermore, how the macro-institutional environment and intermediary governance mechanisms are affecting employees' safety behaviour is still unknown and thus, the study adds to the literature gap. Besides, the study identifies the interrelationships of institutional perspectives and governance mechanisms, which ultimately provides greater understanding on how institutional safety requirements can develop to offer a stabilising force in a society and how organisational actors internalize these different institutional perspectives to different degrees. In addition, the study also

shows how governance mechanisms work together to promote specific organisational safety behaviours and practices. Lastly, the study uses a cumulative safety performance measure by using context-specific factors e.g., workplace accidents/injuries, and individual behaviour-specific factors, e.g., safety compliance and safety participation. By using such a cumulative performance measurement, the current study responds to the demand for using multiple performance indicators by Cooper and Phillips (2004) and Christian et al. (2009). This contributes to the existing safety literature by validating the cumulative safety performance measure and advances knowledge by gathering further insights into the underlying relationships between safety climate and safety performance factors.

Thirdly, most of the previous studies have been conducted in developed countries, while developing/emerging economies seems to be neglected. A number of scholars (Bahari & Clarke, 2013; Zohar & Polachek, 2014; Barbaranelli et al., 2015; Griffin & Curcuruto, 2016) also highlight the insufficient research on safety measures for different national contexts. Hence, the current study advances knowledge of safety climate dimensionality and develops a valid and reliable safety measurement scale in response to a need for a safety climate scale in the manufacturing industry in Bangladesh. As a result, the current study would be first of its kind in South Asian region, which will contribute to the existing theoretical gap. The safety scale should be particularly valuable for international corporate buyers and production companies in the Bangladeshi RMG industry, who need to perform and maintain high safety standards constantly throughout their production process. In the future, with caution, the safety scale can also be applied to examine the safety perception of workers in the context of other developing/emerging countries. In addition, the current study endorses further research to explore any potential modification which may appear in terms of the generalisability of the current results.

Finally, this study provides three sets of practical implications which offer empirical insights for government, third-party agencies, and factory owners on creating better working conditions and contributing to the economic, political, and social development of Bangladesh. For instance, understanding the institutional environment can assist factory

owners in devising appropriate structures for safety co-operation to foster collaboration with government and various other third-party agencies. In addition, conforming to the institutional requirements can help factory management to leverage resources for safety initiatives. Moreover, factory management should also design safety programmes that will facilitate supervisors, safety communication, training and improve the risk perception of the workers to contribute to safety activities. On the other hand, government needs to provide safety practice guidance and directions at both the strategic, high managerial, and employee levels to standardise the best practice and develop a benchmark for safety culture within the industry. Additionally, the government must establish a business environment that promotes and ensures a well-designed governance procedure involving the shareholders. Government also needs to ensure the good governance practice that can play a substantial role in cultivating workers' welfare by ensuring the accountability of public officials and factory owners and can increase the extent of ethical behaviour. Moreover, third-party agencies should create an industry culture where factories develop a deeper understanding of how and whom to be accountable. They also need to ensure the factory standards by forcing factory owners to implement a code of conduct. The current study contributes by indicating how factories may experience higher levels of safety performance by collaborating with government and third-party institutions. The study also identifies that a collaborative tripartite system is necessary to make the industry safer for workers.

1.7 Structure of the Thesis

A summary of seven chapters of this thesis is briefly introduced below:

Chapter 1: Introduction – Overview of the Study

The first chapter offers a brief overview of the study background, the aim and objectives, explains the rationale behind the study and summarises the contributions of the research. Finally, the chapter provides a structural synopsis of the thesis.

Chapter 2: Literature Review – Institutional Perspectives, Governance, Safety Climate & Performance

The second chapter provides a critical review of the literature on institutional perspectives, governance mechanisms, safety climate and safety performance factors. Two different systematic literature reviews in this chapter provide a comprehensive depiction of existing institutional theory and safety climate related issues that have been confirmed over the years and help to determine the prevailing gaps in the current research related areas. In addition, different points of view and approaches of institutional theory are presented. The historic scenario of institutional theory is presented to construct a substantial premise for the current research and provide a better grasp on the research topic. The chapter attempts to demonstrate the institutional theory as an appropriate approach for examining the institutional determinants of organisational practices in developing countries. The next section of the chapter examines and explores the theoretical and empirical progression of safety climate and safety performance in the extant literature, which has been conducted across countries and different industries. The study also identifies, discusses and provides justification for using a five-factor safety climate and three-factor safety performance measurement model. The final section of the chapter explores the theoretical underpinnings of governance mechanisms and their impact on organisational activities. Furthermore, the chapter also explains the reason behind using governance as mechanisms to make a difference and facilitate organisational safety activities.

Chapter 3: Conceptual Framework Development

This chapter provides the theoretical background of the research. Then the chapter uses the existing literature to review the relationships between the four constructs of the research. Additionally, the chapter presents hypotheses and, based on the hypothesised relationships, presents the theoretical framework of the study.

Chapter 4: Research Methodology

Chapter Four emphasises the theories related to research philosophy and its methodological applications. This chapter comprehensively discusses the design of the research (research philosophy, approach, strategy, methodology, time horizon, sampling, data collection process, and applied statistical methods). A variety of perspectives on research design are exhibited, to grasp the underlying proposition of the research methodology. Justifications and procedures for the adopted methods are presented to facilitate a cohesive and conclusive discussion.

Chapter 5: Data Analysis

Chapter Five describes the findings from the analyses performed based on survey data. This chapter presents a range of results, including the results of exploratory factor analysis (EFA), confirmatory factor analysis (CFA), reliability, discriminant validity and convergent validity, and structural equation modelling (SEM). In addition, the chapter presents the results on direct and indirect effects between independent, dependent and moderator variables, multi-group analysis, and interaction effect.

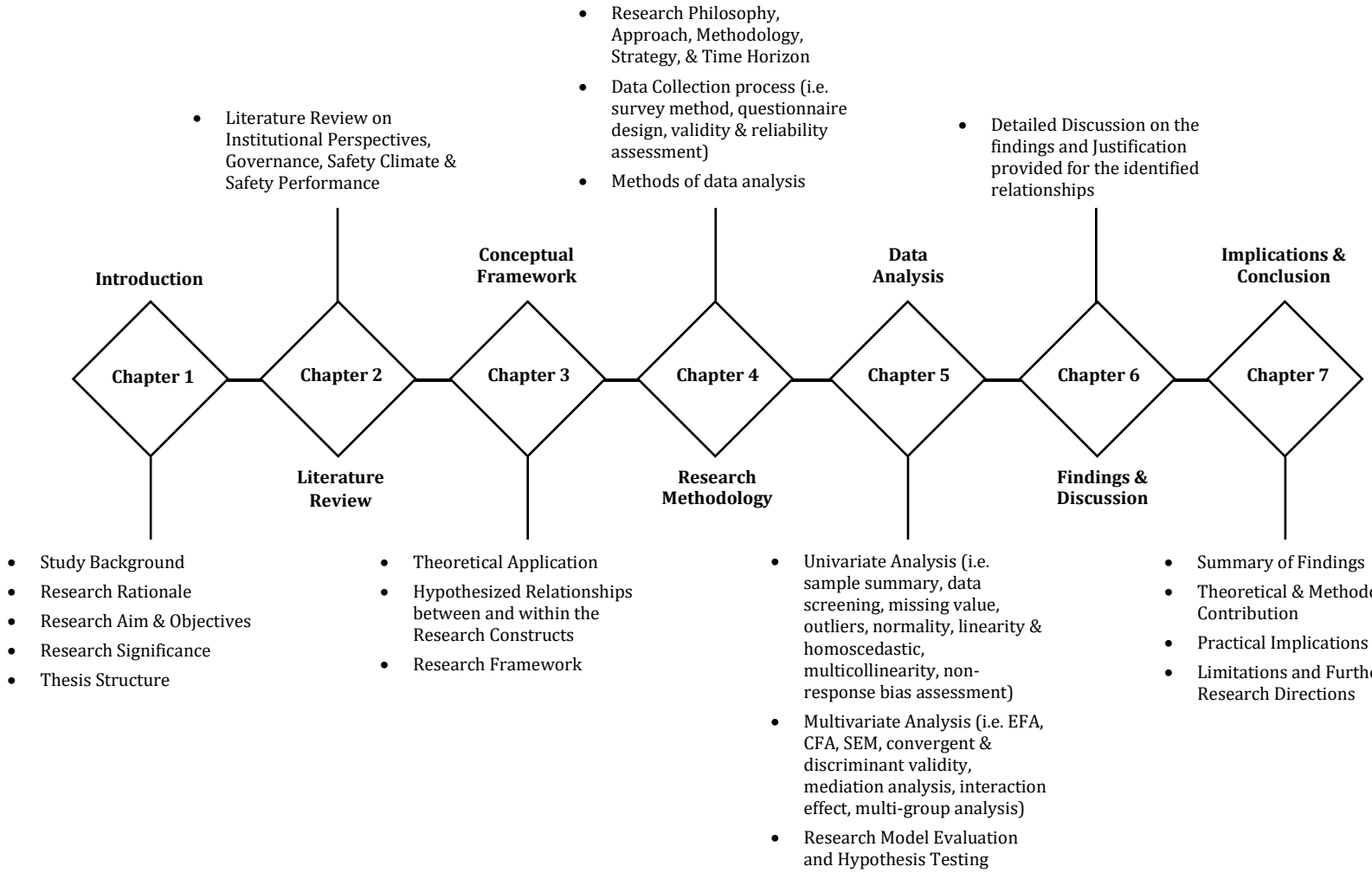
Chapter 6: Findings and Discussion

Chapter Six interprets and discusses the findings based on the results of the analyses. The chapter confirms and explains the status of the hypothesised relationships. The discussion is linked with theoretical underpinnings, methodological approaches, and empirical evidence from previous studies.

Chapter 7: Implications and Conclusion

Chapter Seven provides the conclusions of the study. The chapter presents the theoretical and methodological contributions of the study, along with the practical implications for government, third-party agencies and factory managements. Finally, it presents the research limitations and offer further directions to counter those limitations. The following Figure 1.5 illustrates the structure of the thesis.

Figure 1.5: Structural Synopsis of the Thesis



Chapter 2

Literature Review – Institutional Perspectives, Safety Climate, Safety Performance & Governance

2.1 Introduction

This chapter contains three different sections. The first section of this chapter aims to provide a critical review of institutional theory literature in order to understand how institutions are formed and shape societal behaviours. The first section begins with presenting the historic context of institutional theory by introducing early institutionalism in economics, political science, and sociology. Then introduces neoinstitutionalism within the same domains and captures an eclectic set of views explaining how institutions make impact on organisational behaviours. Furthermore, the section provides a justification of using new institutional theory in sociology. Then it discusses the definitions and features of institutions. Then the section discusses the different perspectives of institutional forces, how they work and how the process of institutionalisation shapes organisations. The final part of the section contains systematic literature review (SLR) of existing studies on institutional theory. This systematic review provides a comprehensive depiction of existing institutional theory related hypotheses that have been confirmed over the years and helps to identify the prevailing gaps in areas related to the current research. To conclude, the section closes with a summary.

The second section of this chapter aims to provide a critical review of safety climate and safety performance literature to understand how organisations can ensure workplace safety. The second section of this chapter commences by discussing the importance of safety in human life and in the workplace. Next, the section provides evidence on how safety climate has been defined in the existing literature and what are the factors that ensure the safety climate within an organisation. In due course, a systematic literature review is presented of major studies, which provides a comprehensive depiction of existing safety

climate factors that have been used over the years. In addition, the SLR has assisted in identifying the prevailing gaps in the research area. The next part of the section offers justifications and provide details of the safety climate factors that selected for use in the research framework followed by a discussion of the safety performance factors used in the current study. Finally, the section closes with a summary.

The third section of this chapter explores the theoretical underpinnings of governance and its impact on a society in general and organisations, in particular. The final section is structured into five parts. The first part aims to explore and define the concept of governance. The second part discusses different components of governance and identifies vital governance factors based on three principles: fundamental value, actionable process and outcome. The remaining three parts of the final section discuss each of the three governance components that have been identified as important for the current research context. The section closes with a summary discussing the importance of incorporating these three governance components (accountability, control of corruption, and rule of law) when monitoring and implementing organisational safety practices.

2.2 Institutional Perspectives

The concept of institution has long been a mainstay of social science (Barley & Tolbert, 1997; Hodgson, 2006). Over the years, it has been used as a collective instrument through which scholars have accommodated all the essentials of societal fact into a fascinating repository of conceptualisation. In due course, the concept has been carefully guided by different scholars from the fields of *economics* (e.g., Coase, 1974; North, 1990; Williamson, 1991; Greif, 1998; Hodgson, 2004), *sociology* (e.g., Durkheim, 1893/1949; Weber, 1957; Berger & Luckmann, 1967; Streeck & Thelen, 2005), *political science* (e.g., Hall, 1986; Immergut, 1998; Thelen, 1999; Peters, 1999; Pierson & Skocpol, 2002), and in *organisational studies* (e.g., DiMaggio & Powell, 1983; Meyer & Rowan, 1977; Scott, 1995). As a result, scholars have professed the concept of institution with extremely diversified subjectivity and with comprehensive heterogeneous interpretations (DiMaggio & Powell,

1991; Tolbert & Zucker, 1999; Scott, 2001). Arguably, the concept of institution has transformed over the years and the multiplicity of institutional definition is rooted in various schools of thought ranging from old to new institutional theory. Therefore, prior to conceptualising institutions, it is necessary to differentiate the genesis of institutional classifications. Since the concept of institutionalism has constantly been developed through continuous revisions and critiques, assimilating the vast body of theory will establish the foundation for the current study. The following section offers a review on the development and transition of institutional theory from classical to new institutionalism in the realms of economics, political science, and sociology.

2.2.1 Institutional Theory – Classical to New Institutionalism

2.2.1.1 Old Institutional Theories

In late 19th century economics, the concept of institutions emanated from a debate over the use of the scientific approach in social science. Based on a historical-ethical approach, the German economist von Schmoller (1904/1942) argued that morals, laws, and customs delineate the structure of social institutions and in turn, these institutions regulate the economic behaviour of individuals in a society. He argued that institutions are not only the product of natural and technical processes but also the product of spiritual and ethical views about what is right. On the contrary, the Austrian economist Menger (1883/1963) argued that institutions are the result of collective human actions rather than a human design. The argument rationalises that social institutions are the unintentional and unplanned outcome of individual actions of members of a society (Hodgson, 1992; Chavance, 2012). While the German historic school of thought considered institutions and rules as the result of purposefully developed design by one or more individuals, the Austrian school of economics viewed institutions as the result of unprompted actions taken by several individuals. However, in late 19th and early 20th century influential economists offered different points of view on institutions than the fruitless debate between the opposing schools of thought (Schumpeter, 1986).

Veblen (1899) first offered an alternative point of view on institutions and challenges the conventional notion by introducing one of the most inspiring streams of economic thought (Old Institutional Economics) regarding habits, institutions, and their relationships. Veblen (1899: 132) believed *"institutions are, in substance, prevalent habits of thought with respect to particular relations and particular functions of the individual and of the community".* He argued that the social order is an arrangement of institutions that are the outcome of habits and that to compete for survival, people develop a course of selective adaptation to select the most appropriate institutions. Eleven years later, Mitchell (1910: 203), building on Veblen's idea, argued that social institutions are the *"habits of thought which have gained general acceptance as norms of guiding conduct"*. He viewed business cycles as an occurrence emerging from the composition of behaviour governed by the institutions of a developed money economy (Rutherford, 2001). While Veblen and Mitchell gave prominence to the notion of habit as the basis of institutionalism or human action, Commons (1950: 26) emphasises the idea of "*working rules of collective action*". According to Commons (1934: 73) an institution is a *"collective action in restraint, liberation, and expansion of individual action"*. The definition proposes that working rules are the laws, customs and norms that define relative rights, duties, liberties, and exposures to control and offer certainty in the actions of organisations and individuals (Van de Ven, 1993; Kaufman, 2003). While all these views constitues a collection of thoughts rather than a specifically defined theory, a common thread among them is the notion that individuals interact to develop institutions, although their choices or purposes are shaped by socio-economic settings (Hodgson, 1998, 2000).

The old institutional economic (OIE) theories are distinctive in nature from the orthodox economic theories, as OIE's are not explicitly concerned about only the human actions rather they also focus on human attitudes, norms, and values (Powell & DiMaggio, 1991). Habit and cognition are the dominant characteristics of these OIE perspectives (Hodgson, 2000) that form institutions to regulate the thoughts and actions of individual human agents (Scapens, 2006). While the OIE approach appears to be very encompassing,

it covers relatively few aspects of institution (Staniland, 2010). For example, OIE theories do not unfold how and what drives the institutional change (Seo & Creed, 2002). Further, Rutherford (1989: 314)[5] claims that OIE left it unclear how social forces (institution vs technology) arise out of individual behaviour or even exactly how they impact on individuals. Additionally, Jepperson (1991: 159) argues that a serious weakness with this OIE approach is that it does not distinguish between human actions and institutions themselves, as *"reification of action"* is deeply rooted in institutional settings. Besides, the approach is stated to be lacking in methodological uniformity and overall plausibility (i.e. Langlois, 1989). Hence, due to the limitations and criticisms of the OIE approaches, new institutional economic (NIE) theories begun to surface in the institutional literature, which will be discussed later in this chapter.

Meanwhile, in 19th century political science, institutional approaches started to emerge from the work of dominant scholars in the field, such as Wilson (1889), Woolsey (1889), Burgess (1890), and Willoughby (1896). These influential academics analysed institutional concept based on law and moral philosophy (Simon, 1996) and focused on formal legal structures and administrative systems that design governance frameworks (Scott, 2013). According to Eckstein (1963) the early institutionalism in politics emphasises the straightforward premise of politics, where institutions are a constitution-making symbol to establish legal codes, contracts, and administrative rules in a state. However, the core idea of these institutional approaches is that politics and political actors are bounded by the macro-level political institutional constraints. These constraints influence political actors power over policies and states, changing political institutions in the process (Amenta & Ramsey, 2009). Therefore, early institutional theories in political science put emphasis on the formation and success of institutions and how institutions were administered (Peters, 2011).

Nevertheless, between 1930 to 1960, the early institutional approach in politics

[5] For a comprehensive debate on OIE and NIE, please see Rutherford (1989) article *"What is wrong with the new institutional economics (and what is still wrong with the old)".*

diverted its attention towards a more behaviouristic approach, focusing on the informal political attitudes, distribution of power, and political behaviour (Thelen & Steinmo, 1992: 4). As a result, the behaviouristic approach paid more attention to party formation, voting behaviour, and public opinion and perceived political actions as a result of *"calculated self-interest"* and *"allocation of resources as the central concern of political life"* (March & Olsen, 1984: 735). Furthermore, according to Bill & Hardgrave (1973: 3-6) the old institutionalism in political science gave more prominence to the origins of institutions rather than how they emerge and emphasised on the historical reform of institutional arrangements. Besides, these old approaches paid attention to moral philosophy more than empirical research (Peters, 2011: 4). Meanwhile, old institutionalism was criticised for being partial, as it does not reflect anything external of its own field settings. As a result, the new institutionalism in political science emerge to overthrow the notion of behaviourism and the drawbacks of old theories to restructure, empower, and guide political actions.

From an alternative perspective, in sociology, the concept of institution was initially prompted by the work of Marx (1844/1972), Durkheim (1893/1949), and Weber (1924/1968). Marx (1844/1972) emphasised the material conditions of a society, when he explored the roots of change and development in human society, through which individuals collectively produce the essentials of life. He believed that economic and political structures with the associated norms, beliefs, and power relations are the outcome of human ideas and activities (Scott, 2013: 12). Further, he perceived that the broader social environment and organisations are structured by class relations and conflict (Elliott, 1984: 383; Adler, 2009: 78). Alternatively, Durkheim (1893/1949) believed that symbolic systems, such as shared cognitive frames and schemas, knowledge, and beliefs are the product of human interaction, which eventually becomes crystallised and constitutes social institutions. He believed that different interdependent parts of the social order are mainly composed of social institutions (e.g., religion, education, family, media, economy, and government), which have roles to perform in order to meet specific needs and structure the social order. While Durkheim focused on the symbolic systems, Weber (1924/1968) predominantly emphasised the

cultural rules that outline the social framework and regulate the social behaviour. Even though, the concept of institution was not been the main aspect of his work, understanding the way culture and belief systems legitimise the exercise of authority is the foundation of the concept of institution. While Marx, Durkheim, and Weber attached substantial importance on institutional roles in social order formation, they all offer contrasting views concerning the roles that institutions play in society.

Parsons (1937) also contributed greatly to sociological literature with his idea of social institutions as more of a subjective analysis of institutions where individuals act in relation to institutions. According to Parsons (1960: 177) institutions are *"generalized patterns of norms which define categories of prescribed, permitted, and prohibited behaviour in social relationships for people interacting with each other as members of their society".* His stance is shared by Coleman (1990: 334) who asserts that a set of regulatory norms formulates a definitive social structure that offers a platform between micro-level individual actors and macro-level system structures. While Parsons introduced a rich institutional theory, it has been described as flawed by modern sociology scholars. For example, Alexander (1986: 242) states that Parsons places extreme emphasis on cultural forms, stressing the *"control exerted by values over conditions".* Additionally, Nisbet (1953: 88-90) criticises Parsons's perception due to its historical point of view. He argues that Parsons's view is incapable of addressing origin, change, inconsistency, and conflict of institutions, and ignores human agency in designing and modifying social institutions, while representing each institution separately. Furthermore, DiMaggio & Powell (1991: 17) describe Parsons's view as limited to the only internalisation of *"value-orientations",* as his view of culture ignores the cognitive dimension.

Meanwhile, Selznick's (1957) work on old institutionalism was the foundational argument to recognise how organisations coalesce as social actors. Selznick (1957: 16-17) views institutionalisation as *"a process"* by which, over time, organisations become infused with values and become institutions. He considers an organisation as a social system in

which procedures and goals attain a value-imbued status creating a *"distinct identity for the organisation"* and become institutionalised (ibid: 256-257). Nevertheless, his view has been criticised by Scott (1987: 495) for being *"largely definitional rather than explanatory"* and for not being coherent about the way values are infused. Furthermore, Silverman (1971: 65) discredits Selznick's view for its excessive concern with organisational efficiency regarding technology, order, and stability. However, all the early institutional studies have some typical drawbacks. While early sociological scholars emphasised language, family, religion, social interaction, economic, legal, political systems, cultural and normative frameworks, they were inclined to neglect organisations and organisational analysis in terms of institution (Scott, 1995: 14). Even though Selznick perceives the organisation as an institutional structure, like most of the early social institutionalists, he confounded the notion of institution and organisation rather than differentiating the concepts. In addition, early institutional work perceives institutions as constraints on organisational behaviour rather than thinking about how institutional endogenous forces and exogenous constraints bring changes to the organisational field (Powell & Colyavas, 2007: 977). As a result, scholars have questioned and debated early institutional work and in due course, new institutional theories have emerged, bringing different points of view to the institutional approach (i.e., economic transaction, or rational calculation of personal utility, or organisational structure). The following section will discuss the new institutional theories in detail.

2.2.1.2 New Institutional Theories

New Institutional Economic (NIE) theory has its root in the work of Coase (1937, 1960). In his work, Coase (1937: 390-391) explains that in addition to the price mechanism, there are other costs (referred to as transaction costs) involved in negotiating and concluding a separate contract for each exchange. Coase's Theorem of transaction cost economics (TCE) maintains that without transaction costs, the assignment of different property right, which is the basis for all market exchange, can create conflicts and market failures. Further, these conflicts and market failures can cause markets to allocate resources

inefficiently. As a result, the theory focuses on the rules, regulations, and governance systems involved in guiding and managing market exchanges. For example, property rights outline the nature of the economic exchange of the land market and such market exchange is determined by the transaction cost (Furubotn & Richter, 2000; Kironde, 2000).

Transaction costs play a determining role in the distribution of property rights. Generally, the transaction costs include the cost of rule enforcement and different contractual arrangements, property rights protection costs, contract writing costs, negotiating costs, and information costs. When these transaction costs are high, allocation of property rights becomes more unfavourable, because transfer of the rights is less fluid (Libecap, 1986: 228), which ultimately affects wealth distribution and equitable resource allocation (De Alessi, 1983). However, it is argued that Coase's approach to transaction costs neither considered defining the inherent empiric features of transaction costs nor provided details of how these features would be recognised (Marinescu, 2012). Despite debates on the transaction costs theory, Coase's theory signifies the basis for analyses of the efficacy of alternative institutional arrangements. In fact, TCE eminently resurfaced and was elaborated considerably by the work of Oliver Williamson (1975, 1985), who widely promoted transaction cost theory into the realm of new institutional economics. Williamson (1975, 2000) views rationally bounded institutional environments (rules, regulations, and governance systems) as an exchange environment where economic transactions are conducted. He argues that transaction costs increase when individual encounters difficulty or opportunity and when the opportunity is associated with additional choices of exchange partners. However, Williamson's (1991: 269) primary emphasis in new institutional economics has been on *"the comparative efficacy with which alternative generic forms of governance—markets, hybrids, and hierarchies—economize on transactions costs".* Thus, NIE theory uses transaction costs as a criterion for measuring the efficiency[6] of any institutional arrangements (Marinescu, 2012).

[6] For example, efficiency is defined by low transaction costs, related to an assumed success for the parties to an exchange when trying to obtain information on the exchange terms (i.e., one wishes to deal and on what terms).

In contrast, an influential economic institutionalist, North (1990) takes broader perspective of NIE by examining institutional frameworks in economic processes. He (1990: 3) goes on to explain institutions as formal (constitutions and laws) and informal (norms of behaviour, and conventions) "*rules-of-the-game*". These "*humanly-devised*" rules set up standards for human interactions and limit the set of choices to construe the expected human behaviours within political, social, or economic context (North, 1991; Nelson & Sampat, 2001). However, an institution as the rules-of-the-game can be defined from two additional perspectives (Aoki, 2001: 4; Gagliardi, 2008). For example, firstly, institutions as the rules-of-the-game can be considered as the players of the game and the actions of the players (*"a choice set"*), which are bounded by consequential functions (Nelson, 1994: 57; Hurwicz, 1996: 117; Aoki, 2001: 4-7). Secondly, institutions as the rules-of-the-game can be perceived as the outcome of the game (Schotter, 1981: 11) where the outcome of rule implementation is the consequence of players expected behaviour in the game (Greif & Kingston, 2011: 14). These rules of the game are exogenously or endogenously shaped (Ostrom, 2006; Aoki, 2007). Since expectations about the behaviour of the players (e.g., specialists in enforcement roles, such as police, judges, etc.) form the institutional constraints which outline people's behaviour, the rules can be explained endogenously (Greif & Kingston, 2011). Alternatively, when behaviour within a group is administered by "rules" which are imposed by the members of the group themselves rather than a third-party professional enforcer, the rules can be taken as a part of an exogenously-given cultural heritage (Williamson, 2000). Generally, individuals adopt these exogenous or endogenous rules depending on the ability of these rules to solve their social problems (Marinescu, 2012). Thus, these rules act as fundamental elements of any political, social, or economic exchange (Greif & Kingston, 2011).

While new institutional economies theories promote the significance of institutions to the development process, they possess a few fundamental flaws. For example, NIE suffers from its restricted view of institutions, *"its over-reliance on analysis of transactions costs and property rights, and it's a historical attachment to markets and private sector firms as major*

engines of development" (Dequech, 2002: 565). In addition, NIE distinctively denies the existence of cultural and normative means that form the behaviours of institutional members (Lai, 2005). Furthermore, NIE theory's fundamental debate on institutions and development has a deficiency in explaining institutional change (Kingston & Caballero, 2009; Chang, 2011). Moreover, new institutional economic theory perceives that individuals can and will perceive all transaction cost minimising arrangements in advance (Buckley & Chapman, 1997: 132). However, individual's ability to evaluate all basic alternatives in advance has been questioned, even by TCE itself (Steen, 2006: 13-14). For example, Schumpeter (2011: 86) argues that individuals act reasonably due to the fact that they have learned from experience how things are done and choose the energy-saving function of fixed habits of thinking. Hence, such fundamental flaws associated with NIE theories, led to the development of new institutional theories in different sociological disciplines, in an attempt to provide a complete understanding of institutional practices (Scapens, 2006: 12).

For Instance, in political science, several schools of new institutional thought (i.e., rational choice, normative, historical, empirical, international, and societal institutionalism) have emerged between the late 19th century and mid 20th century (Peters, 2011: 19-20). However, rational choice, normative, and historical institutionalism have more profound influence in the political science literature. The concept of rational choice institutionalism is significantly borrowed from economics and influenced by the NIE theory (Bell, 2002; Jönsson & Tallberg, 2008). The rational choice theory view institution either as rules or as equilibria (Greif & Kingston, 2011: 14). The institutions as rules approach views that institutions are constructed by systems of rules in which utility-maximizing individual actors attempt to act out of their self-interest (Petracca, 1991: 289; Shepsle, 2006: 24-25). Alternatively, the 'institutions-as-equilibria' approach emphasises the interaction between utility-maximizing individuals forming an institutionalised social situation that provides motivation to follow a regularity of behaviour in a way that maintains the situation (Calvert, 1995: 73-74; Aoki, 2001: 7). However, a key concept of these approaches is that the

collective set of preferences and expectations of the individuals is involved in social interaction driven by the purpose of achieving a state of equilibrium. As a result, several scholars from rational choice institutionalism, e.g., Shepsle & Weingast (1987), Moe (1990), Ostrom (1986, 1990), and Dunleavy (1991), conceptualise institutions as collections of rules and incentives that outline social behaviour. These collections of rules influence a structured equilibrium situation and avoid collective irrationality (Ostrom, 1990). These rules provide the condition for rationality, which creates an institutional environment for actors to act (Dequech, 2001; Jones, 2003; Peters, 2011). Therefore, rational actors are expected to maximise their utility by implementing and coordinating rules, which can be analysed through the lens of transaction cost (Greif & Kingston, 2011).

Unlike the economic-based approach, the transaction cost motive in rational theory focuses on the process of designing structures to reduce difficulties in the decision-making process (Peters, 2011). However, this view has been criticised for underestimating the spontaneous effects of institutions and focusing more on functional practices (Hall & Taylor, 1996; Hay & Wincott, 1998; Bell, 2002). This stance does not define the relationship between institutions and it is less efficient in explaining policy outcomes (Peters, 2011). Furthermore, Hodgson (2012: 94) has criticised that while rational theory assumes that individuals are rational actors who act to maximise their self-interest, in reality, individuals often act irrationally. The theory further believes that utility functions are static, whereas individual preferences commonly change over time and differ across populations (Chai, 2001: 13). Hence, due to several flaws in this theory, scholars such as Elster (1989), Hindess (1989), Jordan (1989), March & Olsen (1989), and Tsebelis (1990) called for an advanced and complementary point of view to the rational choice theory.

In contrast to the rational choice approach, two of the leading institutional ideologists, March & Olsen (1984) have come up with a normative approach to analyse institutions. March & Olsen (1989) argue that, fundamentally, the institution is not a formal structure, but it is a collection of norms, rules, understandings, and perhaps most importantly it is a

routine. They additionally argue that people act within the institutional environment because of the normative principles, rather than to maximize individual utility (Jönsson & Tallberg, 2008). As a result, individuals select their actions in regard to the "*logic of appropriateness*" (i.e., what behaviour is proper and what is not), which can be developed by individuals through the process of institutional membership (March & Olsen, 2006, 2011). Alternatively, a historical institutionalist Hall (1986: 7), defines institutions as "*the formal rules, compliance procedures, and standard operating practices that structure the relationship between individuals in various units in the polity and economy*". This categorisation considers both rational and normative approaches, which provide a meaning to the institution as rules and procedures (Hay & Wincott, 1998; Steinmo, 2008). Historical institutionalism highlights the importance of history, emphasises path dependency and tends to focus on the persistence of institutions (Hay & Wincott, 1998; Jönsson & Tallberg, 2008). Although the concept of historical institutionalism and path dependency have been extensively utilised in political science, there are problems with the meaning and validity of this approach (Amenta & Ramsey, 2009). Moreover, it is less capable of clarifying the change in institutional structure and policy (Peters, 2011). However, modern sociology scholars have provided a more consistent view of the institutional concept (Miller, 2003).

In organisational sociology, institutional perspectives gained importance when scholars like Meyer & Rowan (1977) and Zucker (1977) first presented their neo-institutional view of culture and cognition in institutional analysis. From a micro institutional perspective, Zucker (1977) focuses on the role of cognitive aspects and taken-for-granted behaviours, which control individual's behaviours. In addition, she scrutinises the impact of institutionalisation on cultural continuance, such as resistance to change, maintenance, and generational uniformity. Consequently, Zucker (1977: 742) put forward the argument that *"the greater the degree of institutionalisation, the greater the generational uniformity of cultural understandings, the greater the maintenance without direct social control, and the greater the resistance to change through personal influence"*. Alternatively, Meyer & Rowan (1977), emphasise a macro perspective of institutions, considering them as

networks of cultural roles. Meyer & Rowan (1977) focus on rationalising "*taken-for-granted*" rules, which lead to isomorphic organisational behaviour and establish organisational legitimacy. This suggests that rational notions of institutions are a powerful force for organisations to adapt practices and procedures to increase their legitimacy and survival (Meyer & Rowan, 1977). However, the concept of isomorphic pressure developed by Meyer & Rowan (1977) has been extended by DiMaggio & Powell (1983) from the societal level (macro-level) to the organisational level (micro-level).

According to DiMaggio & Powell (1983: 149) isomorphism is *"a constraining process that forces one unit in a population to resemble other units that face the same set of environmental conditions"*. These isomorphic pressures are constructed by following normative principles, professional standards and practices (normative) or by the pressure from external institutions who have resources on which an organisation depends (coercive), or by imitating other successful organisations (mimetic) (DiMaggio & Powell, 1983). In this approach, the mimetic notion involves presumed actions in uncertain circumstances, while the normative factor includes the persuasive influence of external institutions and the coercive factor concerns societal expectation, force, and political pressures (Björkman et al., 2007). Hence, these isomorphic pressures compel organisations to comply with rules and norms prescribed by the societies and institutions within them, in order to survive and become legitimate (Oliver, 1997; Yang & Konrad, 2011).

Later, Scott (1995) provided a set of comprehensive ideas with three perspectives of institutional processes that have a similar approach to DiMaggio and Powell's institutional isomorphism. Scott expressed his ideas in forms of institutional 'pillars', which consist of the regulative pillar (legal), normative pillar (social), and cultural-cognitive pillar (cultural). He suggests that these pillars from the fundamental edifice of any institutional framework. According to Scott (1995: 33), "*institutions consist of cognitive, normative, and regulative structures and activities that provide stability and meaning to social behaviour*". Scott (2001) believes that institutions constrain behaviours (regulative), recommend actions and

activities (normative), and construct beliefs (cognitive). Table 2.1 illustrates Scott's institutional pillars, which determine the institutional environment of a particular setting.

Table 2.1: Scott's Institutional Pillars

	Regulative	**Normative**	**Cultural-Cognitive**
Basis of Compliance	Expedience social	Social obligation	Taken for granted, Shared understanding
Basis of order	Regulative rules	Binding expectations	Constitutive schema
Mechanisms	Coercive	Normative	Mimetic
Logic	Instrumentality	Appropriateness	Orthodoxy
Indicators	Rules, laws, sanctions	Certification, Accreditation	Common beliefs, Shared logics of action, Isomorphism
Basis of legitimacy	Legally sanctioned	Morally governed	Comprehensible, Recognizable, Culturally supported

Source: Adopted from Scott (1995)

From Table 2.1 it is apparent that the regulative pillar of the institution includes rules, regulations, laws, policies and their implementation through sanction or mediation (Scott, 2001; Orr & Scott, 2008; Stenholm et al., 2013). The normative pillar of the institution includes roles, values, informal norms, professional standards, and practices, (North, 1990; Scott, 2001). In addition, the cultural-cognitive pillar involves the construction of shared beliefs (individual or group), identities, schemas, and rationale for being operative within a particular environment (Scott, 2001; Orr & Scott, 2008). Scott's institutional definition embraces different perspectives and proposes a logical institutional outcome by offering meaning, improving effectiveness and stabilising social structures (Drew & Kriz, 2012; Martinez & Williams, 2012). In addition, the different institutional pillars provide different justifications for organisational legitimacy; whether by legally sanctioned, ethically approved or culturally enforced (Powell & Colyavas, 2007; Scott, 2008b). Integrating different institutional aspects (i.e. normative, cognitive and regulative), his theory minimises institutional ambiguousness and encourages the consistent application of the institutional perspective to various settings, topics, and levels (Greenwood et al., 2008: 32). Moreover, the notion of three institutional pillars offers a dynamic foundation for analysing different organisational behaviours (Grosse & Trevino, 2005) and offers provisions that help to create stability in social life (Scott, 2003).

Nevertheless, upon analysing the development of old and new institutionalism, it can be asserted that new institutionalism has its root in old institutionalism. Both the approaches cast doubt on the rational-actor model of organisation, give importance to culture in directing the organisation, signifying the relationship between organisations and its setting and perceive institutionalisation as a process dependent on the state (DiMaggio & Powell, 1991). However, while old and new institutional approaches have their similarities, the two approaches have significant differences. Table 2.2 illustrates the differences between old and new institutionalism.

Table 2.2: Differences between Old and New Institutionalism

	Old Institutionalism	New Institutionalism
Conflict of interest	Central	Peripheral
Source of inertia	Vested interest	Legitimacy imperative
Structural emphasis	Informal structure	Symbolic role of formal structure
Organisation embedded in	Local community	Field, sector, or society
Nature of embeddedness	Co-optation	Constitutive
Locus of institutionalisation	Organisation	Field or society
Organisational dynamics	Change	Persistence
Basis of critique of utilitarianism	Theory of interest aggregation	Theory of action
Sign for critique of utilitarianism	Unanticipated consequences	Unreflective activity
Key form of cognition	Values, norms, attitudes	Routines, scripts, schema
Social psychology	Socialisation theory	Attribution theory
Cognitive basis of order	Commitment	Habit, practical action
Goal	Displaced	Ambiguous
Agenda	Policy relevance	Disciplinary

Source: Adopted from DiMaggio & Powell (1991)

From the table above it can be addressed that while key elements in old institutionalism asserts the divergence of organisational settings, new institutionalism focuses on the convergence of organisational settings (Abrutyn & Turner, 2011). Old institutionalism views organisations as embedded in the local community, whereas new institutionalism view organisations as embedded at the societal level (DiMaggio & Powell, 1991). While old institutionalism observes organisations as constantly adjusting and transforming (Selznick, 1948), new institutionalism views organisational change as extremely constrained (DiMaggio & Powell, 1983; Scott, 1987). Furthermore, new institutionalism stresses organisational conformity, persistence and inertia, but old institutionalism focuses on the idiosyncratic nature, adaptation process and organisational change (Kraatz & Zajac, 1996). Moreover, Greenwood & Hinings (1996) state that in old

institutionalism, issues of informal structures, coalition and cliques, power, values, and influence patterns are the fundamental blocks, whereas new institutionalism focuses on schema, scripts, routines, classification, the embeddedness of the organisational field and legitimacy. However, it can be deduced that there are a variety of positions and directions in this theoretical field. In economics, while new institutionalists use the rational framework of the transaction cost approach to analyse economic exchange, in political science scholars uses mainly historical and neo-institutional economic approaches to investigate political structures. Alternatively, in sociology, the leading institutionalists have bestowed their interest on cognitive framework more than normative ones and emphasised the effects of cultural belief systems functioning in organisational settings rather than investigating intra-organisational processes. Considering the development and debate of institutional field, more recent inquiries have extended the fundamentals of early literature and emphasised significantly the reason behind organisations' conformity to institutional settings.

From the above discussion, it can be construed that NIS helps to decode the reasons behind the organisational tendency to become similar (Scapens, 2006). It also investigates and analyses the effect of economic, social, and political coercion on organisations. This approach states that organisations conform to the socially established norms and rules to seek legitimacy. Institutional isomorphism is the dominant process in this approach, by which organisations adopt similar measures as a result of normative, mimetic, and coercive pressure as described earlier in this chapter (DiMaggio & Powell, 1983). In due process, organisations not only compete for resources, but also seek for stability and more importantly seek legitimacy. It can be suggested that rather than searching for differences, the NIS approach explains similarities and change in organisational structures (Greenwood & Hinings, 1996). As a result, it seems rational to use new institutional theory in sociology (NIS) in the current context of the research. More specifically, the current study intends to use Scott's seminal work to address the inquiry raised in the research, as it sheds light on the contextual elements that drive local organisation to conform with specific practices. Table 2.3 provides a synopsis of the development of institutional theory.

Table 2.3: Synopsis of Theoretical Development of Institution

Category	Academic Disciplines	Dominant Scholars/Years	Institutional Standpoint	Focus of the Institutional Viewpoint
Old Institutional Theory	Economics	Menger, 1883	Social institutions are the result of spontaneous actions of several individuals	Social phenomena
		Veblen, 1899	Institutions are not just constraints on individual action, but also commonly recognised ways (habits and conventions) of thinking and behaving	Established habits
		Schmoller, 1990	Institutions are the result of purposefully developed design by one or more individuals	Cultural and historical forces
		Mitchell, 1910	Institutions create regularities and generate patterns of behaviour for people that give rise to business cycles in a developed money economy	Our ideals that creates the regularities in the behaviour
		Commons, 1934	Institution is collective action process where transaction is the fundamental unit of analysis	Collective action in control, liberation, and expansion of individual action
	Political Science	Woolsey, 1877	Institutions are tightly structured entities, e.g. parliaments, courts, trade unions, firms and other associations, which are constitution-making symbols to establish legal codes, contracts, and administrative rules in a state	Legal frameworks and administrative arrangements
		Wilson, 1889		
		Burgess, 1890		
		Willoughby, 1896		
	Sociology	Marx, 1844	Capitalism is a historically-bounded social system, where all major institutions, such as religion, state, and political economy, were marked by a condition of alienation (structured by class relation and conflict)	Society is the result of an economic base and a social superstructure
		Durkheim, 1893	Institutions are a product of joint activity and association, the effect of which is to 'fix' to 'institute' outside us certain initially subjective and individual ways of acting and judging	Symbolic systems (moral principles, schemas, knowledge, belief)
		Weber, 1924	Cultural rules outline social framework and regulate social behaviour	Religion forms the base of economic social structure
		Parson, 1937	Institutions are generalized patterns of norms which govern people's behaviour	A common set of normative standards and value patterns
		Selznick, 1957	Organisations become institutions over time by becoming infused with values	Organisations become institutionalised

New Institutional Theory	Economy	Williamson, 1975	Institutions are a way of reducing transaction costs and obtaining higher efficiency in economic performance	Transaction Cost
		North, 1990	Institutions are humanly devised constraints that structure political, economic and social interactions	Rule systems and enforcement mechanisms
	Political Science	Hall, 1986	Institutions are formal rules, compliance procedures, and standard operating procedures	Formal constitution and structures of state
		March and Olsen, 1984	An institution is a collection of norms, rules, understandings, and routine	Logic of appropriateness
		Shepsle & Weingast, 1987	Institutions are systems of rules and inducements to behaviour in which individuals attempt to maximise their own utilities	Governance or rule systems established by individuals seeking to protect their interests
		Moe, 1990		
		Ostrom, 1990		
		Dunleavy, 1991		
	Sociology	Meyer and Rowan, 1977	Institutions are rules, norms and ideologies of wider society	Nexus of cultural rules
		Zucker, 1977	Institutionalisation is a process of conformity which is rooted in the taken-for-granted aspects of everyday life and produces essential understandings about appropriate and meaningful behaviour	Power of cognitive beliefs
		DiMaggio and Powel, 1983	Institutional mechanisms, i.e., coercive, mimetic and normative through which institutional context forces organisations to be isomorphic	Structural isomorphism
		Scott, 1995	Institutions are regulative, normative, and cognitive arrangements that offer stability and meaning to social activities	Institutional forces

2.2.2 Definitions of Institution

The field of institutions tends to be very complicated as institutions have been perceived in various ways to comprehend the meaning, impact, and the changing process within different social settings. As a result, definitions of institutions have become inclusively heterogeneous (Tolbert & Zucker, 1999; Scott, 2013) and they continue to be defined by an eclectic set of approaches (Greenwood et al., 2008). For instance, institutional definitions have been anchored in different roots to address different foci related to habitual actions, cultural change, path dependency, organisational structure, social reality, rules, and even political power (DiMaggio & Powell, 1991). However, as the definitions of institutions remain very diffusing, grasping a particular set of definitions is necessary to constitute the links between the actions of institutions and social actors (Barley & Tolbert, 1997). Moreover, without any intrinsic institutional conceptualisation, developing any speculative or pragmatic exploration on how the institution works would be impossible, as according to Dillard et al. (2004: 512) *"the malleability of an institution can vary with the grain of analysis"*. Therefore, before approaching towards the key idea of this research study, a number of institutional definitions will be emphasised, to offer an inclusive view of what an institution is.

An early complex definition of the institution was provided by Hamilton (1932: 84), who defined the institution as a *"cluster of social usages"* that marks *"a way of thought or action of some prevalence and permanence which is embedded in the habits of a group or the customs of a people"*. Hamilton also sees the institution as an arrangement, convention, or procedure, through which actions of human beings are imposed and restricted. Particularly, his idea of institution has been a central idea to social science studies, as his definition perceives custom or habit as arrangements rather than just behaviours (Hodgson, 2006: 21) and institutions as a dynamic force in bringing changes (William, 1982: 762). While Hamilton tries to provide an in-depth and explicit definition of "institution", his effort results in the further emergence of several other definitions.

Among many, an interesting definition of the institution has been provided by Stinchcombe (1968: 107). He defines institution as *"a structure in which powerful people are committed to some value or interest"*, highlighting the role of power, where interests and values are preserved by individuals who hold power. Alternatively, emphasising the role of power from a different point of view, Jepperson (1991: 145) claims that institutions are "*social order and patterns" and* deviation from such patterns or orders is counterbalanced "*in a regulated fashion, by repetitively activated, socially constructed, controls - that is by some set of rewards and sanctions"*. He views institutions as social entities represented by self-regulating social mechanisms that enforce institutional application through repeatedly activated controls, in the form of power (Phillips et al., 2004). Power puts pressure on social settings to adopt institutional practices in order to minimise risk, increase legitimacy and access resources. Moreover, the existence of institution depends on the possession of power and the power controls the actions of individuals, organisations, and social actors (Lawrence, 2008). As a result, power appears to be a central element in the concept, as Levi (1990: 407) claims that a definition of institution fails if it ignores that the institutions *"facilitate and regulate the resources of power"*. Hence, considering the role of power in the institutional debate the above two definitions have meaningful contribution in the current study.

Alternatively, other definitions of the institution have emphasised the influential elements that induce social relationships and behaviour. Arguably, the influential elements of institutions are based upon the set of norms, values, rules, and cultural beliefs shared by individuals, which are believed to be the guiding principles for social actions and interactions (Scott, 2010). For instance, Barley & Tolbert (1997: 96) state that an institution is a set of *"shared rules and typifications that identify categories of social actors and their appropriate activities or relationships".* They perceive that institutions provide the structures of day to day action by establishing the nature of the actors and their regular context-relevant forms of interaction (Abdelnour et al., 2017). Additionally, extending the view of Barley and Tolbert, institution has been defined by Burns & Scapens (2000: 8) as

"the shared taken-for-granted assumptions which identify categories of human actors and their appropriate activities and relationships". These taken-for-granted rules provide a vital structure of social order, expectation, and preferences, for framing the uniformity in individuals action and interaction within a society (Hodgson, 2006). Furthermore, institutions are defined as standardised norms, practices, procedures, or systematise rules that structure relations between individuals and groups in and across the society, polity, and economy (Hall, 1986: 19; Hall & Taylor, 1996: 938). Likewise, for Fligstein (2001: 108) institutions are *"rules and shared meanings ….. that define social relationships, help define who occupies what position in those relationships, and guide interaction by giving actors cognitive frames or sets of meanings to interpret the behaviours of others".* Hence, drawing on different institutional definitions, institution can be perceived as the stable foundations of social life that have a deep-rooted effect on the thoughts, feelings and actions of individual and collective actors (Lawrence & Suddaby, 2006). Therefore, all the above definitions have a certain degree of importance in this study, as human actions, thoughts and relationships that are influenced by social structures are at the heart of all institutional approaches to organisational research.

However, though institutions have been understood and defined in several and varied ways by scholars (e.g., DiMaggio & Powell, 1983; Meyer, 1983; March & Olsen, 1989; North, 1990; Greenwood & Hinings, 1993; Nee, 1998; Peters, 1999), an overall conception of institution has been given by Scott (2008b: 48), who perceives institutions as:

> *"social structures that have attained a high degree of resilience [and are] composed of cultural-cognitive, normative, and regulative elements that, together with associated activities and resources, provide stability and meaning to social life."*

His definition stresses the existence and interdependence of three distinct institutional elements (normative, cognitive and regulative), which offer a distinct foundation of the social structure. While it includes laws, regulations, and their enforcement in the form of

sanction and power, it also embraces behavioural standards, commercial conventions, scripts, schemas, and taken-for-granted elements that regulate and influence individuals in a sociocultural context (Bruton et al., 2010). Additionally, different institutional elements provide different justifications for organisational legitimacy, whether legally sanctioned, ethically approved or culturally enforced (Powell & Colyavas, 2007; Scott, 2008b). As a result, this dense definition proposes a logical institutional outcome by offering meaning, improving effectiveness and stabilising the social structures (Drew & Kriz, 2012; Martinez & Williams, 2012).

Furthermore, integrating different institutional elements, this definition minimises the institutional ambiguousness and encourages consistent application of an institution-based view to various settings, topics, and levels, such as macro (e.g., societal systems, sectors), meso (e.g., organisations) and micro level (e.g., intra-organisational systems and processes) (Greenwood et al., 2008). Thus, a key interest of this concept is to understand how organisations and their actors behaviour are continuously judged and influenced by the institutional environment, which can vary widely across countries and cultures (Scott, 2008b; Fang, 2010; Aharonson & Bort, 2015). Given the broad notion of institution, this thesis builds on Scott's definition, which offers a meta paradigm to elucidate the meaning of institutions and effectively form the basis and cornerstones of the current study. Therefore, as the current research intends to investigate organisational behaviour in an institutional context, implementing Scott's institutional concept seems practical to find the effect of institutions on choice of organisational behaviours.

2.2.3 Three Institutional Perspectives

Institutions are highly resilient social structures that construct social behaviour (Crawford & Ostrom, 1995) and provide stability, regularity, and meaning to social life (Scott, 2001; Campbell, 2004). Accordingly, they influence organisational structures, behaviours, strategies and practices in a systematic way (Mueller, 1994). According to Meyer & Rowan (1977), organisations behaviour and their internal structure are shaped by

efficiency pressure and institutional pressure (normative, coercive and cognitive). While efficiency pressure systematises and governs organisational activities, institutional pressure legitimises organisational behaviour. A key belief of institutional theory is that organisations compete for resources necessary for their survival and growth and it can mainly possible through aligning the organisation's activities with its institutional environment (Contrafatto, 2014). According to Dowling & Pfeffer (1975), such alignment ensures organisational legitimacy and improves the flow of resources necessary for organisations. Legitimacy has been defined as "*the degree of cultural support for an organisation*" (Meyer & Scott, 1983: 201), a *"generalised perception of social acceptance"* (Suchman, 1995: 574), and *"a symbolic value to be displayed in a manner such that it is visible to outsiders"* (Scott, 1998: 211). In the above sense, legitimacy denotes the valuation of an organisation by its social system (Deephouse & Carter, 2005) or in other words, organisational persuasion of social acceptability from institutions with whom they interact (DiMaggio & Powell, 1983; Scott, 2001). As a result, organisations' struggle to achieve legitimacy, forces them to conform to their institutional environment by imitating institutional or social requirements. The evidence of this can be clearly seen in a study conducted by D'aunno et al. (2000) on U.S. rural hospitals from 1984 to 1991, which demonstrates that institutions promote divergent change in core organisational activities.

While most organisations conform to their institutional environment, they tend to be institutionalised and impose pressure on other organisations to be involved in homogenous behaviours. The course of institutionalisation is influenced by *"powerful institutional rules"* (Meyer & Rowan, 1991: 44) and organisations operating in highly institutionalised settings are exposed to *"powerful forces"* leading to isomorphic behaviour (DiMaggio & Powell, 1983: 148). In due course, organisations, seeking isomorphic behaviour, imitate established strategies, structures and practices that seem practical and rational to the social structure (Tolbert & Zucker, 1983; Fligstein, 1991). As a result, organisations are perceived as socially acceptable (Deephouse & Carter, 2005). According to DiMaggio & Powell (1983) institutional pressures for organisational isomorphic behaviour occur through three

mechanisms: (a) *"coercive isomorphism"* emerges through constitutional regulations and requirements (p.150); (b) *"mimetic isomorphism"* derives from *"ambiguity"* or *"uncertainty",* which leads to *"modelling"* or *"imitation"* (p.151); and (c) *"normative isomorphism"* stems from collective professionals defining *"conditions and methods"* (i.e., normative rules) in which to operate (p.152). Due to this isomorphic pressure, components of the organisational structure institutionalise, and eventually function as traditions or *"myths binding on organisation"* (Meyer & Rowan, 1991: 45). As a consequence, these traditions become symbolic structures, values and meaning systems (Miller, 1994), viewed as *"objective and exterior"* - appropriate ways of doing things (Zucker, 1977: 728). However, isomorphic pressure can have various outcomes due to the complex relationship of regulative, normative, and cultural-cognitive mechanisms that occur across institutional contexts (Szyliowicz & Galvin, 2010). Therefore, in order to better understand how powerful institutional forces, work and how the process of institutionalisation shape organisations in many forms, it is necessary to look at Scott's institutional perspectives, which are the basis for organisations' rationale and mechanisms for conformity.

2.2.3.1 Regulative Perspective

The regulative perspective of the institution has been highlighted by institutional economists like Williamson (1985), North (1990), and Aoki (2001), who focus on the process of '*rule-setting*', '*monitoring*', and '*sanctioning*' activities. This perspective includes the rules and laws of the institutional environment (Kostova & Roth, 2002). Therefore, the regulative perspective considers institutions as *"the rules of the game in a society or, more formally, are the humanly devised constraints that shape human interaction"* (North, 1990:3). These rules govern the way actors should act in the game. In that sense, the institution deemed as a unique mode of governance infiltrated with particular rationality, policy instruments, and mechanisms, where the rationality provides persuasiveness or legitimacy (DiMaggio & Powell, 1983; Laffan, 2001). The regulative perspective, e.g. rules, regulations, policies and laws, is aimed at controlling and promoting a specific pattern of behaviours and ensuring stability within the social environment (Williamson, 1991; Palmer & Biggart,

2002; Scott, 2008b). Hence, to control and promote the specific pattern of behaviours, institutions use power, pressure and authority (Djelic & Quack, 2003; Aguilera et al., 2008). The power encompasses the ability to institute rules, inspect and endorse rewards or penalties to control future behaviours (Scott, 2001). According to Holm (1995) and Lawrence (2008), institutions are associated with power through their influence on the social beliefs and behaviours of the actors. As a result, different authoritative or regulatory bodies/organisations, e.g. government agencies, business groups, trade unions, and professional associations regulate the power (Djelic & Quack, 2003; Orr & Scott, 2008) and force less powerful organisations to function in accordance with prescribed behaviour in order to become legitimised and acquire consequential benefits.

For instance, the International Labour Organisation (ILO) provides international policies and rules for different organisations to promote basic human rights, improve working conditions, and enhance employment opportunities, which ultimately bring benefits to organisations. Thus, to receive required resources for growth and enhance survival opportunity, organisations are more likely to conform to regulative pressures from government agencies and other stakeholders. Yet, according to Matheson (1987) organisations that react to such pressure must be continuously monitored to ensure that they are operating in accordance with institutional requirements. Whether, institutions always monitor effectively or not is a debatable issue (Campbell, 2007) nevertheless, ideally, the regulative institutions tend to monitor individual or organisational behaviour and offer guidelines on how to undertake specific activities (Scott, 2001; Lau et al., 2002). Therefore, as the regulative perspective stresses *"rule-setting, monitoring and sanctioning activities both formal and informal"* (Scott, 2008c: 222), it is considered as 'mandatory' to which organisations are obliged to conform. Nonetheless, as observed by Dunning & Lundan (2008) and Bruton et al. (2010) the regulative perspective should not be conceptualised only as constraints due to its controlling nature; rather it should be perceived as providing opportunities for organisational activities. In this sense, it can be perceived that the regulative perspective defines organisational nature, preserves organisations' interests and

promotes their rights (Dacin et al., 2002), rather than only constraining organisational actions.

2.2.3.2 Normative Perspective

Several sociologists e.g. Durkheim (1893/1949), Selznick (1957), March & Olsen (1989), Parsons (1990), and Stinchcombe (1997), have emphasised the concept of normative institutions. The normative perspective includes social norms, values, standards, roles, conventions, practices, taboos, customs, traditions, and codes of conduct that guide human behaviour and actions (North, 1990; Scott, 1995; Busenitz et al., 2000; Orr & Scott, 2008). These normative aspects introduce the "*prescriptive, evaluative, and obligatory*" dimensions to shape and establish socially accepted behaviours (Scott, 2001: 54; Palmer & Biggart, 2002; Alexander, 2012). This institutional perspective embraces both values (i.e., preferred or desired goals and standards) and norms (i.e., how things should be done), which describe the legitimate ways of pursuing valued ends (Scott, 2001; Currie & Suhomlinova, 2006; Orr & Scott, 2008). These values and norms are informally embedded, shared and diffused (Kostova, 1997) and legitimacy is established based on the conformity to these normative perspectives (Trevino et al., 2008). Consequently, the normative perspective is more likely to be internalised and offer encouragements to conform to the institutional environment for intrinsic and extrinsic rewards (Veciana & Urbano, 2008). As a result, the normative perspective increases the wisdom and intensity of complying with social obligations (Vasudeva, 2013).

Normative rules describe the goals and objectives expected from social actors and designate the appropriate approach for particular individuals or organisations to pursue them (Scott, 2001; Currie & Suhomlinova, 2006; Orr & Scott, 2008). According to March & Olsen (1989: 23), normative rules are grounded in the *"logic of appropriateness"* that defines organisational structures, mandates actions, and describes individual activities. The central idea behind the normative perspective assumes that organisations become socially accepted by conforming to taken-for-granted norms, values and routines (Roberts &

Greenwood, 1997). In this sense, the normative perspective provides the rules-of-thumb (i.e. how organisations should behave) (Hoffman, 1999), which are guided by the silent contract of control authority (professionalisation) and surveillance of the entire society (DiMaggio & Powell, 1983; Hadjikhani & Ghauri, 2001; Deligonul et al., 2013). As a result of conforming to these "rule like", "social fact", "obvious", "taken-for-granted assumptions", and "natural" ways of conduct, organisations increase their chances of survival and success. However, organisations do not always conform to social principles in order to get positive outcomes, but because it is unthinkable to do otherwise (Oliver, 1991) as if they do not, organisations will lose their legitimacy due to their unprofessional identity within their institutional settings (Delmas, 2002). Therefore, the normative perspective plays a key role in terms of controlling and creating pressure on organisations by prescribing types of specifically required behaviour.

2.2.3.3 Cultural-Cognitive Perspective

The cultural-cognitive perspective identifies that organisational and individual actions depend the subliminal understanding instead of a conscious imitation of regulative or normative obligations (Bruton et al., 2009). People adopt cultural-cognitive perspectives as they are taken-for-granted (DiMaggio & Powell, 1991; Scott, 2001). Cultural-cognitive perspectives are the *"operating mechanisms of the mind"* (North, 2005: 30), which *"constitute the nature of social reality"* (Scott, 2001: 67). Several scholars, e.g., Berger & Luckmann (1967), Meyer & Rowan (1977), DiMaggio & Powell (1983), Meyer & Scott (1983), and Weick (1995), have paid their attention to cultural and cognitive institutions. The cultural-cognitive perspective includes the logic of action and mental models, heuristics, scripts, schemas, identities, categories, and shared beliefs (Scott, 2001). These institutional perspectives are cultural in the sense that they represent socially constructed symbols (Durkheim, 1961), while, they are also cognitive, as the socially constructed symbols provide social reality by shaping individual perceptions and decisions (Orr & Scott, 2008; Scott, 2010). Therefore, both external cultural principles (i.e., socially constructed

symbols) and internal assumption processes (i.e., individual perceptions and decisions) outline the interpretations and their justifications of social order (Sen, 2004).

According to Scott (2003), cultural-cognitive perspectives, i.e. logics of action, shared conceptions, and taken-for-granted beliefs, are perceived to underlie the social order. These cultural-cognitive perspectives are perceived as "sense-making of day-to-day" scripts and routines, which help organisations and organisational members to create value, establish identity and gain legitimacy (Vann, 2011: 86). For instance, Whitley (1992) and Greenwood & Hinings (1993) explain that most significant cultural-cognitive perspective offer standards for developing guidelines and routines for working procedure (Orr & Scott, 2008). Hence, it can be perceived that the cultural-cognitive perspective of institution construct is a culturally supported and conceptually corrected behaviour to promote organisational activities.

These three institutional perspectives are extremely symbiotic yet different in providing the basis for social order, mechanisms and social logics of influence, compliance, and reasons for legitimacy. The framework undoubtedly stresses the function of symbolic processes in social life (Scott, 2010) and involves explicit and implicit social elements, emphasising the formal rules, shared beliefs and collective rationales. However, the key idea behind this framework is that unless the symbolic systems offer instruction and direction for social behaviour and until the systems are 'inhabited' by social actors, (Hallett & Ventresca, 2006), institutions will not be functional and social order will be in chaos. For this reason, institutions provide reason, interests and symbolic elements that connect and reflect social behaviour, relations, and resources (Scott, 2008b). As a result, individuals and organisations are constantly bombarded with regulative, normative, and cultural-cognitive institutional pressures to bring the structuralization of social functions and provide authoritative guidelines for social behaviour. The following Table 2.4 offers a synopsis on the theoretical conceptualisation of institutional elements that have been discussed in this

chapter. Specifically, the table presents the institutional elements, forces, dynamics, and mechanisms through which institutions influence and impact social behaviour.

Table 2.4: Institutionalisation - Elements, Mechanisms and Processes

<table>
<tr><td>Institutional Elements</td><td>Regulative</td><td colspan="2">Normative</td><td>Cultural-Cognitive</td></tr>
<tr><td>Paradigms of element</td><td>Laws, regulations, legislations</td><td colspan="2">Norms, professional standards, codes of conduct, rules and routines</td><td>Conceptual concepts, meaning and symbols, schema, scripts, cognitive beliefs</td></tr>
<tr><td>Institutional mechanisms involved in isomorphic Change</td><td>Coercive</td><td colspan="2">Normative</td><td>Mimetic</td></tr>
<tr><td>Sources</td><td>Legal requirements and regulations</td><td colspan="2">Norms/rules, including those emanated by professional bodies</td><td>Uncertainty and ambiguity with regards to organisational goals and relationship between ‘means and ends’</td></tr>
<tr><td>Influences</td><td>To adopt initiatives and actions in compliance with regulations/ legislations</td><td colspan="2">To adopt initiatives and actions which conform with the normative expectations</td><td>Towards the imitation of leading peers (organisations) which are perceived as successful and distinguished</td></tr>
<tr><td>Processes of Institutionalization</td><td>Macro-institutionalism</td><td colspan="2">Meso-institutionalism</td><td>Micro-institutionalism</td></tr>
<tr><td>Level and focus of analysis</td><td>Society, government, sector, industry</td><td colspan="2">Organisations</td><td>Intra-organisational sub-system</td></tr>
<tr><td></td><td></td><td colspan="3">Meso & Micro Institutionalism</td></tr>
<tr><td>Institutional Elements</td><td>Outside the scope of study</td><td>Regulative / Normative</td><td></td><td>Cultural-cognitive</td></tr>
<tr><td>Sub-process involved</td><td>Outside the scope of study</td><td colspan="2">Adoption, enactment and reproduction of organisational procedures, rules and routines</td><td>Construction of common meaning systems:
a. Externalisation
b. Objectivation
c. Internalisation</td></tr>
<tr><td>Outcome</td><td>Outside the scope of study</td><td colspan="2">Institutionalisation of organisational procedures, rules and routines</td><td>Institutionalisation of symbolic structures, conceptual concepts and meaning systems</td></tr>
<tr><td>Strategies to reduce possibilities for deinstitutionalisation</td><td>Outside the scope of study</td><td colspan="3">At the organisational and intra-organisational levels, these may involve
a. The creation of role topologies
b. The creation and formulation of formal structures</td></tr>
</table>

Source: Adopted from Contrafatto (2014)

Even though early institutional discussion mainly emphasised the macro perspective, including societal systems, government and industry, contemporary institutional discussion stresses the micro-level perspective, including intra-organisational systems and processes. According to Scott (2010: 7) more recent *“research is actively underway to examine*

institutional structures and processes at the world system or transnational, the societal, the industry or organisation 'field', the organisation population (collections of organisations of the same type), the individual organisation, and the intra-organisation or group level". In a similar vein, the current study emphasises the effect of institutional processes and dynamics (institutionalization) that take place at the organisational (meso) and intra-organisational (micro) levels, as highlighted with the black box in Table 2.4. However, as a dynamic process, institutionalisation has gained considerable attention, which creates an opportunity for application of various institutional approaches, from economic to political, to further sociological, and even anthropological (Szyliowicz & Galvin, 2010). Hence, it seems relevant to conduct a systematic review in this area to explore an inventory of what has been done before and to highlight some of the issues explored and findings of the existing empirical research. In particular, the systematic review of literature provides a comprehensive depiction of existing institutional theory related hypotheses that have been confirmed over the years and help to determine the prevailing gaps the current research. The following section offers a defence and description of the literature review methodology, followed by analysis and discussion of the findings of aggregate studies on institutional theory in general.

2.2.4 Institutionalism in Organisational Studies –Existing Empirical Literature

2.2.4.1 Data Sources and Search Strings

To introduce empirical findings related to institutional theory, five electronic journal databases were selected as the data sources for potentially related literature. Due to less precise results and overlapping outcomes from other database, Google Scholar, has not been included as a probing database. The following electronic databases have been used in the search process.

1. Science Direct
2. Web of Knowledge
3. EBSCO (Business Source Premier)

4. JSTOR
5. Wiley-Blackwell Full Collection

The search was conducted over the timespan of 1970 to 2017, as according to Szyliowicz & Galvin (2010: 322) *"institutional theory has been a presence in organisational studies since the late 1970s"*. Over four decades, various studies have used and addressed institutional theory in different ways. Therefore, for the construction of the search string, the current study identifies and uses a combination of different search terms to obtain all available research in this area (e.g. institution, institutional theory, institutional perspective, institution-based view, institutional pillars etc.). The literature search strings are shown in Table 2.5. The search strings for finding relevant studies were developed by linking the terms with a conjunction (AND) operator and a disjunction (OR) operator. The study also uses the wild card operator (*) where required. Due to the length of the search strings, the current study realigned a few keywords for the JSTOR digital library that are semantically similar. After that, the search strings were applied to reveal frequently occurring words in the title field (e.g., abstract, title, keywords etc) of the relevant articles found through reference search results. A total of 19,748 papers was identified at this stage of the process. Given the long time period and number of articles found in the preliminary search, the study was limited to top tier journals based on quality ranking. While journal rankings are being criticised for grading the empirical publications (Rafols et al., 2012), scholars are more likely to favour journal rankings for establishing the significance of its contribution (Frey & Rost, 2010; Hall, 2011b). Therefore, 4* and 3* ranking journals were selected, as is classified by the Association of Business Schools (ABS) Journal guide.

Table 2.5: Literature Search Strings

Database	*Related Subject Area*	*Search terms*	*Refined By (Journal Category 3* & 4* and Topic)*
	Topic	**Title-Abstract-Key**	**Limit to - Journals**
Science Direct **Web of Knowledge** **EBSCO** **JSTOR** **Wiley-Blackwell**	Institutional Theory	(“institution” or “institutional theory” or “institutional perspective” or “institution-based view” or “institutional pillar” or "isomorphism" or "coercive” or “mimetic” or “normative” “cultural-cognitive” or “regulative” or “institutional pressures" “decoupling” or "iron cage") and (institution*)	Academy of Management Review, Journal of Management Inquiry, Academy of Management Journal, Organisation Studies, Administrative Science Quarterly, Journal of Business Ethics, Organisation Science, Journal of Management Studies, Journal of International Business Studies, Strategic Management Journal, International Business Review, Corporate Governance: An International Review, Journal of Business Research, Business Ethics Quarterly, Journal of World Business, Human Relations, Journal of Management, Management Accounting Research, Journal of Business Venturing , American Sociological Review, Management International Review, British Journal of Management, Journal of Operations Management, Industrial Marketing Management, Research Policy, Critical Perspectives on Accounting, Long Range Planning, Journal of Financial Economics, Accounting, Organisations and Society, Journal of Corporate Finance

2.2.4.2 Journal and Article Selection Criteria

After executing the search strings, specific inclusion and exclusion criteria were set to identify relevant studies for further analysis. The current research includes studies that:

- are available in full-text
- are published between year 1970 and 2017
- are written in English
- are peer-reviewed
- are within the domain of institutional and organisational analysis
- are only related to different institutional theories
- discusses institutional elements, institutional perspectives, institutional structures, institutionalism, institutionalisation, isomorphism along with legitimacy

it excluded papers that:

- are duplicate
- are not related to institutional and organisational analysis
- are not available in full-text and have missing information
- are related to organisational analysis but not related to the institutional perspective
- are not included in 4* and 3* ranking journals classified by the ABS Journal ranking
- are not ranked above 0.500 on article influence factor and 5-Year impact factor is below (<2.000).

For selection criteria, the titles and abstracts of the initial pool of references were reviewed to evaluate their definite applicability for the topic of this analysis. In addition, duplicates were removed from the accumulated articles archived in EndNote. Furthermore, along with the ranking of the journals (i.e. 4* and 3*), it was decided to screen journals based on the impact factor, eigenfactor scores and article influence scores, which are readily computed by Thomson Reuters' Web of Science Journal Citation Reports. The impact factor approach is perhaps the best-known instrument for measuring the quality and popularity of a journal. While impact factor measures the quality, it does not account for the prestige of the journal (Franceschet, 2010) and hence it is supplemented by the eigenfactor scores and article influence scores (Kianifar et al., 2014). These scores attempt to provide

considerable information about a journal that offers more precise depiction of the prestige and quality of citations than the basic citation counts (West et al., 2013). Therefore, users can select vital papers that may have been disregarded by other ranking methods based on status and rate of downloads. Furthermore, these approaches have recently been used to evaluate journal status and proved to be an effective instrument for accurate evaluation of the quality (i.e. Bergstrom, 2007; Bergstrom et al., 2008; West et al., 2010; West et al., 2013; Kianifar et al., 2014). Therefore, current study uses these approaches as filters for navigating the scholarly literature and selected following journals for the review which are listed in Table 2.6. However, though Accident Analysis & Prevention (AAP) journal has not been listed in the ABS ranking guide, it has been incorporated in the review due to its relevance and importance to the current study.

Table 2.6: Impact Factor Analysis

Journal Title	2016 Total Cites	Impact Factor 2016	5-Year Impact Factor	Immediacy Index	2016 Articles	Cited Half-life	Eigenfactor Score[7]	Article Influence Score[8]
AMJ	30,777	7.417	11.901	1.080	88	>10.0	0.02763	5.777
AMR	27,906	9.408	13.630	1.897	29	>10.0	0.01281	6.446
AAP	13,131	2.685	3.244	0.500	296	6.9	0.02223	0.915
ASQ	15,273	4.929	6.913	0.800	20	>10.0	0.00687	5.181
AJS	15,513	3.088	6.095	0.595	37	>10.0	0.01089	4.474
ASR	16,257	4.400	6.814	0.625	48	>10.0	0.01454	4.569
IBR	3,190	2.476	3.095	0.554	112	7.5	0.00332	0.573
JBE	17,130	2.354	3.526	0.376	322	7.7	0.01557	0.694
JBR	16,703	3.354	4.108	0.522	761	7.9	0.01318	0.628
JBV	8,310	5.774	8.284	0.556	36	>10.0	0.00800	2.500
JIBS	12,254	5.869	7.433	1.125	48	>10.0	0.00851	2.326
JOM	16,286	7.733	12.213	1.014	69	>10.0	0.02265	5.008
JMS	9,272	3.962	7.236	1.295	44	>10.0	0.01213	3.107
LRP	3,423	3.547	6.297	0.327	49	8.2	0.00237	1.484
MIR	1,737	1.516	2.732	0.310	29	9.5	0.00170	0.703
OSC	16,459	2.691	6.145	0.590	83	>10.0	0.02405	3.464
OST	6,373	3.107	4.771	0.629	70	>10.0	0.00841	1.859
SME	5,138	2.421	3.414	0.451	91	>10.0	0.00622	0.947
SMJ	27,588	4.461	6.652	0.84	153	>10.0	0.02123	3.071

AMJ=Academy of Management Journal, **AMR**=Academy of Management Review, **AAP**=Accident Analysis & Prevention, **ASQ**=Administrative Science Quarterly, **AJS=**American Journal of Sociology, **ASR**=American Sociological Review, **IBR**=International Business Review, **JBE**=Journal of Business Ethics, **JBR**=Journal of Business Research, **JBV**=Journal of Business Venturing, **JIBS**=Journal of International Business Studies, **JOM**=Journal of Management, **JMS**=Journal of Management Studies, **LRP**=Long Range Planning, **MIR**=Management International Review, **OSC**=Organisation Science, **OST**=Organisation Studies, **SME**=Small Business Economics, **SMJ**=Strategic Management Journal

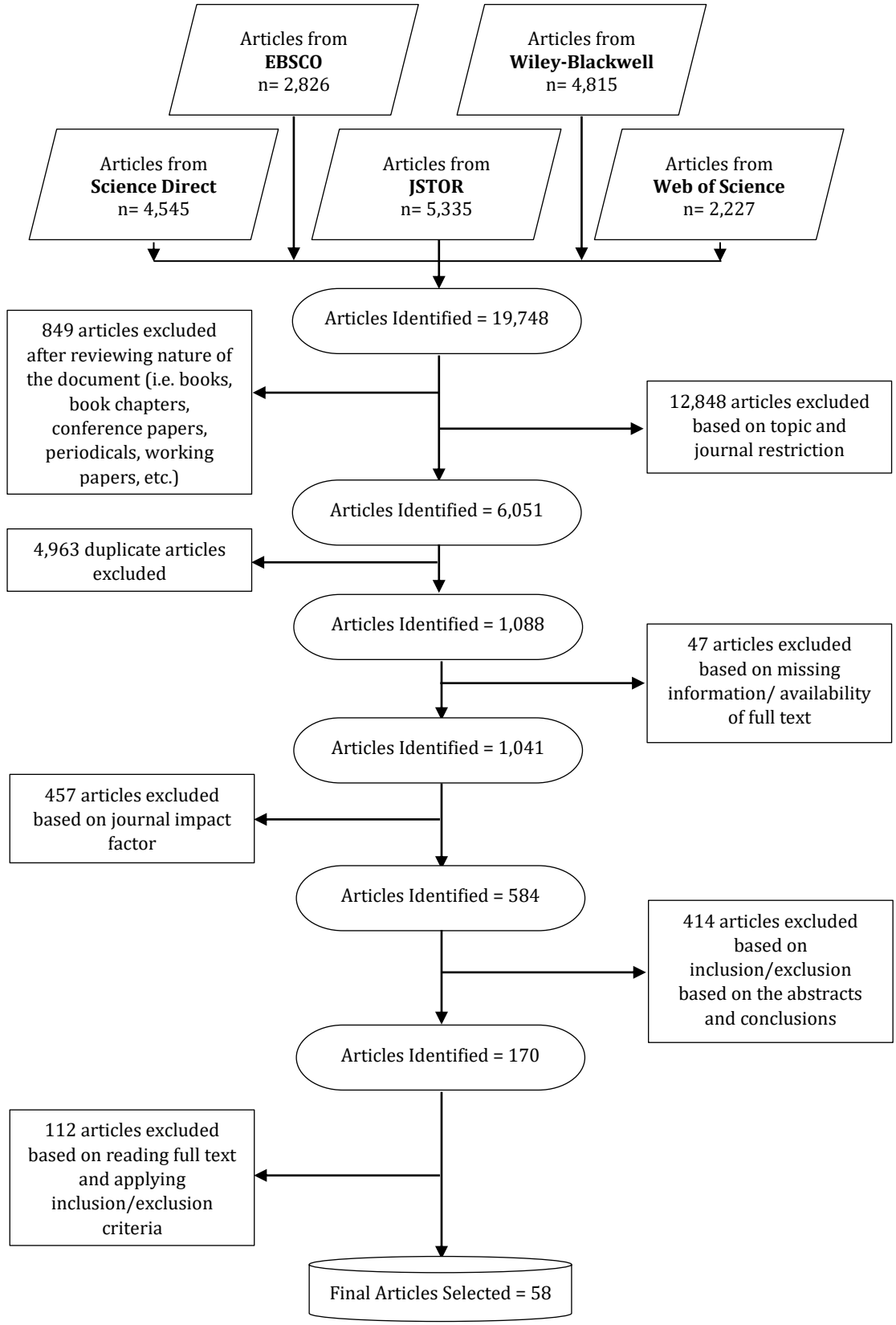
[7] The *Eigenfactor* Score calculation is based on the number of times articles from the journal published in the past five years have been cited in the JCR year. References from one article in a journal to another article from the same journal are removed, so that *Eigenfactor* Scores are not influenced by journal self-citation.

[8] The mean Article Influence Score is 1.00. A score greater than 1.00 indicates that each article in the journal has above-average influence. A score less than 1.00 indicates that each article in the journal has below-average influence.

2.2.4.3 Inclusion and Exclusion of Journals

Out of a total of 19,748 articles, 849 were excluded based on the nature of the document, i.e. books, book chapters, conference papers, periodicals, working papers, editorials, letters to the editor, discussion forum papers, short communications, essays or similar documents. Due to the fact that these scholarly outputs usually go through a less rigorous peer-review process, and less readily available (Podsakoff et al., 2005), the current study does not consider them in the review analysis. Furthermore, 12,848 were excluded based on topic and journal restriction. After the first two exclusion criteria, the study was left with 6,051 articles, out of which 4,963 duplicates were excluded by using EndNote, 47 articles have been excluded based on missing information or unavailability of full text, and 457 articles were excluded based on journal impact factor, eigenfactor scores and article influence factor scores. From the remaining 584 articles, 414 were excluded after considering inclusion/exclusion based on the abstracts and conclusions. Finally, 112 articles were filtered and after reading the full text and applying inclusion/exclusion criteria, a total of 58 articles was selected for the final review. Figure 2.1 shows the number of articles that were refined in each stage of the study selection process.

Figure 2.1: Study Selection Process



2.2.4.4 General Characteristics of the Reviewed Articles

This section presents the assessment results of articles' distribution by journals, year of publications and article types. The sub-sample of empirical studies was further studied by examining the research focus, framework, methodologies and measurement variables used and their outcomes. The descriptive statistics provide an overview of the status of the theoretical perspectives of the institutional concept in organisational studies. Table 2.7 shows the distribution of articles by sources and years from 1977 to 2017.

Table 2.7: Summary of Reviewed Articles by Sources and Years

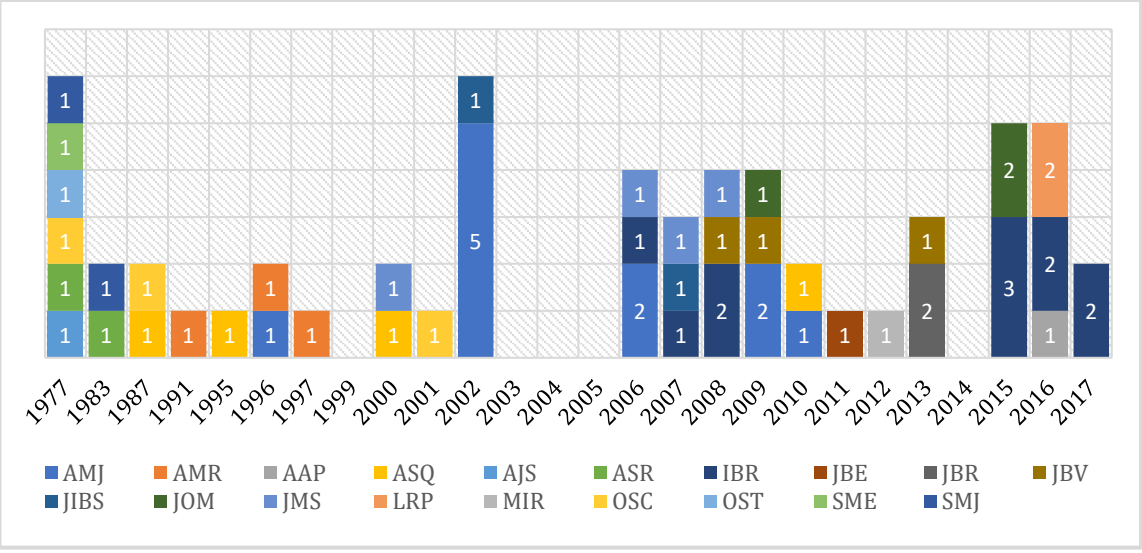
Year/ Journal	AMJ	AMR	AAP	ASQ	AJS	ASR	IBR	JBE	JBR	JBV	JIBS	JOM	JMS	LRP	MIR	OSC	OST	SME	SMJ	Total
1977					1	1														**2**
1983						1														**1**
1987				1																**1**
1991		1																		**1**
1995				1																**1**
1996	1	1																		**2**
1997		1																		**1**
1999																	1			**1**
2000				1									1							**2**
2001																				**0**
2002	5										1					1				**7**
2003																				**0**
2004																1				**1**
2005																				**0**
2006	2						1						1							**4**
2007							1				1		1							**3**
2008							2			1			1						1	**5**
2009	2									1		1							1	**5**
2010	1			1														1		**3**
2011								1								1				**2**
2012															1					**1**
2013									2	1										**3**
2014																				**0**
2015							3					2								**5**
2016			1				2							2						**5**
2017							2													**2**
Total	**11**	**3**	**1**	**4**	**1**	**2**	**11**	**1**	**2**	**3**	**2**	**3**	**4**	**2**	**1**	**3**	**1**	**1**	**2**	**58**

AMJ=Academy of Management Journal, **AMR**=Academy of Management Review, **AAP**=Accident Analysis & Prevention, **ASQ**=Administrative Science Quarterly, **AJS=**American Journal of Sociology, **ASR**=American Sociological Review, **IBR**=International Business Review, **JBE**=Journal of Business Ethics, **JBR**=Journal of Business Research, **JBV**=Journal of Business Venturing, **JIBS**=Journal of International Business Studies, **JOM**=Journal of Management, **JMS**=Journal of Management Studies, **LRP**=Long Range Planning, **MIR**=Management International Review, **OSC**=Organisation Science, **OST**=Organisation Studies, **SME**=Small Business Economics, **SMJ**=Strategic Management Journal

Table 2.7 indicates that out of 58 articles identified in the process, only 12 (20.69%) studies appeared in first twenty-four years period (between 1977 to 2000), 28 (48.28%) studies were published between 2001 and 2010, and finally 18 studies were published in

the last seven years (between 2011 and 2017). The findings demonstrate that more and more articles on institutional theory in management are being published each year, especially after the year 2000, which is consistent with the findings of Farashahi et al. (2005). According to Scott (2010), in recent time, the *"importance of institutions has (re)discovered"* and its *"centrality is increasingly recognised"* (p.5). The view is also supported by Bruton et al. (2010), who state that institutional theory is an increasingly utilised theoretical lens for organisational research. In the same way, the current study findings are also analogous to the statements of both scholars, which shows an increasing trend of implementing institutional theory as a popular theoretical foundation for examining a wide variety of research topics in organisational studies. The majority of these articles have appeared in the *Academy of Management Journal (AMJ)* and *International Business Review (IBR)* (11 articles each), followed by the *Administrative Science Quarterly (ASQ)* Journal and *Journal of Management (JOM)* (four articles each). Figure 2.2 illustrates the distribution of reviewed articles between 1977-2017.

Figure 2.2: Distribution of Reviewed Articles from 1970-2017



2.2.4.5 Discussion on Reviewed Articles

Based on the analysis of the selected articles, it can be stated that most of the articles have drawn their samples from the developed countries (76.08%). The sample from

developed countries consists of the USA (26.10%), other developed countries, i.e. UK, Israel, Japan, Canada, and European countries (75.61%) or from both U.S. and one or more other developed countries (15.21%). In contrast, recently a few studies (23.91%) have been conducted in the developing countries, including China (8.70%), Russia (6.52%), and other emerging economies such as India, Malaysia, Egypt, South Africa, and Vietnam (8.70%). These findings are consistent with previous analysis conducted by Farashahi et al. (2005) on institutional theory. The findings are particularly important to the current research, because the institutional context in developed countries is usually stable and alteration in the context is predictable (Scott, 2001), while developing countries possess opposite characteristics of the institutional context. As a result, using developed countries institutional dynamics to a developing countries perspective might be unsuitable, challenging and even inappropriate. Hence, there is a real demand for assessing the applicability of the institutional perspectives in developing countries, where the institutional context is more unpredictable and dynamic. Considering this need, the current study attempts to accommodate this inadequacy of the literature.

Moreover, most of the reviewed articles embrace a top-down approach (65.38%), where they have analysed the effect of institutions on organisations. Alternatively, 23.08% of the articles use a bottom-up approach, where they have examined the effect of organisations on institutions, whereas only 11.54% articles put emphasis on the effect of institutions on other institutions. In these studies, when the top-down approach is considered, scholars (e.g. Deephouse, 1996; Yiu & Makino, 2002; Cheng & Yu, 2008; Makhmadshoev et al., 2015; Choi et al., 2016; Lin & Ho, 2016) have perceived governments, regulative or regulatory agencies, and legal systems as the dominant producers of institutional pressure for organisations. For example, articles have shown how institutional pressure significantly influences organisational *strategic decisions* (Hitt et al., 2004), *foreign country entry-mode choice decision* (Yiu & Makino, 2002), adoption of *environmental management systems* (Schaefer, 2007), or even *SMEs entrepreneurial internationalisation* process (Oparaocha, 2015). However, such organisational response

varies depending on different institutional forces and also based on organisational factors such as size, age, industry type, performance and competitiveness (i.e. Deephouse, 1996; D'aunno et al., 2000; Delmas & Toffel, 2008; Alexander, 2012; Choi et al., 2016; Yi et al., 2018). While in terms of institutional forces, isomorphism has been the main concern (i.e. Deephouse, 1996; Davis et al., 2000; Bjorkman et al., 2007; Combs et al., 2009; Garcia-Sanchez et al., 2016), articles mainly use three dominant sources of institutional pressure suggested by Scott (1995), that affects organisational responses.

Regulative perspectives have been considered in the form of rules, legal mandates, enforcement and sanctions, which guide the behaviour of organisations. In contrast, normative perspectives of institutions have been considered as the appropriate behaviour and the way it should be performed. Besides, cultural-cognitive perspectives have been studied as cultural rules, norms, values, and symbols that outline the reality and nature of meaning systems. These three perspectives of institution have been assessed in different contexts, such as in *overseas subsidiaries* (Kostova & Roth, 2002; Yiu & Makino, 2002), *SME's* (Cheng & Yu, 2008; Lim et al., 2016), different organisational *strategy and decision-making processes* (Huang & Sternquist, 2007; Trevino et al., 2008; Deligonul et al., 2013), *organisational changes* (D'aunno et al., 2000), *organisational responsiveness* (Casile & Davis-Blake, 2002), *performance* (Escobar & Vredenburg, 2011), *innovation* (Greenwood et al., 2002; Alexander, 2012), *corporate social responsibility* (Garcia-Sanchez et al., 2016) and organisational *safety climate* (He et al., 2016). In these studies, the regulative (37.93%) and normative (31.03%) perspectives have been identified as the dominant sources of institutional pressure, while cultural-cognitive perspectives remain comparatively ignored (15.52%). However, the articles have not made an effort to address the reasons why the cultural-cognitive perspective is less explored perspective in their selected institutional setting. One possible justification for this might be based on the argument that the cultural-cognitive perspective is complex in nature and difficult to capture (Scott, 2008a). In response, the current study tries to contribute in this vacant area of the literature.

In the top-down approach, two different fundamental arguments have been identified in the existing literature, such as structure vs agency and conformance vs performance. These findings convey almost similar conclusions drawn by previous meta-analysis conducted by Heugens & Lander (2009). The structure vs agency argument identified by this systematic review is also supported by scholars (e.g., Lawrence & Suddaby, 2006; Delbridge & Edwards, 2007) who agreed that recent developments in institutional field have incorporated the dynamic role of agency during social structure replication. Meanwhile, the current systematic review has identified that when the articles consider the structure vs agency approach, isomorphism has been the typical feature for institutionalists, while the debate lies on the degree of influence social structures have on organisational behaviours (Deephouse, 1996; Beckert, 1999; Young et al., 2000; Björkman et al., 2007; Schaefer, 2007; Cheng & Yu, 2008; Berrone & Gomez-Mejia, 2009; Marquis et al., 2016).

Primarily, structure focused articles stress the impact of institutional pressure on organisational agency, emphasising the way institutional structure produces stability and legitimacy in organisational structures and strategies (Zucker, 1977; Jepperson, 1991). For structuralist scholars, institutions impose structure on organisational settings, which confines organisational agency and thus diminishes differences in structures and policies among the organisations. In contrast, agency focused articles propose that organisational behaviours are not completely determined by social structures; rather these social structures provide organisations with the source for improvisation, deviance, and entrepreneurship (Hoffman, 1999; Washington & Ventresca, 2004). These agency focused articles suggest that social structures create strong organisational field–level isomorphic forces, which give rise to acts of organisational resistance and endogenous pressures for change. However, such strong isomorphic forces can gradually decrease organisational flexibility to adapt the social systems, making organisations vulnerable to external shocks (Schneiberg, 2005). Hence, scholars emphasising the agency approach postulate that institutional structures ultimately provide a foundation for change and deviance. While

conceptual fallacy remains, both the arguments consider the relationship between isomorphic pressure and self-determining organisational behaviour, which have become the mainstream in the field of organisation theory. However, as the role of agency is greater in uncertain settings (Beckert, 1999; Combs et al., 2009; Yi et al., 2018) and social structure may change in the context of developing countries (Deephouse, 1996; Hitt et al., 2004; Björkman et al., 2007), there is a need to examine the balance between structure and agency in future studies (Heugens & Lander, 2009). Therefore, the current study incorporates agency with the institutional perspective to assess organisational performance in a developing country context, which will be discussed later.

In the second argument, conformance vs performance, articles argue that conforming to institutional settings can provide legitimacy, offer resources, avoid sanctions and bring positive performance. For instance, conformance can result in improved *economic performance* (Schaefer, 2007), *subsidiary performance* (Slangen & Hennart, 2008), *environmental performance* (Berrone & Gomez-Mejia, 2009), *social performance* (Escobar & Vredenburg, 2011), *innovation performance* (Alexander, 2012), *marketing channel performance* (Jia & Wang, 2013), and *safety performance* (Marquis et al., 2016). However, alternative debate exists regarding the effect of institutional conformance on organisational performance. For instance, according to Meyer & Rowan (1977: 340–341) *"conformity to institutionalised rules often conflicts sharply with efficiency criteria and, conversely, to coordinate and control activity in order to promote efficiency undermines an organisation's ceremonial conformity and sacrifices its support and legitimacy"*. In addition, Kennedy & Fiss (2009) argue that the idea that conformance enhances performance is a false dichotomy and organisations do not conform to any settings merely based on their social recognisability and acceptability. Besides, Kostova & Roth (2002) claim that conformance to regulative and normative institutional profile can cause negative impact on the variation and level of employee perception and performance of an organisation. Furthermore, in a study regarding organisational safety behaviour, Marquis et al. (2016) found that normative institutional conformation has no influence on safety procedures and work performance.

While the arguments in support of the view that conformance enhances organisational performance are conceptually compelling, they are not unanimously supported by empirical evidence. As a result, there is a further need to investigate this phenomenon and hence, the current study intends to discover the possible influence of institutional conformation on organisational safety performance in an emerging country context.

In conclusion, the systematic literature review has given a clear picture and an account of empirical findings on institutional theory, evidencing the major directions of theoretical arguments and exposing the gaps in the existing literature. Table A.1 in Appendix A provides a comprehensive synopsis of article types, study variables, methods, main characteristics in terms of theoretical framework and contextual dimensions and findings related to institutional factors.

2.2.5 Summary

Based on existing literature, different points of view and approaches of institutional theory have been presented in the current chapter. Scholars from economics, political science, and sociology have used old and new institutionalism to fully comprehend the way organisations become institutionalised. The historic scenario of institutional theory has been presented to construct a substantial basis for the current research and provide a better grasp of the research topic. This historic scenario has demonstrated how new institutionalism developed largely from early institutionalism. Having presented the different points of view, the study provides a justification of why new institutionalism is suited to the current research context.

The chapter attempts to demonstrate that institutional theory is an appropriate approach for examining the institutional determinants of organisational practices in developing countries. Evidence from empirical findings also demonstrates that research in institutional theory has mostly been conducted in developed countries, while institutional dynamics in developing countries might be different. Hence, the current study identifies the necessity for assessing institutional perspectives in the context of developing countries to

accommodate the lack of evidence in the literature. Furthermore, the systematic literature review of institutional theory reveals that existing empirical inquiries have primarily emphasised the top-down approach. While the top-down approach attempts to grasp how and what types of pressures shape organisational actions, the bottom-up approach seeks to comprehend how organisations alter institutional settings and societal behaviours, prompting old ways to change. Analysis of both the approaches exhibits the connection between them and helps to comprehend the formation of social practices. However, it should be mentioned that analysing both the approaches together might give rise to methodological issues. Hence, most of the studies focus on investigating only one approach and the top-down approach is the dominant one. At the same time, studies from the systematic review exhibit a distinct bias towards the normative and regulatory institutional perspective, rather than the cultural-cognitive perspective. Hence, there is also a need to further investigate the effect of the cultural-cognitive perspective of institutions on altering organisational behaviours.

Nevertheless, there is currently little empirical evidence to understand how these three different types of institutional perspectives systematically affect the conformation of organisational safety climate practices, especially in developing countries. Therefore, the current study intends to use Scott's institutional theory to understand and shed light on the contextual elements that drive local organisations to conform with specific practices, especially organisational safety climate. The next section presents literature reviews on organisational safety climate issues. It will help to present a conceptual model that seeks to gain a better understanding of the institutional perspectives of companies' safety practices in developing countries, where governments and other stakeholders have a central role as conduits of institutional pressures.

2.3 Safety Climate & Safety Performance

Safety concerns are among the basic needs of human nature. The safety needs are perceived as essential criteria for fulfilling the higher order needs (Maslow, 1943) both in

general day-to-day activities and organisational practices (Schepers et al., 2008). Reflecting on Maslow's notion, a safe working environment is necessary to encourage positive employee behaviours and to improve productivity (Kivimäki et al., 1995; Collins & Clark, 2003; Schaufelberger, 2009; Chan & Mak, 2012; Huang et al., 2014b; Curcuruto & Griffin, 2018). A safe working environment reduces accidents and injuries, ill-health, and is likely to increase profitability (Tompa et al., 2009). In contrast, an unsafe working environment increases cost in terms of human and financial capital and decreases productivity (Heinrich, 1959; Oxenburgh & Marlow, 2005; Kazaz & Ulubeyli, 2007; Kath et al., 2010). For instance, the most recent figures, from 2016-17 show that, in the UK, 31.2 million working days were lost due to work-related injuries and illnesses and 1.3 million working people suffered from a work-related illness. This situation has an estimated cost of £14.9 billion to the society in 2016-17 (Health and Safety Executive, 2017). Surprisingly, the ILO (2017) also reports that, worldwide, every 15 seconds, 153 workers encounter work-related accidents, while every day, 6,300 workers die from work-related accidents or diseases. In fact, the economic cost of current occupational health and safety issues is estimated to be equal to 4% of global Gross Domestic Product (GDP) each year (ILO, 2017). These highly disappointing figures exemplify that the social and personal burden of work-related health and safety failures causes employers, employees, their families, communities, and sometimes the entire nation to suffer, even long after an event (Marson, 2001; Haslam et al., 2016). As a result, reduction in accidents and injuries is of paramount importance to the industries in particular, society in general and the nation as a whole.

While in developed countries, many efforts have been undertaken to ensure a safe working environment, in most developing and least developed countries, occupational health and safety issues are mostly neglected (O'Neill, 2000; Ahasan & Partanen, 2001; Nuwayhid, 2004). Thus, injuries and deaths exact a huge toll in developing and least developed countries, particularly, where a large number of people are involved in hazardous occupations (Smith et al., 2006). For instance, evidence can be found in the recent incident in August 2015, when two massive explosions at a container storage station in the port of

Tianjin, northern China, exposed severe concerns related to workplace safety. As a result of primitive negligence and putting profit above lives, more than 173 people were killed, 800 people were injured, 300 homes were destroyed and thousands of people were made homeless (Jiang et al., 2015; Mortimer, 2016). Furthermore, even three decades of after the 1984 Bhopal gas tragedy, accidents in Indian manufacturing industries cause 100 fatalities per million employees, compared to 10–30 per million in advanced countries (Basha & Maiti, 2013; DGFASLI, 2014). While different investigations (e.g., Bowonder, 1987; Gupta, 2002; Chouhan, 2005) have repeatedly established that management negligence, worker's unawareness and complacency, and regulatory agencies irresponsibility were the root causes of the catastrophic Bhopal accident, the situations remains unchanged.

Moreover, a variety of evidence around the world (e.g., the 2008 fireworks factory explosion in Istanbul; the 2010 Deepwater Horizon oil spill in Mexico; the 2012 Ali Enterprises Garment Factory fire in Pakistan; the 2014 Soma Mine disaster in Turkey; the 2016 gas leakage in fertilizer company in Bangladesh), it is apparent that health and safety issues in the workplace have been a widely ignored issue, especially in emerging and least developed countries, which therefore requires attention. Having such dramatic evidence of the human and economic cost of large-scale industrial accidents such as Chernobyl or Bhopal in emerging countries, Bangladesh could have been cautious and invested in safety infrastructures at least in hazardous industries (e.g., steel, ready-made-garments, construction, automobile, chemical, tannery etc.). Yet, the overall workplace safety situation in Bangladesh is seriously appalling. In fact, Rana Plaza tragedy in 2013, one of the worst disasters on record in the world (ILO, 2013), demonstrates the deteriorating working situation. Similar to the Bhopal incident, investigations show that poor management of safety in the workplace, non-compliance in factories and negligence on the part of government and regulatory agencies caused this devastating, record-breaking industrial tragedy (Nur-e Maula et al., 2013). Hence, a question remains, about the way in which safety management is carried out in least developing countries (LDC) such as Bangladesh. Surprisingly, while numerous studies have been conducted in safety research in various

parts of the world, scholars have been silent on research evidence from Bangladesh, where safety is yet to get the priority it deserves. Hence, one of the strands of this study is to examine the safety practices and their influence on safety performance in Bangladeshi manufacturing industry.

For several decades, in order to prevent accidental injuries and fatalities in workplaces, occupational safety has become prominent research area for scholars (e.g., Heinrich, 1959; Vroom, 1964; Cohen, 1977; Zohar, 1980; Dedobbeleer & Béland, 1991; Hofmann et al., 1995; Mearns et al., 2001a; Clarke, 2010; Huang et al., 2013; Murphy et al., 2014). The principal notion of occupational safety is to foresee safety-related consequences in order to offer an important guideline for cultivating safety in organisations (Vinodkumar & Bhasi, 2010). Besides, it is important for organisations to look into the dynamics that contribute to the safety and soundness of the workplace (Goldenhar et al., 2001). Hence, attention to safety in different organisations has intensified, not only in order to comprehend several aspects that impact safety issues but also to understand the way safety transpires. Given that different organisational factors affect safety outcomes, a considerable amount of attention needs to be devoted to organisational safety climate issues (Nielsen et al., 2008). The fact that different aspects exert an impact on the organisational safety outcomes, it leads to a considerable amount of attention devoted to organisational safety culture and safety climate issues (Nielsen et al., 2008). Different scholars have extensively investigated both safety climate (e.g., Zohar, 1980; Coyle et al., 1995; Williamson et al., 1997; Dedobbeleer and Béland, 1998; Mearns et al., 2003) and safety culture issues (e.g., Hofmann et al., 1995; Cox and Flin, 1998; Glendon and Stanton, 2000; Guldenmund, 2000) in order to have a better understanding of occupational safety. As a result, both the concepts of safety culture and climate are stressed extensively by most of the scholars (Guldenmund, 2000).

In theory, safety culture and safety climate offer a foundation to govern employee safety behaviours which influence safety performance (Zohar, 1980). These concepts have

been endorsed as the 'leading indicators'-predictive, proactive, and preventative metrics, which identify variables that are potentially harmful and could cause safety-related failures (Flin, Mearns, O'Connor, & Bryden, 2000; Givehchi, Hemmativaghef, & Hoveidi, 2017; Hinze, Thurman, & Wehle, 2013; Hudson, 2009). While both of the concepts are widely accepted as valuable and effective interpreters of safety outcomes (Cooper & Phillips, 2004; Griffin & Neal, 2000; Zohar, 2000), the relationship between two concepts still remain unclear (Nielsen et al., 2008). Scholars have tried to resolve and render differences between the two concepts and argued that the definitions are very global, 'highly implicit', and persistently challenging to define (e.g., Guldenmund, 2000; Weigmann, Zhang, Thaden, Sharma, & Mitchell, 2002). As a result, efforts have been made to distinguish and define the concept of safety culture and climate, while there has been little agreement on both the concepts and often tends to get conceptually muddled with each other (Lin, Tang, Miao, Wang, & Wang, 2008).

Despite having discrete terminologies, both the definitions are commonly used interchangeably in the existing literature (Cox & Flin, 1998; Kennedy & Kirwan, 1998). Besides, the efforts to define these concepts are also classified as "unsystematic" and "fragmented" (Zhang, Wiegmann, von Thaden, Sharma, & Mitchell, 2002, p. 4). While scholars agreed upon the substantial empirical development of safety culture and safety climate issues, the theoretical development has not reflected that progression (Clarke, 2000; Zohar, 2010). However, safety culture is perceived as part of the overall culture of an organisation (Zhou, Fang, & Wang, 2008) and generally it refers to the basic values, attitudes, and beliefs regarding safety in the organisation (Cooper, 2000; Fang, Chen, & Wong, 2006). Whereas, safety climate can be seen as the current surface features of a safety culture (Schneider & Gunnarson, 1991). According to Moran and Volkwein (1992), climate reflects the behaviour and attitudes of organisational members, whereas culture reciprocates the beliefs, expectations, and opinions that are taken for granted by organisational members. In that sense, safety climate is a manifestation of safety culture, which is expressed through behaviours and attitudes of employees (Cox & Flin, 1998).

Therefore, it can be claimed that safety culture and climate co-exist where culture can affect climate and vice-versa.

In theory, while both the concepts can be distinguished to a certain level, the way both concepts have been used repeatedly makes it difficult to differentiate from each other in practice (Nielsen et al., 2008). According to Mearns and Flin (1999), the division between culture and climate is often a question of understanding than their intended purposes in reality. Rousseau (1985) argues that the resemblance of both concepts are exceedingly overlapping for research on any one of the concept to inform us about the other. Hence, the vast majority of research on safety culture actually reflects safety climate issues instead despite the fact that the definitional distinctions remain between these two concepts (Yule, 2003). It is also largely documented that climate can be used as a projection of underlying status of organisational safety culture (e.g., Cox & Flin, 1998; Cox & Cheyne, 2000; Mearns & Flin, 1999). In addition, safety climate appears to be a successful predictor of unsafe behaviour (Martínez-Córcoles, Gracia, Tomás, & Peiró, 2011; Zohar, Huang, Lee, & Robertson, 2014; Zohar & Luria, 2005). Given that safety climate can be assessed immediately; while culture is excessively conjectural to be assessed immediately (Mearns et al., 2003). Moreover, climate refers to a situation at a point in time, while culture refers to a more lasting phenomenon (Hale, 2000). Hence, it can be implied that safety climate helps to identify underlying problems within organisations and facilitates the improvement of safety culture since a stable positive safety culture could not exist instantly.

From the discussion above, it seems reasonable to deduce that assessing safety climate seems more viable than assessing safety culture, as it can instantly raise a certain degree of safety aspects within an organisation. Various scholars have extensively investigated the safety climate issue (e.g., Zohar, 1980; Coyle et al., 1995; Williamson et al., 1997; Dedobbeleer & Béland, 1998; Mearns et al., 2003) with the aim of gaining a better understanding of occupational safety. Hence, the present study considers safety climate as

a construct to measure different safety aspects of the manufacturing industry in Bangladesh and following section will discuss the safety climate definitions in detail.

2.3.1 Definitions of Safety Climate

In general, the construct of organisational climate denotes *"shared perceptions of organisational policies, practices, and procedures"* (Reichers & Schneider, 1990: 22). These shared perceptions offer a context for employees that govern work behaviours by supplying cues related to expected behaviour–outcome contingencies (Schneider, 1975). However, due to the multi-nature of climate constructs (e.g., psychological climate, collective climate, organisational climate), there is much debate regarding the meaning of climate and its functionality (Anderson & West, 1998; Parker et al., 2003a). Organisational climate is an over-inclusive and ambiguous climate concept (Schneider et al., 2000) that has been criticised for its ineffectiveness in specifying the predicted outcomes (Carr et al., 2003). In addition, an organisational climate that is not directed to a specific concept is often destined to fail (Kath et al., 2010). However, much of the conceptual confusion emerges from the multiple uses of terms in organisational climate research and this can be resolved by clearly defining one's level of theory, measurement, and analysis (Klein et al., 1994; Parker et al., 2003a). Hence, it is essential to define clearly what is meant by organisational climate.

In a workplace setting, people get involved with different activities that are connected to a variety of work clusters, and thus there are "climates for" different aspects of organisational life (Schneider & Reichers, 1983; Schneider et al., 2002; Huang et al., 2006; 2007). For instance, different aspects of organisational life involve the *climate for innovation* (Abbey & Dickson, 1983; Klein & Sorra, 1996; Anderson & West, 1998), *climate for customer service* (Burke et al., 1992; Schneider et al., 1992; Schneider et al., 1998), or *climate for transfer of training* (Noe, 1986; Tracey et al., 1995). As a result, a facet-specific or strategically focused -"climate for something" – is required for an organisation to achieve expected outcomes (Schneider, 2000: xxi). A facet-specific climate provides information related to behaviours that are expected, supported, and rewarded in the workplace

(Schneider & Reichers, 1983; OReilly & Chatman, 1996). Consequently, it offers inclusive processes of employees' interpretations or understandings of related policies, procedures, and practices (Kozlowski & Klein, 2000; Zohar & Luria, 2005). Hence, considering the above-mentioned arguments, Zohar (1980) developed a concept of facet-specific behavioural climate relating to safety and came up with the idea of safety climate.

Safety climate is a specific form of organisational climate (Guldenmund, 2000; Lin et al., 2008) that reveals employees' perceptions and attitudes at one discrete point in time (Schneider & Gunnarson, 1991; Cox & Flin, 1998; Cheyne et al., 1998; Ma & Yuan, 2009). According to Neal et al. (2000), safety climate specifies individuals' perception of the value of safety in the work environment. In addition, Zohar (1980: 96) defines safety climate as *"a summary of molar perceptions that employees share about their work environments .... a frame of reference for guiding appropriate and adaptive task behaviours*". More precisely, it signifies the employees' common assessments of the safety policies, procedures, and practices, as well as the general importance and the true priority given to safety in an organisation (Zohar, 2000; Griffin & Neal, 2000; Zohar & Luria, 2003; Neal & Griffin, 2006). Thus, assessing safety climate is considered to be the same as taking the ''safety temperature" of an organisation (Budworth, 1997), which portray the current status of organisational safety (Cheyne et al., 1998; Kennedy & Kirwan, 1998; Huang et al., 2007; Vinodkumar & Bhasi, 2009). However, scholars have provided several definitions of safety climate and thus, there is a need to be explicit about the precise meaning of the term. Different accounts of safety climate definitions are presented in Table 2.8.

Table 2.8: Definitions of Safety Climate

Zohar (1980)	"employees' perceptions about the relative importance of safe conduct in their occupational behaviour" (p.96)
Glennon (1982)	"is defined as employees' perceptions of the many characteristics of their organisation that have a direct impact upon their behaviour to reduce or eliminate danger" (p.18)
Brown & Holmes (1986)	"a set of perceptions or beliefs held by an individual and/or group about a particular entity" (p.455)
Dedobbeleer & Béland (1991)	"molar perceptions people have of their work settings" (p.97)
Niskanen (1994)	"a set of attributes that can be perceived about particular work organisations and which may be induced by the policies and practices that those organisations impose upon their workers and supervisors" (p.241)

Cooper (1995)	"is largely concerned with employees' perceptions of the importance of safety and how it is operationalised within the working environment" (p.1)
Coyle et al. (1995)	"the objective measurement of attitudes and perceptions toward occupational health and safety issues" (p.247)
Ciavarelli et al. (1996)	"shared perception of an organisation's members that the organisation's leaders are genuinely committed to safety of operations, and have taken appropriate measures to communicate safety principles and to ensure adherence to safety standards and procedures" (p.1034)
Hofmann & Stetzer (1996)	"perceptions regarding management's commitment to safety and worker involvement in safety-related activities" (p.314)
Cabrera et al. (1997)	"shared perceptions of organisational members about their work environment and, more precisely, about their organisational safety policies" (p.256-257)
Cooper (1997)	"shared perceptions and beliefs that employees hold regarding safety in their workplace. These serve to construct a self-sustaining image of risk, danger and safety in an organisation" (p.1)
Díaz & Cabrera (1997)	"set of molar perceptions, shared by individuals with their work environment, which are valid as references for guiding behaviour in the execution of tasks during day-to-day eventualities" (p.644)
Williamson et al. (1997)	"summary concept describing the safety ethic in an organisation or workplace which is reflected in employees' beliefs about safety and is thought to predict the way employees behave with respect to safety in that workplace" (p.16)
Cheyne et al. (1998)	"temporal state measure of culture, which is reflected in the shared perceptions of the organisation at a discrete point in time" (p.256)
Flin et al. (1998)	"perceived state of safety of a particular place at a particular time. It is therefore relatively unstable and subject to change depending on features of the operating environment" (p.6)
Kennedy & Kirwan (1998)	"reflects the symbolic (e.g. posters in the workplace, state of the premises, etc.) and political (e.g. managers voicing their commitment to safety, allocation of budgets to safety, etc.) aspects of the organisation which constitute the work environment" (p.251)
Grosch et al. (1999)	"shared perceptions of workers regarding the level of safety where they work, and typically consists of several dimensions, such as management commitment to safety, conflict among co-workers, cleanliness, feedback about safety, job hindrances, and availability of personal protective equipment" (p.122)
Griffin & Neal (2000)	"a higher order factor comprised of more specific first-order factors. The first-order factors of safety climate should reflect perceptions of safety-related policies, procedures, and rewards. The higher order factor of safety climate should reflect the extent to which employees believe that safety is valued within the organisation" (p.348)
Neal et al. (2000)	"a specific form of organisational climate, which describes individual perceptions of the value of safety in the work environment" (p.100)
Cooper (2001)	"collective commitment of care and concern, whereby all employees share similar positive perceptions about organisational safety features" (p.204)
Garavan & O'Brien (2001b)	"perceptions of management's commitment to safety, employee ownership of safety related issues, stereotyping of safety conscious employees, adherence to safety rules and procedures, and the existence of proactive approaches to managing safety" (p.146)
Mohamed (2002)	"a construct that captures employees' perceptions of the role that safety plays within the organisation [and] a descriptive measure reflecting the workforce's perception of, and attitudes toward, safety within the organisational atmosphere at a given point in time" (p.375)
Cooper & Phillips (2004)	"a term used to describe shared employee perceptions of how safety management is being operationalized in the workplace, at a particular moment in time" (p.497)
Hahn & Murphy (2008)	"shared perceptions of employees about the safety of their work environment, and provides a background against which day-to-day tasks are performed" (p.1047)
Fogarty & Shaw (2010)	"refers to employees' perceptions of the relative emphasis placed by management on safety issues relative to other organisational concerns" (p.1455)
Huang et al. (2010)	"refers to the workers' perceptions of the organisation's policies, procedures, and practices as they relate to the value, importance, and actual priority of safety within the organisation" (p.1421)
Sinclair et al. (2010)	"refers to workers' shared perceptions about their organisation's value for safety as expressed through the organisation's safety polices, practices, and procedures" (p.1478)

Mearns et al. (2013)	"refers to how employees perceive the enactment of organisational policies and procedures relating to safety in their organisation at a given point in time" (p.124)

From the above table, it can be seen that there are disparities in the way safety climate is defined. Most of the definitions refer to safety climate as perceptions, while some scholars also use attitude and belief along with perception to define the concept (e.g., Brown & Holmes, 1986; Coyle et al., 1995; Cooper, 1997). Additionally, most of the scholars define it as a group perception, such as a shared or molar perception (e.g., Dedobbeleer & Béland, 1991; Díaz & Cabrera, 1997; Grosch et al., 1999; Zohar, 2000), while others define it as an individual perception (e.g., Neal et al., 2000; Neal & Griffin, 2006). However, despite the differences in definitions, safety climate can be viewed as a snapshot of the organisational safety situation, indicating the employees' underlying safety perception about their workplace. Hence, safety climate provides an internal representation of organisational safety for employees to interpret the environment and adapt their behaviours accordingly, which is central to accident prevention issues (Shen et al., 2015). Considering safety climate as fundamental to preventing accidents within any workplace environment, many scholars have explored the safety climate concept in different industrial settings (e.g., Zohar, 1980; Dedobbeleer & Béland, 1991; Coyle et al., 1995; Mearns et al., 1998; Siu et al., 2004; Wallace et al., 2006; Kath et al., 2010; Shen et al., 2015).

The exploration of safety climate covers a wide range of industries such as *construction* (Brown & Holmes, 1986; Siu et al., 2004; Meliá et al., 2008; Fang & Wu, 2013); *manufacturing* (Zohar, 1980, 2000, 2002b; Cheyne et al., 2002); *offshore oil* (Østvik et al., 1997; Cox & Cheyne, 2000; O'Dea & Flin, 2001; Mearns et al., 2001a); *nuclear power* (Rosen, 1997; Lee & Harrison, 2000; Morrow et al., 2014); *health care* (Coyle et al., 1995; Flin, 2007; Halligan & Zecevic, 2011); *chemical manufacturing industry* (Donald & Canter, 1994; Silva et al., 2004; Vinodkumar & Bhasi, 2009); *road* (Niskanen, 1994; Glendon & Litherland, 2001; Delorme & Lassarre, 2014); *rail* (Clarke, 1999; Kath et al., 2010); *aviation* (McDonald et al., 2000; Fogarty, 2004, 2005; Fogarty & Shaw, 2010) and *grain industry* (Seo et al., 2004). Moreover, the exploration covers various nations like Eastern and Western

countries (Dedobbeleer & Béland, 1991; Felknor et al., 2000; Mearns et al., 2003; Siu et al., 2004). Moreover, more than 30 years history of exploration (Zohar, 2010; Murphy et al., 2014) in wide-ranging settings have demonstrated the significance of safety issues through consistent positive effects on workers' safety behaviour, and prevention of unintentional injuries and accidents in workplaces settings (Clarke, 2006a; Huang et al., 2007; Christian et al., 2009; Nahrgang et al., 2011; Barbaranelli et al., 2015; Liu et al., 2015). According to Cooper & Phillips (2004) and Zohar (2010), most of the studies have been dedicated to:

1) developing climate measurement issues and determining their underlying factorial structure (e.g., Zohar, 1980; Brown & Holmes, 1986; Dedobbeleer & Béland, 1991; Coyle et al., 1995; Garavan & O'Brien, 2001a)
2) developing and analysing predictive validity in order to ascertain factors related to different safety consequences (e.g., Cheyne et al., 1998; Thompson et al., 1998; Neal et al., 2000; Prussia et al., 2003)
3) investigating the association between safety climate perceptions and safety performance (e.g., Zohar, 2000; Glendon & Litherland, 2001) and
4) determining the linkage between safety climate and organisational climate (e.g., Neal et al., 2000; Silva et al., 2004).

Consequently, there are no 'one-size-fits-all' safety climate factors that can be employed across domains or even within a single domain (Cox & Flin, 1998). It has also been found that the different definitions of safety climate (e.g., Flin et al., 2000; Guldenmund, 2000; Weigmann et al., 2002) specify an assortment of safety climate factors in the literature. For example, Flin et al. (2000) found 20 different empirically confirmed safety climate factors for manufacturing industries alone, while Guldenmund (2000) found that the safety elements are stemming from more than 50 different theoretical threads. Moreover, in the extant literature, safety climate is shown to have different factor structures, ranging from one factor (e.g., Barling et al., 2002; Evans et al., 2005; Neal & Griffin, 2006) to

a high of 11 factors[9] (e.g., Findley et al., 2007; Baek et al., 2008). In their search for a uniform safety climate measures, Coyle et al. (1995) failed to obtain a universal safety element structure for safety measurement, due to its heterogeneous nature. Hence, this status quo indicates a conceptual vagueness and the necessity for greater endeavour addressing the theoretical concerns (Zohar, 2010). As a result, it is essential to identify the appropriate factors for safety climate and therefore, the current study conducts an extensive review of safety climate literature in order to identify safety climate elements that are suited to the present study context.

2.3.2 Systematic Literature Review – Safety Climate

Like previous section, a systematic search has been performed to identify all relevant peer-reviewed studies within the literature of safety climate. The aim of conducting SLR on safety climate is to build on previous work, analysing in further detail the probable effect of organisational safety climate on the employees' safety behaviour and level of occupational accidents and injury in industrial organisations. Thus, the four main objectives of conducting the review on safety climate are to:

1. Recognise previously identified factors of safety climate and choose relevant safety factors for ready-made garments (RMG) manufacturing industry
2. Develop a comprehensive understanding of the effects of safety climate on employees' behaviour and accident rates
3. Identify how the variables of safety climate have been approached and measured by scholars, in on specific industries
4. Identify theoretical gaps and deficiencies

2.3.2.1 Literature Search

[9] Flin et al. (2000) reported that factor analysis is typically used for identification of an underlying structure, but numbers of items range from 11 to 300 and thus solutions range from 2 to 19 factors.

To present existing studies related to safety climate, five electronic journal databases were selected as the data sources for potentially relevant literature. The following electronic databases were used in the search process.

1. Science Direct
2. Web of Knowledge
3. EBSCO (including: PsychInfo; PsycArticle)
4. JSTOR
5. PubMed

Furthermore, the search was complemented by a manual search of reviewed articles by Clarke (2006b), Christian et al. (2009) and Beus et al. (2010b) and the reference sections of all articles identified. The literature was searched for the records from all entries up to year 2017. The search was conducted using the combinations of following keyword search terms: *safety climate, safety perceptions, safety participation, safety compliance, safety performance, safety behaviour, accident and injury*. The present study limits the review to articles published in peer-reviewed journals because these can be considered validated knowledge and are likely to have the highest impact in the field (Podsakoff et al., 2005). Relevant journals were selected based on quality journals relevant to industrial–organisational psychology and occupational safety: *Safety Science; Journal of Safety Research; Accident Analysis & Prevention; Journal of Applied Psychology; Journal of Loss Prevention in the Process Industries; Journal of Occupational Health Psychology; Journal of Operations Management; Journal of Organizational Behaviour; Journal of Safety Research; Personnel Psychology; Risk Analysis; Safety Science; Work & Stress.* The overall search returned 6,396 keyword hits and given the number of articles found in the preliminary search, specific inclusion and exclusion criteria were implemented to identify relevant studies for further analysis.

2.3.2.2 Inclusion and Exclusion Criteria

After executing the search strings, specific inclusion and exclusion criteria were set to identify relevant studies for further analysis. The current research includes studies that:

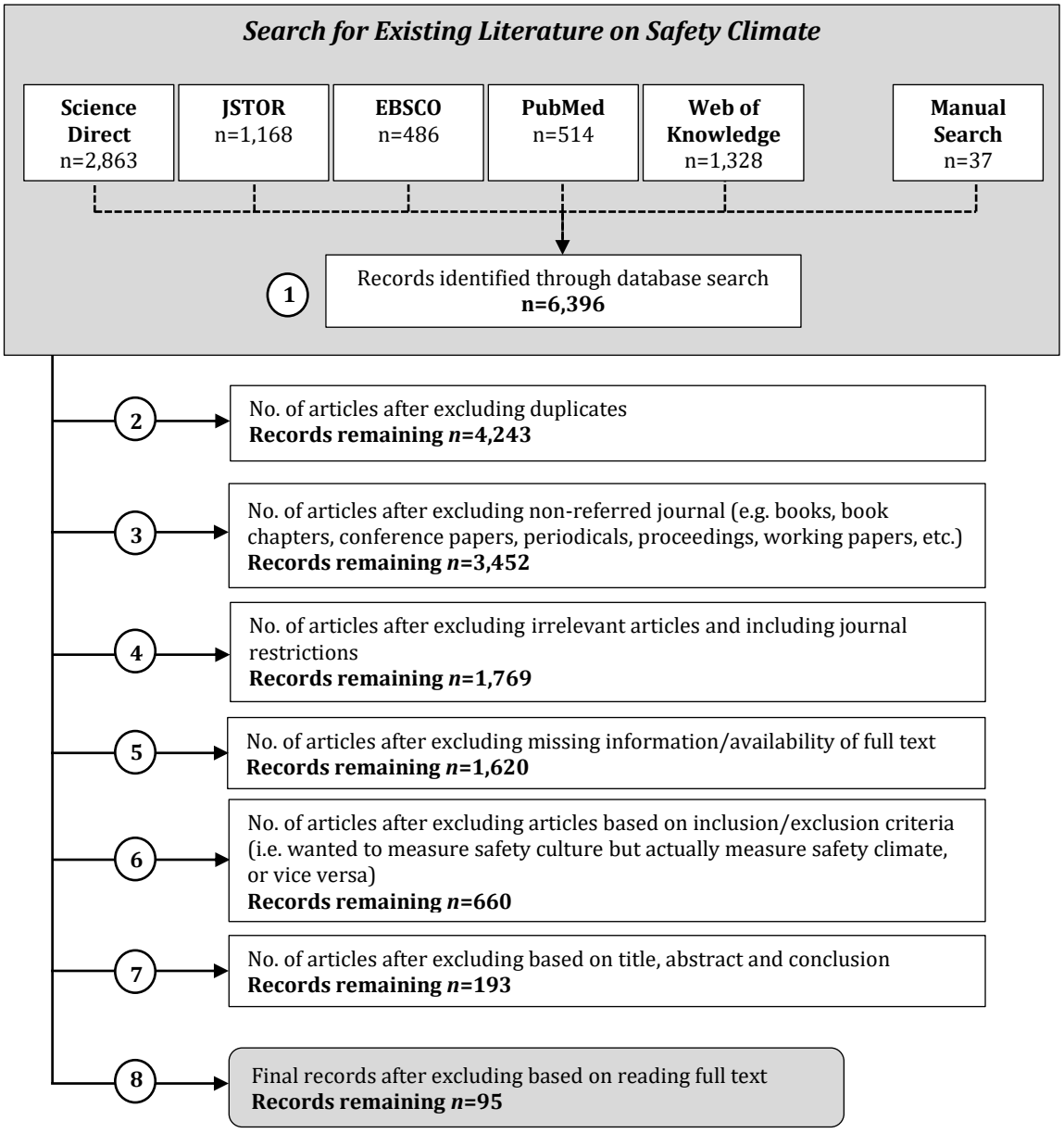
- are available in full-text
- were published between the years 1980 and 2017
- are written in English
- are peer-reviewed
- contain a measure of safety climate
- contain a criterion measure in terms of occupational accidents, injuries, safety compliance, or safety participation

The current research excluded papers that:

- are duplicate
- are not related to safety climate
- do not use quantitative research methods
- purport to measure safety culture to but if actually measure safety climate, or vice versa
- are not available in full-text and have missing information

Out of a total of 6,396 articles, after removing duplicates, selecting relevant journals, considering inclusion/exclusion criteria, and reading the full text, a total of 95 articles were selected for the final review. Table B.1 in Appendix B provides a comprehensive synopsis of article types, study variables, methods, main characteristics in terms of theoretical framework and contextual dimensions and findings related to safety climate and safety performance. Figure 2.3 shows the number of articles that were refined in each stage of the study selection process.

Figure 2.3: Literature Selection Process



2.3.2.3 Characteristics of the Included Studies

The following sections detail and examine the findings of the systematic review of safety climate literature, which are placed into different categories such as trends of publication and related countries, journal outlets, range of industries, trends of safety climate variables and usage, types of data analysis tools used and an overall synopsis of identified articles. The descriptive statistics provide an overview of the position of safety climate literature in organisational studies. Figure 2.4 shows the distribution of articles by sources and years from 1980 to 2017.

Figure 2.4: Number of Articles Published in Mainstream Journals

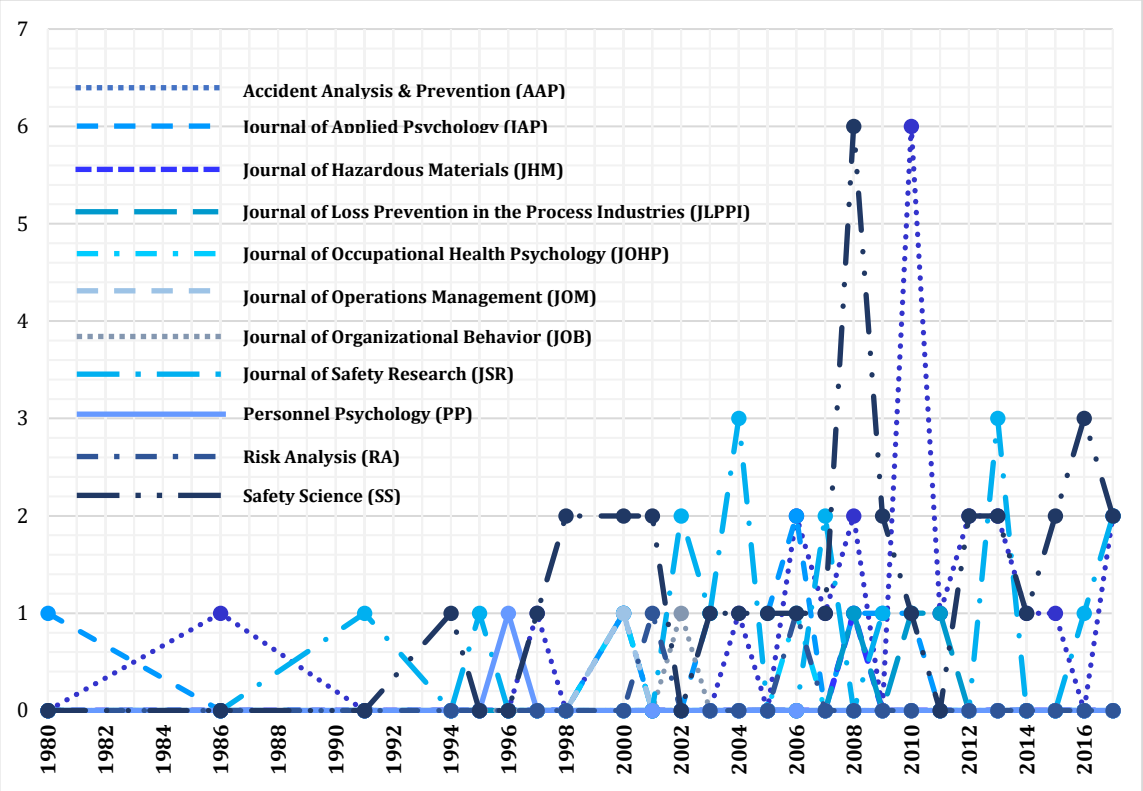


Figure 2.4 indicates that out of 95 articles identified in the SLR process, only 16 (16.84%) studies appeared in the first twenty years (between 1980 to 2000), 40 (42.11%) studies were published between 2001 and 2010, and finally 30 studies were published in the last seven years (between 2011 to 2017). The numbers reveal that studies on safety climate have surged greatly in recent years since the first one in 1980 and this finding corresponds with the view of Huang et al. (2010) that the growth of safety climate studies is dramatic. Another identified trend related to journal titles is the association with safety. Almost 85.26% of journal titles (81) were linked to safety, and 12.63% of journal titles (12) were linked to psychology. In these published articles, most have appeared in the *Safety Science* (SS) (34 articles, 36.84%) and *Accident Analysis & Prevention* (AAP) journal (24 articles, 25.26%), followed by Journal of Safety Research (JSR) (17 articles, 17.89%) and *Journal of Applied Psychology* (JAP) (9 articles, 9.47%). This may suggest the important role safety environment plays in occupational health and wellbeing. However, it is very troubling that safety climate research is scant in the mainstream management and organisational

behaviour (OB) journals (only two articles from *Journal of Organizational Behaviour* & *Journal of Operations Management*). Given the growing prominence of safety in the workplace and the important role that safety climate plays in predicting safety outcomes (Huang et al., 2010; Zohar, 2010), management and OB journals have not considered the issue sufficiently. While this may indicate that the mainstream management and OB journals have been resistive on this topic, the responsibility is on safety-climate scholars to suitably augment and position safety climate theory to reflect its importance to mainstream management theory and practice.

Researchers from various countries have paid attention to safety climate, as is revealed by the fact that the 95 articles were generated from 23 different countries. Table 2.9 demonstrates the distribution of safety climate studies by country and region. In total, out of 23 different countries, studies from the USA (29), Australia (10), Israel (8), UK (8), Taiwan (7), and China (6) were most frequent. In terms of geographic regions Europe (30.77%) and America (34.07%) received the most attention, with studies of the USA, UK, Spain, Italy, and Norway being most common, followed by East Asia and Oceania, where studies of Taiwan, China, Hong Kong, and Australia predominate. The least frequently studied geographic region has been the Middle East, while Israel is the most frequently studied country in the Middle East region. However, insufficient research has been done in South and Southeast Asia and Africa, followed by the Caribbean and Latin America. The studies that have been reviewed in the current SLR have focused predominantly on advanced economies and notably, while comparing between countries, studies of this type have focused largely on comparisons to the USA, with other advanced economies. Comparative studies of safety climate in different emerging economy contexts are quite rare, which is a concern given the diversity of countries commonly classified as emerging economies. Pertaining to the level of development, considering that safety climate research has emphasised mainly more advanced economies in Europe, America, East Asia and Oceania, while other developing economies of the world have as yet been relatively neglected.

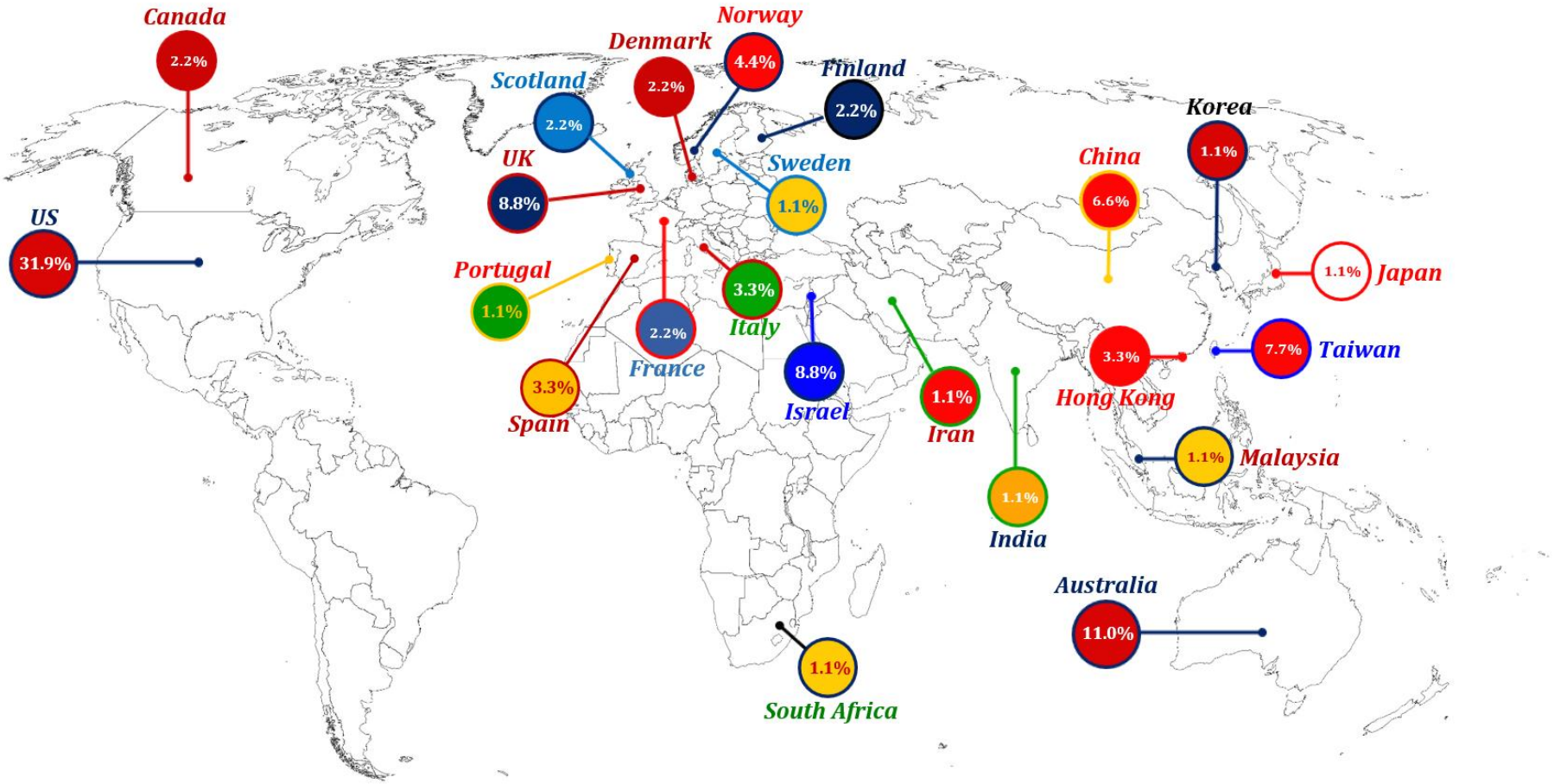
Table 2.9: Distribution of the Articles by Investigated Countries

Country	#	%	Country	#	%
Europe	**28**	**30.77**	**America**	**31**	**34.07**
Denmark	2	2.20	U.S.	29	31.87
Finland	2	2.20	Canada	2	2.20
France	2	2.20	**Central, East & South Asia**	**19**	**20.88**
Italy	3	3.30	China	6	6.59
Norway	4	4.40	Hong Kong	3	3.30
Portugal	1	1.10	India	1	1.10
Scotland	2	2.20	Japan	1	1.10
Spain	3	3.30	Korea	1	1.10
Sweden	1	1.10	Taiwan	7	7.69
UK	8	8.79	**Southeast Asia & Oceania**	**11**	**12.08**
The Middle East and Africa	**10**	**10.99**	Australia	10	10.99
Iran	1	1.10	Malaysia	1	1.10
Israel	8	8.79			
South Africa	1	1.10	Not Specified	1	1.10
			Total	**100**	**109.89***

a. *The total is higher than 100% because some studies cover more than one country.
b. As four (4) Meta-analytic studies have been incorporated in the SLR, % has been counted based on 91 articles

These findings are similar to the view of Barbaranelli et al. (2015) who identified that most safety studies are based on Western countries and especially in Anglo, English-speaking countries, i.e. the USA, UK, Canada, and Australia. Noteworthy exceptions such as the study by Bahari & Clarke (2013) also underline the inadequate evidence of safety climate in different national contexts. Therefore, it is difficult to make a sweeping assumption about findings on safety climate and make definitive claims based on either regional or national context. Hence, there is a need to better understand how the meaning of safety climate changes in different national and cultural contexts (Zohar & Polachek, 2014; Griffin & Curcuruto, 2016). As a result, the current study would be first of its kind in the context of Bangladesh and the South Asian region, which will contribute to the existing theoretical debate and literature gap. This should be particularly valuable for international corporate buyers and production companies in the Bangladeshi RMG industry, who need to perform and maintain high safety standards constantly throughout their production process. Figure 2.5 illustrates the distribution of the reviewed articles by country.

Figure 2.5: Distribution of the Reviewed Articles by Country



Note: Different colour circle represents the colour of their national flags

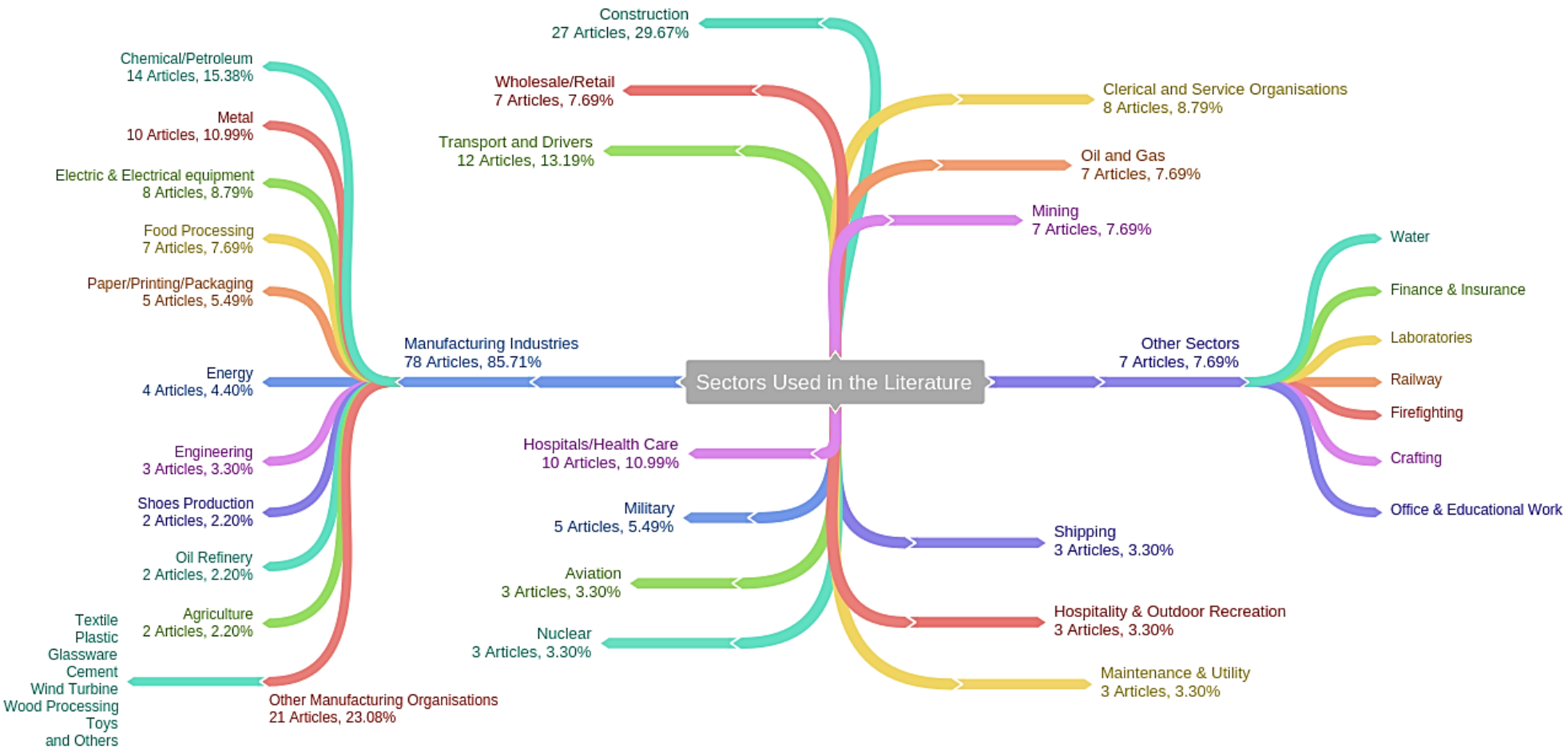
Besides, occupational health and safety (OHS) related laws and regulations along with their implementation are quite fragile in developing countries (Pringle & Frost, 2003). According to Hossain et al. (2015) the overall OHS conditions and practices are far below the international standard, in some cases, the condition is actually at its lowest standard. As a result, there is a need to conduct research in the overlooked geographical regions, especially least developed countries. As a least developed country, Bangladesh encapsulates the same problem related to OHS (Belal & Owen, 2007). To the best of the researcher's knowledge, little study has been conducted in this area in the Bangladeshi context, leaving a gap in the literature. Furthermore, due to the unique nature of the safety climate (Ghahramani & Khalkhali, 2015) context of different companies, industries, and even countries (Mearns et al., 2004; Høivik et al., 2009), the current study realises a need to construct a new scale to analyse the safety climate. Kudo et al. (2008: 161) similarly argue for development of a standard safety climate construct for each occupation and for the purpose of collecting appropriate data. Hence, the current research intends to close the research gap by developing an original scale to measure the safety climate in Bangladeshi RMG manufacturing companies.

The safety climate studies reviewed in the systematic review were found to cover a broad spectrum of industries (39 different sectors) ranging from construction to nuclear to agriculture. Within such a broad range of industries, construction (29.67%), oil & gas (7.69%), mining (7.69%), land transport (13.19%), hospitals/healthcare (10.99%), aviation (3.30%), and military (5.49%) were the most frequently studied. However, the majority (85.71%) of the reviewed studies emphasised manufacturing industries, including 18 different sectors, in which chemical/petroleum (15.38%), metal (10.99%), electronic and electrical equipment (8.79%) and food processing (7.69%) were very common sectors. While such a great variety of industrial contexts has been investigated in existing studies, scholars remain silent in terms of the ready-made garment (RMG) industry, which is one of the most accident-prone sectors in the Bangladeshi manufacturing industry. Hence, there is a need to develop a RMG industry-specific safety climate scale, as an *"industry-specific*

climate scale is likely to identify new, context-dependent targets of climate perceptions in respective industries" (Zohar, 2010: 1521). Although generic safety climate scales can be used across industries, identifying industry-specific climate indicators presents scope for extracting and analysing propositions about the processes underlying climate emergence (Huang et al., 2010; Zohar, 2010). Therefore, the current study intends to develop a RMG industry-specific safety climate measure for a potentially fruitful area for future comparative research. Figure 2.6 illustrates sectors that have been discussed in the existing safety climate literature.

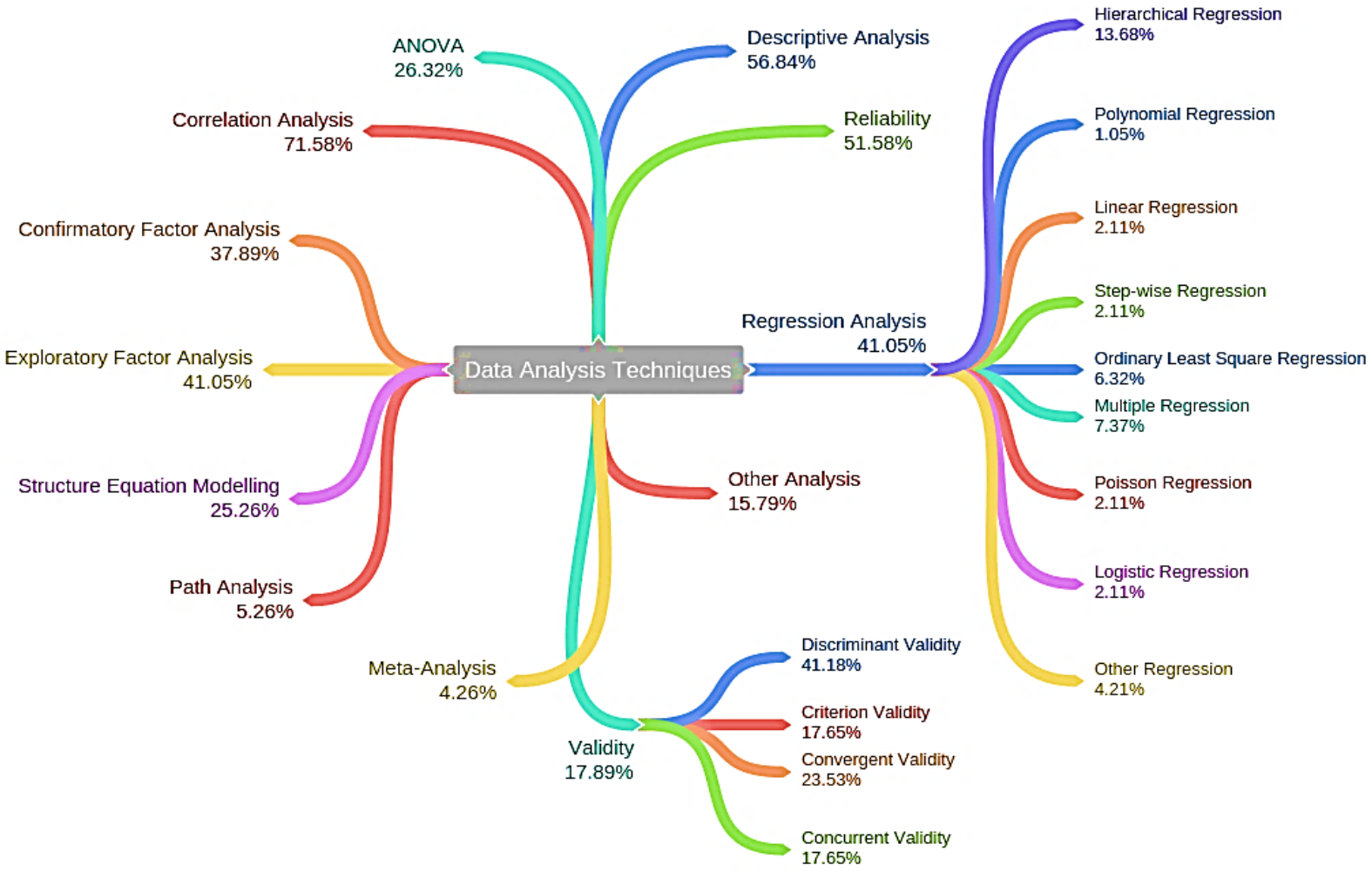
All the articles selected in this study are quantitative studies, out of which 84 articles are survey based but a small number of articles used case studies (5 articles) for their meta-analytic review and a longitudinal approach (6 articles) for collecting the data. The articles using the survey method employed a diverse set of instruments to measure safety climate among which 67.86% of articles used previously validated instruments. For example, studies have used Zohar's safety climate survey (Zohar, 1980, 2000), an offshore safety questionnaire based on Dedobbeleer & Béland (1991), Cheyne et al. (1998), Neal et al. (2000), Huang et al. (2003), the trucking safety climate scale by Huang et al. (2013) and others. In contrast, 32.14% of articles used tools created by the authors, among which 21 articles drew on existing literature, while only three articles used in-depth interviews, and one used focus group discussion for item generation. Additionally, one of the articles employed both focus group and in-depth interview, while one article used observation and in-depth interview to develop the safety climate measurement instrument. The findings suggest that for industry-specific safety climate scales, most of the authors have developed their own measurement instrument based on existing literature. Since the current study focuses on an industry-specific safety climate scale, it also uses existing literature to develop the measurement instrument.

Figure 2.6: Sectors Investigated in the Existing Safety Climate Literature



In terms of data analysis methods, 49 articles (51.58%) used both descriptive statistics, correlation and reliability analysis. The articles adopted analytical methods such as factor analysis, structural equation modelling, ANOVA, various types of regression analysis, t-tests, path analysis, validity tests and other advanced analytical techniques (e.g., modal profile, discriminant function, dominance or meta-analysis). However, most articles emphasised mainly factor analysis (exploratory factor analysis 41.05%, confirmatory factor analysis 37.89%), structural equation modelling (25.26%), ANOVA (26.32%), validity (21.05%), and regression analysis (41.05%). The findings suggest that a wide selection of methodologies have been used in these safety climate studies, which incorporate relatively sophisticated analytical approaches. However, the analytical choices show that these articles have focused on safety climate measurement issues, together with the factorial structure of the scales and their extrapolative validity with regard to a variety of safety outcomes, which seems to be aligned with the opinion of Zohar (2010). Since most of studies have attempted to define the structure of the safety climate scale in different industrial settings, scholars focused on identifying industry-specific factor structures along with confirming the validity of the scale. In a similar vein, the current study also focuses on the most common analytic techniques used in the existing literature to identify the structure and validity of the new industry-specific scale with regard to different safety outcomes. Figure 2.7 illustrates the data analysis techniques that have been used in the existing safety climate literature.

Figure 2.7: Data Analysis Techniques



Findings from analysis reveal that studies published between 1980 to 2000 included 25 different factors; while those published between 2001 to 2017 included 28 different factors. This suggests that safety climate is becoming more diverse over time. While the factors of safety climate are increasing, the new factors are more likely to be context-specific rather than universal. That is probably due to the fact that earlier safety climate articles tended to adopt an ''all-inclusive'' design, whereas the recent articles have had more specialised topics or themes. This also suggests that with the maturation of the safety climate research field, more and more articles have approached specialised topics in a particular industrial context.

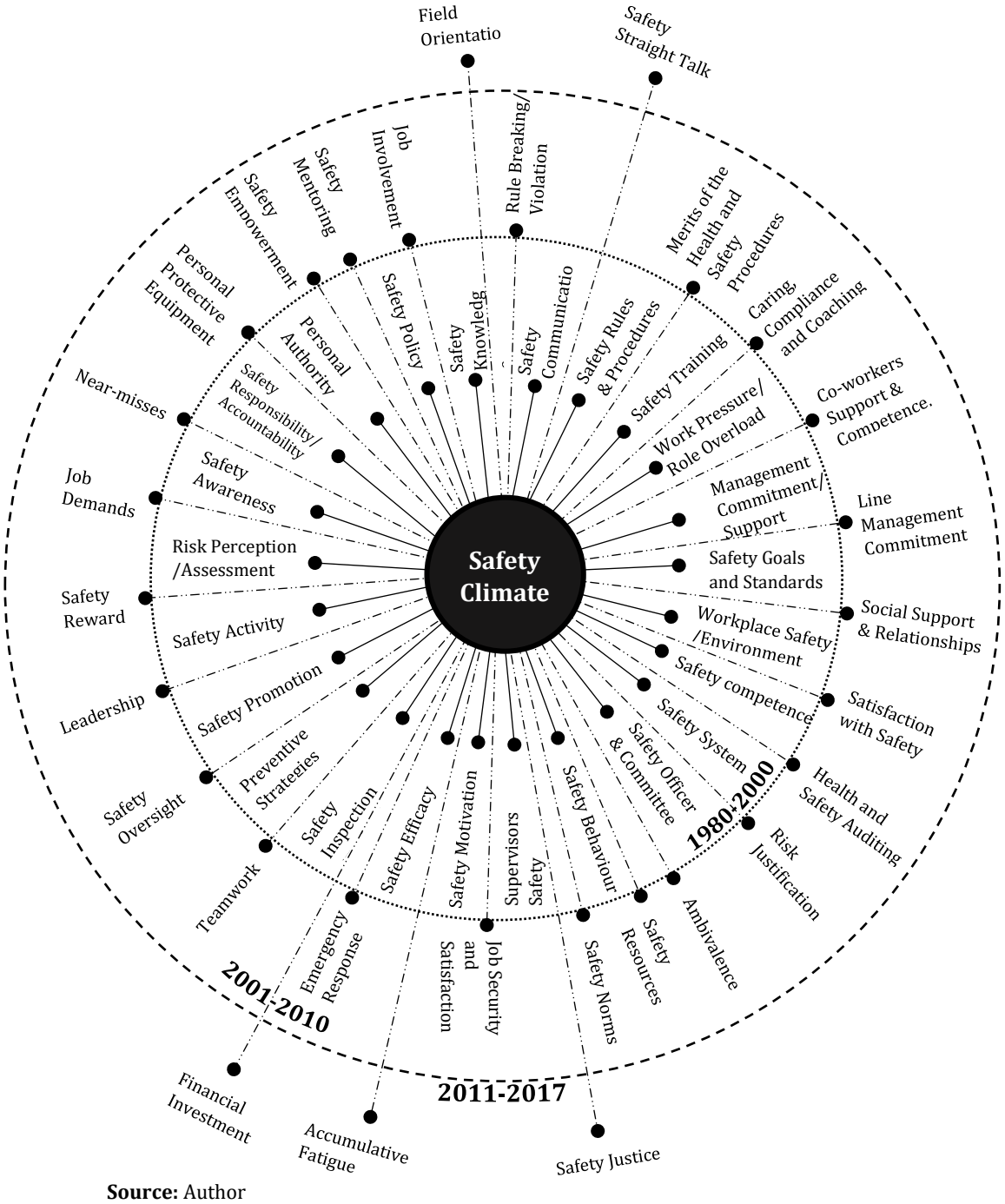
Among the 53 different identified factors, management commitment (56.0%), safety communication (38.5%), safety risk perception/assessment (36.3%), safety training (31.9%) and supervisor's safety (30.8%) have been the five most popular factors used over the years. Specifically, these five factors have been the most commonly used in the manufacturing industry focused articles. On the contrary, preventive strategies, safety goals and standards, personal authority, safety monitoring have received relatively less attention and have not received renewed attention in more recent journals. On the other hand, job involvement (13.2%) and leadership (11.0%) are the two trending factors in safety climate between 2001-2017. However, findings from SLR analysis suggest that the derivation of universal safety climate factors is highly unlikely, as scholars have used as few as two factors in their safety climate models (Dedobbeleer & Béland, 1991) and as many as sixteen (Barbaranelli et al., 2015). Having said that, factors such as management commitment, safety communication, safety risk perception/assessment, safety training and supervisor's safety support are commonly reported in prior studies and would seem to form essential elements of a generic manufacturing industry related safety climate model. Table 2.10 demonstrates the safety climate factors applied in selected studies.

Table 2.10: Safety Climate Factors Applied in Studies

Year	Safety Climate Factors	1980'-2000'		2001'-2010'		2011'-2017'		Overall	
		#	%	#	%	#	%	#	%
1980-2000	Management Commitment/Support	7	7.7	27	29.7	17	18.7	51	56.0
	Safety Communication	3	3.3	19	20.9	13	14.3	35	38.5
	Safety Risk Perception/Assessment	6	6.6	18	19.8	9	9.9	33	36.3
	Safety Training	4	4.4	12	13.2	13	14.3	29	31.9
	Supervisors Safety Support	2	2.2	13	14.3	13	14.3	28	30.8
	Safety Behaviour	6	6.6	10	11.0	11	12.1	27	29.7
	Work Pressure/Role Overload	4	4.4	7	7.7	6	6.6	17	18.7
	Safety Rules & Procedures	2	2.2	7	7.7	6	6.6	15	16.5
	Safety System	2	2.2	4	4.4	6	6.6	12	13.2
	Workplace Safety/Environment	3	3.3	4	4.4	4	4.4	11	12.1
	Safety Competence	1	1.1	7	7.7	3	3.3	11	12.1
	Safety Motivation	2	2.2	5	5.5	4	4.4	11	12.1
	Safety System	2	2.2	3	3.3	6	6.6	11	12.1
	Safety Knowledge	2	2.2	6	6.6	2	2.2	10	11.0
	Safety Activity	3	3.3	3	3.3	3	3.3	9	9.9
	Safety Policy	2	2.2	3	3.3	1	1.1	6	6.6
	Safety Responsibility/Accountability	3	3.3	0	0.0	3	3.3	6	6.6
	Safety Awareness	1	1.1	3	3.3	1	1.1	5	5.5
	Safety Officer & Committee	3	3.3	1	1.1	0	0.0	4	4.4
	Safety Inspection/Evaluation	3	3.3	0	0.0	1	1.1	4	4.4
	Safety Efficacy	1	1.1	1	1.1	1	1.1	3	3.3
	Safety Promotion	1	1.1	2	2.2	0	0.0	3	3.3
	Personal Authority	1	1.1	2	2.2	0	0.0	3	3.3
	Safety Goals and Standards	1	1.1	0	0.0	1	1.1	2	2.2
	Preventive Strategies	1	1.1	1	1.1	0	0.0	2	2.2
2001-2010	Job Involvement	0	0.0	8	8.8	4	4.4	12	13.2
	Leadership	0	0.0	6	6.6	4	4.4	10	11.0
	Emergency Response	0	0.0	3	3.3	3	3.3	6	6.6
	Safety Reward	0	0.0	4	4.4	1	1.1	5	5.5
	Rule Breaking/Violation	0	0.0	4	4.4	1	1.1	5	5.5
	Teamwork	0	0.0	3	3.3	1	1.1	4	4.4
	Near-misses	0	0.0	3	3.3	1	1.1	4	4.4
	Caring, Compliance and Coaching	0	0.0	2	2.2	2	2.2	4	4.4
	Social Support & Relationships	0	0.0	4	4.4	0	0.0	4	4.4
	Co-workers Support	0	0.0	2	2.2	1	1.1	3	3.3
	Safety Resource	0	0.0	1	1.1	2	2.2	3	3.3
	Safety Norms	0	0.0	1	1.1	1	1.1	2	2.2
	Job Demand	0	0.0	2	2.2	0	0.0	2	2.2
	Personal Protective Equipment	0	0.0	1	1.1	1	1.1	2	2.2
	Safety Empowerment	0	0.0	1	1.1	1	1.1	2	2.2
	Line Management Commitment	0	0.0	1	1.1	1	1.1	2	2.2
	Health and Safety Audit	0	0.0	1	1.1	1	1.1	2	2.2
	Risk Justification	0	0.0	1	1.1	0	0.0	1	1.1
	Job Security and Satisfaction	0	0.0	1	1.1	0	0.0	1	1.1
	Safety Oversight	0	0.0	1	1.1	0	0.0	1	1.1
	Merits of the Health and Safety Procedures	0	0.0	1	1.1	0	0.0	1	1.1
	Satisfaction with Safety Measure	0	0.0	1	1.1	0	0.0	1	1.1
	Ambivalence	0	0.0	1	1.1	0	0.0	1	1.1
	Safety Monitoring	0	0.0	1	1.1	0	0.0	1	1.1
2011-2017	Field Orientation	0	0.0	0	0.0	3	3.3	3	3.3
	Safety Justice	0	0.0	0	0.0	1	1.1	1	1.1
	Accumulative Fatigue	0	0.0	0	0.0	1	1.1	1	1.1
	Safety Straight Talk	0	0.0	0	0.0	1	1.1	1	1.1

The findings from the analysis reveal that the number of factors associated with safety climate has grown over time. The growth of safety climate factors over the years is visually represented in Figure 2.8

Figure 2.8: Growth of Related Safety Climate Factors Over the Time



Source: Author

The current study focuses on achieving a brief yet reliable and effective safety scale that RMG manufacturing companies can use to measure the overall level of safety climate at

the factory. Besides, such a short safety climate scale can also be easily used to accumulate existing employee perceptions or incorporated into organisational surveys to infer the condition of the overall organisational safety climate. Hence, after analysing the pattern of safety climate factors used in manufacturing industry-specific articles, the current study uses management commitment, safety communication, safety risk assessment, safety training and supervisors' support as a measure of overall safety climate of Bangladeshi RMG factories.

2.3.2.4 Management Commitment to Safety

Despite the differences in the number of factors of safety climate, the importance of management's role in safety is a recurrent theme that seems to dominate the existing safety literature (Flin et al., 2000; Zohar, 2003; Seo et al., 2004; Huang et al., 2006). Management commitment was the major theme found in the analysis, appearing 51 times in the reviewed safety climate articles. Additionally, the meta-analysis conducted by Beus et al. (2010b) identified management commitment to safety as the strongest predictor of occupational injuries. This factor of safety climate has been operationalized as employees' perception of management's concern regarding safety or support for employees' welfare and well-being or how much safety is important to management (Brown & Holmes, 1986; Dedobbeleer & Béland, 1991; Niskanen, 1994; Díaz & Cabrera, 1997; Gershon et al., 2000; Neal et al., 2000). Different studies (e.g., Zohar, 1980; Cheyne et al., 1998; Flin et al., 2000; Huang et al., 2006; Bosak et al., 2013) indicate that management commitment to safety accounts for over half of the total variance in organisational safety climate. Furthermore, the systematic review identifies that management commitment to safety is one of the most crucial aspects for determining different safety outcomes (e.g., Zohar, 1980; Dedobbeleer & Béland, 1991, 1998; Flin et al., 2000; Glendon & Stanton, 2000; O'Toole, 2002; Silva et al., 2004; Huang et al., 2006; Hsu et al., 2008; Bosak et al., 2013). For instance, management commitment has been identified as a dominant element in preventing *accident & injury rates* (Hofmann & Stetzer, 1996; Probst et al., 2008; Huang et al., 2012a; Liu et al., 2015), *safety violation*

(Fogarty & Shaw, 2010; Hansez & Chmiel, 2010), enhancing *citizenship behaviours* (Hofmann et al., 2003), *self-efficacy* (Al-Refaie, 2013), *safety-specific behaviours* (Agnew et al., 2013), *safety compliance and participation* (Christian et al., 2009; Cui et al., 2013; Casey & Krauss, 2013; Hon et al., 2014), *knowledge and skills motivation* (Griffin & Neal, 2000) and various other safety outcomes.

In particular, a number of meta-analytic reviews (e.g., Clarke, 2006b; Christian et al., 2009; Beus et al., 2010b) probing a range of safety climate elements have established management commitment to safety as one of the strongest and most persuasive predictors of safety performance. In addition, highlighting the importance of management commitment, Cheyne et al. (1998: 268) claim it as a prime factor in predicting safety behaviours, while Cox & Cheyne (2000) identify it as one of the most highly ranked factors of organisational safety climate. Finally, based on theoretical and statistical considerations, Zohar and Luria (2005) have endorsed management commitment as a global factor when determining organisational safety climate. According to Zohar (2008: 377) the *"core meaning of safety climate concerns managerial commitment, with all other variables that have been associated with this construct assuming a secondary role both theoretically and empirically"*. Therefore, in the current study, management commitment to safety is viewed as the primary element in determining the organisational safety climate.

Hahn & Murphy (2008: 1049) and Huang et al. (2012a: 95) have argued that an organisation can have structural policies (e.g., safety training or safety equipment) in place due to completely different reasons (e.g., industry standards) other than having a belief in safety values. Hence, it is plausible that organisations may have safety policies on the books, but the policies may not be generated from the management's belief regarding the significance of ensuring safety. In fact, Hale & Hovden (1998) suggest that structural factors are likely to be critical only in organisations with a poor safety climate, while management attitude is superior for recognising the difference between the organisational safety climate. Hence, the current study will take an approach consistent with Hale (2000), Hahn & Murphy

(2008) and Huang et al. (2012a) and define management commitment to safety as an assessment of employee attitudes about management's value of safety rather than of the structural elements of safety provided. However, the managerial level at which commitment is examined (e.g., senior manager, supervisor) is vague in some studies, despite the large differences in their roles and influence, as perceived by the employees (Clarke, 1999; Flin et al., 2000). Senior managers *"undoubtedly set the tone and tempo for organisational atmosphere, establish priorities and allocate resources"* (Flin et al., 2000: 186) and are also critical in limiting supervisor discretion in policy implementation (Zohar & Luria, 2005). Therefore, the current study emphasises senior management commitment to safety.

2.3.2.5 Supervisor's Safety Support

There has been much empirical and theoretical interest in the leadership practices of front-line supervisors in accident prevention and in the promotion of safety behaviour amongst employees (e.g., Komaki et al., 1982; Hofmann & Morgeson, 1999; Barling et al., 2002; Zohar, 2002b, a; Zohar & Luria, 2004; Kapp, 2012). Employees usually develop their individual safety perceptions by looking at the preferences and actions of their supervisor to determine the prioritization and importance of safety (Zohar, 2000). The safety perception of employees predicts employees' motivation to work safely, which affects their safety behaviours and subsequent injury outcomes (e.g., Hofmann & Stetzer, 1996; Griffin & Neal, 2000; Zohar, 2002b, 2003; Huang et al., 2012b). For example, supervisors can influence *safe behaviour* (Oliver et al., 2002; Zohar, 2002a); employee perceptions of *safety responsibility, team cohesion, safety knowledge* (Yule et al., 2006); *self-reported safety behaviours* (O'Dea & Flin, 2001; Yule, 2003); *willingness to report errors* (Fogarty, 2004) and *work-related injuries* (Kelloway et al., 2006). Hence, it can be perceived that the supervisors' safety support role in promoting employees' safety behaviour in organisation is undeniably important (Cox et al., 1998; Cheyne et al., 2003; Zohar & Luria, 2010; Huang et al., 2012b).

Furthermore, supervisors are an important part of manufacturing industry and play an increasingly critical role in delegating job tasks, managing subordinate performance, and

juggling competing demands for productivity, quality, and safety (Michael et al., 2006). They are also seen as having a key role in communications between management and employees (Therkelsen & Fiebich, 2004). In addition, when supervisors distribute responsibilities towards accomplishing any task and show concern for the wellbeing of the team (Fernández-Muñiz et al., 2014), employees tend to demonstrate safety related organisational citizenship behaviours (Clarke, 2006; Hofmann et al., 2003). As a result, academics and practitioners have turned to supervisors' safety support as one of the ways to improve employees' safety behaviours and thereby reduce accident and injury rates (Conchie et al., 2013). Besides, studies (e.g., Zohar & Luria, 2004; Michael et al., 2006) show that initiatives directed at supervisors may be more effective at improving organisational safety than initiatives directed at employees. This is also supported by studies (i.e. Barling et al., 2002; Kelloway et al., 2006; Conchie et al., 2013) that show a positive association between supervisors' safety support (i.e. safety coaching, sharing safety values and safety communication) and employees' safety behaviour. Hence, due to supervisors' strong influence on employees and organisational processes, it is claimed to play a critical role not only in relation to goal achievement and efficiency but also with regard to ensuring workplace safety (Zohar, 2002b; Christian et al., 2009).

Over the years, a number of studies (e.g., Cohen, 1977; Hofmann et al., 1995; Hofmann et al., 2003; Zohar, 2002b; O'Dea & Flin, 2001; Neal & Griffin, 2002; Kelloway et al., 2006; Lu & Yang, 2010; Martínez-Córcoles et al., 2011) have pointed out the significance of the supervisor's support in improving employees' safety behaviour and safety outcomes. Most of these researches applied to various industrial fields such as *nuclear* (Osborn & Jackson, 1988; Kivimäki et al., 1995; Carvalho et al., 2005; Martínez-Córcoles et al., 2011); *offshore workers* (Dahl & Olsen, 2013; Nielsen et al., 2016), *construction* (Conchie et al., 2013; Fernández-Muñiz et al., 2014; Hoffmeister et al., 2014; Kapp, 2012); *oil and gas* (O'Dea & Flin, 2001) *and chemical industry* (Wu et al., 2011). Different studies have also emphasised manufacturing sectors such as *commercial heating and air condition manufacturing* (Hofmann & Morgeson, 1999); *metal processing* (Zohar & Luria, 2004);

packaging production (Cooper & Phillips, 2004); *wood product manufacture* (Michael et al., 2006); *wind turbine blades* (Nielsen et al., 2008); *lighting processing, shoes, electronics, and toys etc* (Liu et al., 2015). *However,* study on the effect of supervisors' support in the garments manufacturing industry has been limited, especially as supervisors play an important role in implementing safety policies and procedures. It has also been argued that our knowledge about how supervisors' support influences safety performance through safety climate is still limited (Martínez-Córcoles et al., 2011; Hoffmeister et al., 2014). Hence, there is a need for investigation in order to understand how supervisors can promote safety performances through safety climate (Griffin & Hu, 2013). As a result, the current study considers supervisor's safety support as a significant factor of the organisational safety climate.

2.3.2.6 Safety Training

While previous research has studied different factors of safety climate (e.g., Zohar, 1980; Hofmann & Stetzer, 1996; Cooper & Phillips, 2004; Lu & Yang, 2011; Chen et al., 2017), agreement on factors other than management commitment to safety is still vague. However, one factor that has been extensively studied in the existing safety literature, is employees' safety training (e.g., Coyle et al., 1995; Huang et al., 2006; Hahn & Murphy, 2008; Lu & Tsai, 2008; Vinodkumar & Bhasi, 2010). The widely held assumption underlying safety training is that it benefits workers to acquire knowledge, improve skills, adopt a positive attitude and also enhance competencies to perform their jobs effectively (Vojtecky & Schmitz, 1986; Vredenburgh, 2002; Barling et al., 2003; Vidal-Gomel, 2017). Especially, in the current context of rapidly changing high technology and demands of the workplace, safety training has become one of the axiomatic parts of accident prevention tactics and a standard element in safety management systems (Taylor, 2015; Freitas & Silva, 2017). Therefore, it is considered that workers should be provided with an appropriate and adequate amount of safety training to improve their safety awareness to encounter day-to-day hazard, risk and danger in their workplace (Fugas et al., 2012; Goetsch, 2015).

Safety training is mostly considered as a specific type of exercise that is carried out within organisations to prevent accidents, control risks and preserve life and health (Cooper & Cotton, 2000). It provides knowledge to improve different types of safety-related skills associated with hazard and risk identification and safe work practices (Taylor et al., 2016). According to Vojtecky & Schmitz (1986), safety training is education that increases safe behaviour in the workplace. In addition, Robson et al. (2012) refer to safety training as planned efforts to enable the learning of occupational health and safety specific competencies. Thus, it can be considered as a specific type of knowledge on how employees can manage their workspace to identify and address workplace hazards and risks to ensure a safe and effective workplace (Vredenburgh, 2002; Robertson et al., 2008). Furthermore, Vinodkumar & Bhasi (2010) state that safety training as a management practice that improves safety-related knowledge, behavioural skills and/or attitude and provides a means for making accidents more predictable. Due to the fact that organisations depend on frontline employees' skills and attitudes to recognise and resolve problems, to initiate changes in working procedures, and to take responsibility for safety, training is deemed to be an essential component in any organisation (Pfeffer & Veiga, 1999). According to Roughton (1993) training for safety is the standard way of avoiding incidents. Such training is assumed to be an ongoing process to educate employees within a supportive learning environment, whereby shortfalls in skills or knowledge are met by providing information and assisting individuals to practise the necessary skills to carry out activities safely (Lu & Yang, 2011). Therefore, the current study defines safety training as a planned learning activity/experience related to safety and health-specific goals that is intended to bring changes in an individual's safety knowledge, attitudes, or skills.

Different studies (Barling et al., 2003; Cooper & Phillips, 2004; Hofmann & Stetzer, 1996; Vinodkumar & Bhasi, 2010; Fugas et al., 2011; Huang et al., 2012a; Ford et al., 2014) have previously shown the obvious importance of safety training and provided evidence of how it can change employees' safety behaviours and attitudes. Even from the systematic analysis, it can be seen that over the years, safety training has become a requisite factor for

safety climate measurement and has been used to assess different outcomes such as *safety behaviour* (Cooper & Phillips, 2004; Zhou et al., 2008; Fugas et al., 2012), *injury assessment* (Hofmann & Stetzer, 1996; Huang et al., 2006), and *safety performance* (Jiang et al., 2010; Vinodkumar & Bhasi, 2010). For example, an early research led by Smith et al. (1978) demonstrated that safety training is associated with a low accident rate in organisations. Likewise, Huang et al. (2012a) identify that safety training can be a significant predictor of future injury outcome in fast-food restaurants. Furthermore, in another study Hung et al. (2013) identify that training is necessary for protecting residential construction workers from falling from the roof. In a longitudinal study on manufacturing industry, Cooper and Phillips (2004) found that safety training could be applied to predict the actual level of safety behaviour. Besides, safety training has been recognised to be an effective measure for making front-line employees conscious of environmental hazard and potential threats of safety (Hahn & Murphy, 2008; Ma & Yuan, 2009; Cui et al., 2013). In that sense, training for safety can provide opportunities for workers to share their ideas and opinions, thus easing the way to an improved safety climate (Jiang et al., 2010). Therefore, it is very crucial to increase the relevant training to make employees systematically recognise the factors affecting safety performance, which is an important prerequisite to ensure the good safety performance of any organisation.

2.3.2.7 Safety Communication

Effective communication has long been credited as a prime factor in the attainment of high levels of organisational effectiveness (e.g., Greenbaum, 1974; Roberts & O'Reilly, 1979; Frank & Brownell, 1989). According to Smidts et al. (2001: 1052) communication is the *"transactions between individuals and/or groups at various levels and in different areas of specialization that are intended to design and redesign organizations, to implement designs and to coordinate day-to-day activities"*. Likewise, Keyton (2011: 12) defines communication as a "*complex and continuous process through which organisational members create, maintain and change the organisation"*. It is the interaction between manager, supervisor

and employee that includes openness of management to employee communication or the reliability of the information being circulated within an organisation (Allen, 1992; Guzley, 1992). Indeed, various authors (e.g., Cohen, 1977; Cox & Cheyne, 2000; Vredenburgh, 2002; Mearns et al., 2003; Clarke, 2006b) argue that the level of such interaction affects the workers' behaviour. Therefore, effective communication has been identified as a crucial factor for developing and maintaining a safe work environment (Hofmann & Stetzer, 1998; Casey & Krauss, 2013; Manapragada & Bruk-Lee, 2016; Zwetsloot et al., 2017).

Communication is one of the most significant and dominant activities in modern-day organisations (Harris & Nelson, 2008: 14) that is used for an open exchange of information to improve the overall effectiveness of any organisational safety effort (Parker et al., 2001; DeJoy et al., 2010). Undeniably, constant communication related to safety between managers, supervisors and employees is a dominant practice to enhance safety in the workplace (Vinodkumar & Bhasi, 2010). For example, communication of risk and safety information fosters a climate in which workers are prepared for any kind of risky and hazardous situation (Pidgeon, 1991; Fernández-Muñiz et al., 2007). Moreover, the sharing of safety-related information (Hofmann & Stetzer, 1996; Hofmann & Morgeson, 1999) and any task-related information among group members (Zohar & Polachek, 2014) improves cooperation and coordination, which is likely to enhance workers' safety performance. However, it is shown that the effect will be higher in two-way communication, which can improve workers' safety knowledge and ultimately lead to changes in safety participation and compliance behaviour (Vinodkumar & Bhasi, 2010). Therefore, two-way safety communication (i.e., downward-manager to employee and upward-employee to manager) has been recognised as an dynamic factor for improving the safety climate and in turn reducing workplace incidents and accidents (Hofmann & Stetzer, 1998; Zohar, 2000; Kath et al., 2010; Kines et al., 2010).

Within an organisation, the success of any safety effort cannot rely solely on management commitment; rather it must be rendered through concrete actions of the

personnel (Zwetsloot et al., 2017). This implies that managers have to establish their commitment through their behaviours and practices so that the employees can perceive it (Hofmann et al., 1995; Griffin & Neal, 2000). When an organisation commits itself to ensure a safe working environment, it requires good communication to share the belief that all accidents are preventable. Such a belief can be transmitted when managers communicate safety information to their employees (downward communication), which ultimately affect the extent to which the employees comply with operational rules and safety practices (Flin et al., 2000; Rundmo & Hale, 2003). Hence, it can be reasonably assumed that the greater the flow of communication from management, the more workers are motivated to carry out safe practices, which will have more positive effect on workers safety behaviour (Fernández-Muñiz et al., 2012). Different studies (e.g., Zohar, 2000; Kines et al., 2010; Zohar & Polachek, 2014; Manapragada & Bruk-Lee, 2016) have focused on downward safety communication for fostering a positive safety climate, safety performance and/or reduction of workplace accidents and injuries. For example, Zohar & Luria (2003) demonstrate a positive change in workers' perception of safety climate and safety-related behaviour when supervisors have more safety communication with their employees. Similarly, Zohar & Polachek (2014) have found that routine supervisory communication with group members can effect corresponding changes in safety climate perception and safety behaviour. Moreover, management expressing the significance of safety in their exchanges with employees can inspire upward communication from employees as it can influence the degree to which employees feel free to raise and openly discuss safety issues (e.g., Edmondson, 1996; Hofmann & Stetzer, 1996; Zohar, 2008; Kines et al., 2010). Therefore, communication from management (downward communication) fosters a climate that can ensure a safe working environment.

While downward safety communication is a significant factor for a safe workplace, upward safety communication is also critical to ensure a safe working environment (Kath et al., 2010; Casey & Krauss, 2013). Upward safety communication refers to a situation where workers are open to sharing their thoughts and concerns about workplace safety

deducing that their leaders are open to such interaction (Hofmann & Stetzer, 1998). Various studies (e.g., Hofmann & Morgeson, 1999; Cigularov et al., 2010; Kath et al., 2010; Manapragada & Bruk-Lee, 2016) have established that upward safety communication is also a significant predictor of employee safety behaviours and workplace injuries. For example, when employees perceive that their organisation does not appreciate their safety concerns, they tend to share less safety information or become silent out of fear of facing negative consequences (Kath et al., 2010) and hence workplace injury rate increases (Hofmann & Stetzer, 1998; Hofmann & Morgeson, 1999).

Alternatively, when organisations hold an open approach to interaction, employees become more aware about safety, offer more suggestions, and report safety problems, e.g., unsafe practices and conditions, safety violation, and near miss incidents (Edmondson, 1996; Clarke, 2003; Cigularov et al., 2010). Moreover, a substantial body of research demonstrates the relationship of overall safety communication with different measures of safety performance. For example, safety communication has been significantly associated with the success of *safety programmes* (Harper et al., 1996), *safety knowledge* (Griffin & Neal, 2000; Probst, 2004), *safety participation and compliance* (Cheyne et al., 1998; Griffin & Neal, 2000; Parker et al., 2001), and *occupational accidents, injuries or near-miss incidents* (Mearns et al., 1998; Sawacha et al., 1999; Hofmann & Morgeson, 1999; Mearns et al., 2003; Siu et al., 2004). While Pfeffer (1998) proposes information sharing and communication as one of the seven practices for ensuring a successful organisation, Zacharatos & Barling (1999: 204) have recommended communication as one of ten work practices that have a positive effect on workplace safety. Likewise, SLR analysis by the current study has identified that almost 38.5% of the reviewed studies used communication as a measure of safety climate within different industrial settings. Therefore, the current study also considers safety communication as one of the major factors in measuring Bangladeshi RMG manufacturing industry's safety climate.

2.3.2.8 Safety Risk Assessment

Risk is an inherent property of human existence and it denotes the probability of something happening coupled with the degree of associated gains and losses (Lupton, 2013). Usually, risk is perceived as the likelihood of an unpredicted event that leads to potential negative consequences. For example, risk has been defined as *"a situation or event where the* human value *(including humans themselves)* is at stake (Rosa, 2003: 61). In addition, Lowrance (1976: 8) defines risk as *"a measure of the probability and severity of adverse effects"*. Besides, risks have been associated with expected *'disutility', 'loss', 'damages', or 'cost'* (Campbell, 2005: 570). However, when evaluating the probability of a negative situation, people make their decisions based on perceived (subjective) risk rather than absolute (real) risk (Slovic, 1987; Roehl & Fesenmaier, 1992; Rundmo, 2000; Kouabenan et al., 2015; Rundmo & Nordfjærn, 2017). For example, Flin et al. (1996) have found that risk assessment varies between offshore workers and it is entirely based on subjective judgement. Furthermore, Slovic et al. (1981: 17) argued that risk assessment, whether by the an expert or the public, is inherently subjective. Due to the fact that absolute risk is difficult to assess (Bentley et al., 2001; Jang et al., 2002), individuals are concerned with the risk they are able to perceive (Quintal et al., 2010). Therefore, risk assessment can be viewed as an individual assessment of the probability of an undesirable consequence (Starren et al., 2013).

According to Gierlach et al. (2010: 1539), risk assessment is *"a subjective judgment about the felt likelihood of encountering hazards".* This definition depicts risk assessment as a cognitive activity, which can determine the inherent risk of a situation (Ji et al., 2011). Rundmo (1996) suggests that risk assessment can offer a dynamic insight into risk management. Indeed, understanding how employees perceive the risks, or risk issues, that they are vulnerable to, is of paramount importance, particularly where employees' behaviour towards risk is concerned (Arezes & Miguel, 2008). As a result, scholars have devoted several efforts to explore safety risk assessment as one of the determinant factors

of workplace safety (Zohar, 1980; Dedobbeleer & Béland, 1991; Mearns et al., 2001a; Cooper & Phillips, 2004; Seo, 2005; Lin et al., 2008; Wu et al., 2011). Risk assessment has traditionally been studied as one of the safety climate factors to predict accidents/injuries (Zohar, 1980; Brown & Holmes, 1986; Díaz & Cabrera, 1997; Flin et al., 2000; Guldenmund, 2000). For example, Hayes et al. (1998) found that higher safety risk assessment leads to lower accident/injury incidences. Additionally, Brown & Holmes (1986) and Díaz & Cabrera (1997) confirm that risk assessment is one of the factors of organisational safety climate. Moreover, an extensive review on safety climate research conducted by Siu et al. (2004) illustrates that perceived risk is one of the most common dimensions studied by scholars along with other safety climate factors.

Consequently, in recent years, safety risk assessment seems to be attracting the attention of different scholars to study workers' involvement in safety-related actions and ways of increasing the efficiency of the organisational safety climate (e.g., Rundmo, 2001; Arezes & Miguel, 2008; Gandit et al., 2009; Ji et al., 2011; Kouabenan et al., 2015; Xia et al., 2017). Such studies demonstrate that if any individual perceives an event or situation as highly risky, they are more likely to manifest protective behaviour. For example, in a study of commercial pilots, Ji et al. (2011) identify that safety behaviours have a direct relationship with risk assessment. Another study, conducted by Basha & Maiti (2013) on a steel melting plant in India, shows that risk assessment is positively related to work injuries. Furthermore, Kouabenan et al. (2015) found that frontline managers' risk assessment of their subordinates' vulnerability to risk would trigger them to get more involved in safety-management issues. Taylor & Snyder (2017) demonstrate in their laboratory-based study, that when risk is framed in terms of non-compliance with safety procedures, risk assessment is related to safety behaviour. In addition, risk assessments have been shown to be associated with a variety of safety-related intentions such as *readiness to participate in safety program* (Edwards & Hahn, 1980; Goldberg et al., 1991; Cree & Kelloway, 1997), *usage of hearing protection by workers* (Arezes & Miguel, 2008) or *hand-to-face contact behaviours* related to laboratory-acquired infections (Johnston et al., 2014). These studies

support the view, that the perceived risk influences the likelihood of a person demonstrating safety-related intentions and behaviours.

In contrast, some other studies find that safety risk assessment does not always stimulate safety behaviour (Stasson & Fishbein, 1990; Bellrose & Pilisuk, 1991; Pligt, 1996). For example, meta-analytic research conducted by Christian et al. (2009) shows that safety behaviour is negatively related to the perception of risk. In addition, Rundmo (1996: 207) found that risk assessment does not predict risk behaviour and hence, concludes that *"safety cannot be improved by changing individual risk perception"*. Hence, given such conflicting results and conclusions, further investigation on the relationship between risk assessment and safety behaviour is needed (Taylor & Snyder, 2017). Additionally, little research has focused on the effects of risk assessment specifically on safety compliance and safety participation, two distinctively vital worker safety behaviours (Griffin & Hu, 2013; Xia et al., 2017). Slovic (1999: 286) argues that it would be unwise to cast aside the risk assessment concepts especially when the drive is to understand and predict *"people's concerns, their desires for risk reduction, and their protective behaviours"*. Hence, the current study incorporates risk assessment as a factor of the safety climate to measure employee safety behaviour and performance.

Various studies discussed above in terms of the five factors of safety climate provide evidence that improving the safety climate improves workplace safety. However, despite the evidence, in developing countries like Bangladesh, the workplace safety system is yet to be developed and become mature. In fact, Hämäläinen et al. (2006) state that developing countries struggle with identifying hazards and thus, global occupational safety programmes should be focused on the developing countries. For Bangladesh, this is also the case, as over the years, in the pursuit of developed economy Bangladesh has bred unplanned export-oriented industrialisation in various industrial sectors, including RMG and textiles. Such unplanned industrial establishment exploits almost every national and international standard, such as minimum standards prescribed in building and construction legislation,

safe working environment, labour rights, etc. In addition, it appears that this quintessentially labour-intensive RMG industry involves untrained workers in totally new tasks, which ultimately results in higher workplace accident rates. Furthermore, the reluctant attitude of the stakeholders towards structural and workplace safety compliance issues has resulted in different occupational disasters in RMG factories in Bangladesh (Barua & Ansary, 2017). Such an attitude towards guaranteeing workplace safety reveals a completely opposite situation from the Western world. To the best of the researcher's knowledge, there are very few safety climate and perception-based studies in any Bangladeshi industrial sector, which necessitates developing tools for conducting surveys of employee's and management's beliefs regarding safety and monitoring attitudes. Hence, to fill this gap, the current study uses the five factors of safety climate discussed above to measure beliefs, perceptions and attitudes towards safety and their effect on safety performance in the Bangladeshi RMG sector.

2.3.3 Safety Performance

The prevalence of workplace accidents along with the massive cost associated with safety incidents and the ways to enhance occupational safety are of ongoing interest (Krause et al., 1999; Cooper & Phillips, 2004; Turner et al., 2005; Zhou et al., 2008). Scholars argue that one of the crucial steps in comprehending the reasons behind occupational accidents and improving the safety climate is to examine the related workplace behaviours (e.g., Hofmann et al., 2003; Turner et al., 2005; DeArmond et al., 2011; Sampson et al., 2014), which are collectively referred to as safety performance (Christian et al., 2009). Safety performance is an umbrella term which signifies various forms of safety behaviours, ranging from self-reported safety behaviours (e.g., following procedures, wearing protective equipment, participating safety meetings etc.) to organisation-level safety outcomes i.e., accident and injury rates (Morrow et al., 2014). For example, safety performance has been defined as the *"actions or behaviours that individuals exhibit in almost all jobs to promote the health and safety of workers, clients, the public, and the environment"* (Burke et al., 2002:

432). More specifically, safety performance refers to the behaviours that individuals carry out in the workplace to promote safety (Griffin & Neal, 2000). According to Grabowski et al. (2007), it is measured using organisational users' perception of safety in their work environment. Alternatively, safety performance has also been defined as the *"overall performance of the organisation safety management system in safe operation"* (Wu et al., 2008: 309). These definitions exemplify that the safety performance perspective is largely concerned with either organisational, group or individual safety climate factors (Clarke, 2006b; Christian et al., 2009; Chen & Chen, 2014). Hence, several conceptual models and approaches have been proposed with the aim of investigating all the relevant factors related to safety outcomes and performance (Cagno et al., 2014).

Burke et al. (2002) have developed a four-factor model of safety compliance behaviours, while Hofmann et al. (2003) conceptualised a six-factor approach of safety citizenship behaviours. However, such approaches as those suggested by Burke et al. (2002) and Hofmann et al. (2003) are rarely used, due to their impracticality and the length of the instruments, which has been noted as a problem in previous studies (e.g., Turner et al., 2005). Various other scholars (e.g., Papazoglou et al., 2003; Iyer et al., 2004, 2005; Barlow & Iverson, 2005; Oyewole et al., 2010) have used different additional approaches related to safety performance outcomes. For instance, Barlow and Iverson (2005) have proposed a job stressors focused approach that relates to a cause-to-effect chain of interactions between different individual and organisational factors to safety performance. Alternatively, Al-Refaie (2013) uses employee safety self-efficacy, and safety awareness as indicators of safety performance. While Wu et al. (2011) developed a plant-level Safety Performance Scale (SPS) to examine safety performance in petrochemical industries, Alolah et al. (2014) proposed using the balanced scorecard to measure workplace safety performance in Saudi Arabian schools. Furthermore, Goh et al. (2012) and Han et al. (2014) used a system dynamics group model building (GMB) approach to create a causal loop diagram of the underlying factors influencing safety performance in drilling, mining and construction companies. Such varied safety performance measurement approaches show that scholars

have not agreed on a universal measure of safety performance, which can be claimed better than others. Perhaps such differences appear because of the fact that the choice of safety performance indicators depends on the available resources, the purpose of measuring performance and the context of the research (Feng et al., 2014).

In addition to different safety performance approaches, a growing number of studies have attempted to use situational and individual factors as measures of safety performance (Christian et al., 2009). For instance, individual factors such as *personality* (Forcier et al., 2001; Clarke & Robertson, 2005), *job insecurity* (Probst & Brubaker, 2001; Størseth, 2006), *attitudes to safety* (Mearns et al., 2001a), *caring* (Burt et al., 2008), *job satisfaction* (Barling et al., 2003), *safety motiva*tion (Neal & Griffin, 2006) and *safety knowledge* (Burke et al., 2002) have been related to outcomes such as safety performance, risk taking behaviour and workplace accidents. Alternatively, situation-based factors such as *work pressure* (Lilley et al., 2002), *work systems* (Zacharatos et al., 2005), *training* (Lingard, 2002), *safety activities, work environment* (Varonen & Mattila, 2002), *safety management* (Torp & Moen, 2006), and *safety leadership* (Wu et al., 2008) have been related to outcomes such as micro-accidents, negative behaviours, injury rate, musculoskeletal health, work environment, safe behaviour, and workplace accidents. However, most of these situational and individual factors are not capable of providing a comprehensive understanding of safety performance (Cagno et al., 2014). Such incomplete representation occurs due to the fact that few studies have observed organisational, group, and individual factors instantaneously (Chen & Chen, 2014). Therefore the process (e.g., causal sequence/cause-to-effect chain) by which accidents are instigated remains unclear (Fernández-Muñiz et al., 2014).

Wilpert (1994) argues that accidents are caused not only by a single factor but are also the consequences of a chain reaction of other factors that interact with the various levels of the organisational system. Different historical accident analyses (e.g., Perrow, 1984; Strauch, 2002; Sagan, 2004) reveal that accidents are often the result of interactions among multiple, interdependent elements in complex, high-risk systems. Hence,

occupational accidents can be perceived as a consequence rather than a cause. In that sense, accidents can be perceived as a causal sequence, which can be influenced by a variety of proactive safety behaviours (Probst, 2004; Griffin & Hu, 2013; Martínez-Córcoles et al., 2013; Yuan et al., 2015). For instance, prevention of occupational risks not only starts from the improvement of equipment safety, but also includes *effective safety management* (Krause et al., 1999; Benavides et al., 2005; Fuller, 2005), *integration of safety and quality control* (Manuele, 1995), and *constitution of a good safety practice* (Gervais, 2003), that affects the safety performance of an organisation (Hsu et al., 2012). Hence, it is likely that different proactive safety behaviours can simultaneously influence safety performance.

Martínez-Córcoles et al. (2011) examine the safety research in depth, and identify two different models of studying safety performances in organisational settings: through workplace security (accident or injury incidents) (e.g., Niskanen, 1994; Zohar, 2000, 2002b; Vredenburgh, 2002; Mearns et al., 2003) and through safety behaviours (e.g., Neal et al., 2000; O'Dea & Flin, 2001; Cooper & Phillips, 2004). Previous safety studies have inclined towards statistical data of accidents or injuries to measure safety performance (e.g., Lu & Yang, 2011; Hon et al., 2014) due to comparative ease of simple access and to set the benchmark with other contexts (Sgourou et al., 2010). More recent studies have also used alternative data such as self-reported injury data (e.g., Siu et al., 2004; Huang et al., 2006), which display accuracy as high as 80% (Gabbe et al., 2003). However, workplace security (accidents and injuries) records are considered as a reactive approach, which has often been criticised because they only reflect the occurrence of failures and are unable to reveal cause-effect relationships; thus, they appear to have little predictive values (Carder & Ragan, 2003; Cooper & Phillips, 2004).

Another problem is that such data are *"insufficiently sensitive, of dubious accuracy, retrospective, and ignore risk exposure"* (Glendon & Litherland, 2001: 161). Additionally, Hon et al. (2014) argue that injuries are ineffective indicators of safety performance because of infrequent medical treatment and lost time. Many times, under-reporting can be another

problem because if accident rates are associated with organisational reward systems, it can lead to lower reporting of minor injuries in order to demonstrate higher performance (Sgourou et al., 2010). Moreover, reactive measures are preferable for the evaluation of past safety efforts or for the purpose of comparison (Hinze & Godfrey, 2003; Holt, 2005). Due to this deficiency of workplace security as a proxy of safety performance, several scholars (e.g., Shannon et al., 1999; Cooper & Phillips, 2004; Lu & Yang, 2011) have preferred safety behaviour over workplace security statistics, as they focus on unsafe behaviour prior to occurrence of accidents.

A growing number of studies have attempted to use proactive measures to assess safety performance and to date, Griffin and Neal's (2000) approach is the most well-known and commonly employed framework in the existing literature (DeArmond et al., 2011; Fernández-Muñiz et al., 2014; Hon et al., 2014; Sampson et al., 2014; Barbaranelli et al., 2015). Griffin & Neal (2000) developed a model of safety behaviour based on the theory of job performance proposed by Borman & Motowidlo (1993). This model incorporates two factors of safety behaviour: safety compliance and safety participation. Safety compliance refers to behaviours focused on meeting minimum safety standards (Inness et al., 2010), following safety procedures conscientiously and taking precautions against hazards at work (Clarke, 2006b), for example, wearing personal protective equipment (PPE), using a fall protection harness, or putting on welding gloves (Fernández-Muñiz et al., 2014; Sampson et al., 2014). In contrast, safety participation refers to behaviours that support and create an atmosphere supportive of safety (Vinodkumar & Bhasi, 2010; Brondino et al., 2012), for example, helping co-workers, promoting safety programmes within the workplace, pointing out potential hazards, and reminding co-workers to wear PPE (Neal et al., 2000; DeArmond et al., 2011). Substantial documentation indicates that it is essential to differentiate between these two forms of distinctive, yet interdependent safety behaviours (e.g., Geller et al., 1996; LePine et al., 2002; Parker et al., 2003b; Schöbel, 2005), as they tend to have different relationships with variables like safety climate and safety outcomes (Clarke, 2006b; Christian et al., 2009; Sampson et al., 2014). Moreover, Marchand et al. (1998) argue

that safety behaviours should not be explained from a unidimensional perspective; rather, bidimensional aspects should be used to assess safety behaviours. Due to the fact that the two-dimensional proactive nature of Griffin and Neal's (2000) approach can offer continuous occupational safety improvements, the current study thus measures safety performance by using both safety participation and safety compliance factors.

Nevertheless, Glendon & Litherland (2001) point out the lack of development of a practical yet reliable and valid measure of safety performance as one limitation associated with evaluating the effectiveness of organisational safety climate. For example, most of the studies using compliance and participation (e.g., Griffin & Neal, 2000; Probst & Brubaker, 2001; Goldenhar et al., 2003; Probst, 2004; Wallace & Chen, 2005) have not been able to provide adequate information regarding the development of their safety performance measures. Furthermore, the measures of safety compliance and participation used by Griffin and Neal remain doubtful due to their low internal consistency (participation, α=.66 & compliance α=.56). Hence, the question remains whether safety participation and compliance have been sufficiently developed or not (DeArmond et al., 2011). Additionally, Marchand et al. (1998) argue that safety performance factors should be developed based on the uniqueness of the specific context in which they will be used. In that sense, context-specific safety performance factor is needed. For example, production activity deals with different kinds of forces and energy interactions in a controlled environment. On occasions, this control is lost, and an uncontrolled energy transfer occurs, leading to an accident and/or injury incident (Khanzode et al., 2012). Dealing with production, manufacturing industry is considered as one of the most dangerous industries in terms of occupational accidents (Nenonen, 2011: 1394). This is specially so in developing countries like Bangladesh, where the RMG manufacturing industry tends to experience poor workplace safety conditions and high accident rates. Hence, as a context-specific factor, workplace accidents/injuries particularly necessarily need to be considered in order to find out the efficiency and effectiveness of the organisational safety climate. Furthermore, along with various other studies (e.g., Barling et al., 2003; Smith et al., 2006; Neal & Griffin, 2006; Basha & Maiti,

2013), two meta-analytic studies, by Clarke (2006a) and Beus et al. (2010b) illustrate that safety climate provides greater predictive validity in relation to workplace accidents. Besides, Cooper & Phillips (2004) and Christian et al. (2009) suggest using multiple performance indicators to gather further insights into the underlying relationships between safety climate and safety performance. Therefore, based on the above discussion, the current study examines both safety behaviours and workplace security (injury experience) to determine relationships between safety climate and safety performance.

At present, there are limited research activities in the area of occupational health safety (OHS) in developing countries, especially in the South Asian region. A very few studies have been reported in Indian industrial sectors, such as safety risk assessment based studies on mining (Maiti & Bhattacherjee, 1999), and the steel industry (Basha & Maiti, 2013) and a safety climate based study on the chemical industry (Vinodkumar & Bhasi, 2009, 2010). However, countries that are undergoing an industrialisation process which involves increasing fatal and other workplace accidents (Hämäläinen et al., 2006) such as Bangladesh, are lacking safety research activity so far. Hence, the current study set out to examine safety climate factors that influence employees' safety performance in the RMG manufacturing industry, thus providing a greater understanding of their inter-dependence which, in turn, will facilitate safety improvement in the sector.

2.3.4 Summary

The second part of the current chapter has examined and explored the theoretical and empirical progression of safety climate in the extant literature which has been conducted across countries and different industries. The proliferation of safety incidents in the workplace is clearly a concern to government, industry, and society. Hence, the high cost of work-related accidents drives organisations to establish programmes to secure their workforce from accidents. As a result, this section illustrates that the concept of the safety climate has transformed over the years to meet the safety demands of the workforce. This is especially relevant in the mining, construction, and manufacturing industries, as they

experience a heavy accident and injury-related burden and have a strenuous environment in which to operate. The section attempts to demonstrate the significance of the safety climate concepts due to its conceptualization of the root factors that drive the choices of safety behaviours in the workplace. Despite safety climate being widely researched and discussed, the academic literature is still undecided and unable to resolve some important conceptual and practical issues. While many models have been designed to identify and describe 'one-fits-all' or industry-specific contents of safety climate, lack of consistency in development procedure, validity and reliability measures and theoretical platform creates voids in this research field. Hence, this section of the chapter identifies a gap to develop an instrument especially for the Bangladeshi Manufacturing industry and proposes a five-construct safety climate measure for the RMG industry in Bangladesh. Furthermore, the section also discusses safety performance measurement factors and provides justification for using a three-construct safety performance measurement. The next section presents literature review on governance issues. It will help to present an 'invisible hand' into the research framework that offers a better understanding of how government and other stakeholders can effectively and systematically oversee organisational safety practices in developing countries.

2.4 Governance

Governance is an elusive and extremely multidimensional concept with extensive implications (Weiss, 2000; Khan, 2002: 63; Hezri & Dovers, 2006; Kotzé, 2012: 22). The term 'governance' has been commonly utilised in different ways and often takes on various connotations (Peters, 2014). While previously, governance was comparatively unknown as a concept (Nanda, 2006; Colebatch, 2014), it has turned out to be a major issue of debate among scholars and intellectuals in every possible discipline (Aguilera & Cuervo-Cazurra, 2009; Andrews, 2010). For instance, governance is discussed within a range of research domains: *economics* (La Porta et al., 1998; Williamson, 2005; Bjorkman & Svensson, 2009; Athanasouli & Goujard, 2015), *public administration* (Rhodes, 1996; Pierre,

2000; Kjaer, 2004; Bryson et al., 2014), *urban management* (Rakodi, 2003; Baud & Dhanalakshmi, 2007), *natural resource management* (Hall, 2006; Dinica, 2009; Busse & Gröning, 2013; Coleman, 2014), *health system* (e.g., Atkinson & Haran, 2004; Bjorkman & Svensson, 2009; Barbazza & Tello, 2014; Joshi, 2017), *clinic management* (Eeckloo et al., 2004; Elliott, 2006), *tourism* (e.g., Beritelli et al., 2007; Guzmán et al., 2008; Roxas & Chadee, 2013; Wan & Bramwell, 2015), *finance* (Mersland, 2009; Barry & Tacneng, 2014; Thenmozhi & Narayanan, 2016) and *management* as a form of corporate governance (Shleifer & Vishny, 1997; Becht et al., 2003). Hence, the classification, scope, and magnitude of 'governance' are characterised by confusions and disagreements (Windsor, 2009; Pechlaner et al., 2010). Despite all the arguments, 'governance' has become one of the most commonly used terms in scholarly literature (Pierre, 2005; Bell & Hindmoor, 2009; Hendriks, 2013) and a dominant logical tool for understanding public administrative process (Osborne & Gaebler, 1992; Peters, 2014; Wan & Bramwell, 2015). Yet, a variety of literature poses a question whether 'governance' is definitely a universal notion, which can be integrated into any administrative setting (Peters, 2014) or whether the term has become merely a vogue with less rational elements (Fukuyama, 2013). Hence, there is a need to comprehend 'governance' as a concept to incorporate in the context of the current study.

2.4.1 Definitions of Governance

Governance is a highly contested concept (Hezri & Dovers, 2006), so is difficult to understand exactly where it begins and ends (Hendriks, 2013). Yet, governance –either in terms of leadership, stewardship, regulation, oversight or governance itself– has repeatedly been stated as a core function in different agendas (Mikkelsen-Lopez et al., 2011; van Olmen et al., 2012; Barbazza & Tello, 2014). While governance as a term used to be used as an alternative for government (Rhodes, 1996; Stoker, 1998), present-day application of the term underlines broader perspectives with various consequences (Kjaer, 2004). However, remarkably little concern has been shown to comprehending its connotations and

implications (Colebatch, 2014). For example, Rhodes (1997) recognises six alternative connotations related to 'governance', while advising that the term indeed has no meaning. Alternatively, Kersbergen & Waarden (2004) recognise nine different connotations, while Offe (2009) describes the term as a floating signifier. Hence, due to the inconclusive characterisation of the term, it remains ambiguous and the outcome remains dubious (Nanda, 2006). Therefore, this increasingly wide-ranging understanding of 'governance' needs to be fully understood, for effective inclusion in any context.

While contrasting depictions of governance exist, two possible interconnected classifications are possible (Colebatch, 2014; Peters, 2014). One classification is based on practitioners instilled in judgment; for instance, the World Bank (1989) defines governance as *"the exercise of political power to manage a nation's affairs"* (p.61). This concept of governance emphasises the process of political stability, ownership, institutional authority and power, accountability, responsibility and citizen engagement, implementation of the law and a free press (Leftwich, 1993: 610; Fattore & Tediosi, 2010; Barbazza & Tello, 2014). Other multinational and international organisational definitions of governance vary in nature between social, political and technical, and economic. These organisations perceive governance from different perspectives; however, the concept definition provided by the World Bank is considered as a common frame of governance to make government more efficient (Weiss, 2000; Brinkerhoff & Bossert, 2008). Table 2.11 shows the definitions of governance provided by different international organisations.

Table 2.11: Governance Defined by International Organisations

European Commission (2003)	"The rules, processes, and behaviour by which interests are articulated, resources are managed, and power is exercised in society". [P.3]
Asian Development Bank (1995)	"Governance is about the institutional environment in which citizens interact among themselves and with government agencies/officials." [P.3]
World Bank (2008)	"The traditions and institutions by which authority in a country is exercised. This includes the process by which governments are selected, monitored and replaced: the capacity of the government to effectively formulate and implement sound policies; and the respect of citizens and the state for the institutions that govern economic and social interactions among them". [P.1]
United Nations Development Programme (1997)	"The exercise of political, economic and administrative authority in the management of a country's affairs at all levels". It comprises mechanisms, processes and institutions through which citizens and groups articulate their interests, exercise their legal rights, meet their obligations and mediate their differences." [p.2]

USAID	"The ability of government to develop an efficient, effective and accountable public management process that is open to participation and that strengthens rather than weakens a democratic system of government" [p.1]
WHO	Leadership and governance "involves ensuring that strategic policy frameworks exist and are combined with effective oversight, coalition building, regulation, attention to system-design and accountability" [p.3]
Institute on Governance, Ottawa	Governance is "the process whereby societies or organisations make their important decisions, determine who has a voice, who is engaged in the process and how the account is rendered." [p. 4]
Commission on Global Governance	"Governance is the sum of the many ways individuals and institutions, public and private, manage their common affairs. It is a continuing process through which conflicting or diverse interests may be accommodated and cooperative action may be taken. It includes formal institutions and regimes empowered to enforce compliance, as well as informal arrangements that people and institutions either have agreed to or perceive to be in their interest." [p.2]
African Development Bank	"a process referring to the manner in which power is exercised in the management of the affairs of a nation, and its relations with other nations." [p.15]
International Food Policy Research Institute	"Governance refers to the manner in which power and authority are used to manage the collective affairs of a community, society, nation, or country. Institutions are the systems of formal and informal rules that constitute the environment within which policies, cooperation, and innovation occur."

The above definitions focus on the reconstruction of macro social-political-economic affairs (Hezri & Dovers, 2006), whereas social scientists have different classifications of governance (Colebatch, 2014). For example, in political science, governance is defined as the *"conscious management of regime structures with a view to enhancing the legitimacy of the public realm"* (Hyden, 1992: 7). This view of governance emphasises the institutional framework (i.e., government) in which public decisions and policies are made (Onibokun, 1999; Olowu & Sako, 2002). Other scholars advocate the idea of "governance without government" (Holsti, 1992; Rhodes, 1996; Grande & Pauly, 2005; Börzel & Risse, 2010; Parasuraman et al., 2018). For example, a widely cited definition by Rhodes (1997: 15) depicts governance as *''the self-organising inter-organisational networks characterised by interdependence, resource exchange, rules of the game and autonomy from the state''*. Peters (2014) shares a similar, view that networks of social actors can provide more effective and responsive governance than governments. Even though the theory of "governance without government" exists, usually a governance structure contains at least one governmental institution (Almquist et al., 2013). However, governance without a government is by no means the only theoretical variant (Hendriks, 2013), as various scholars discuss various approaches of governance, i.e., "markets", "hierarchies",

"networks" and "communities" (e.g., Lowndes & Skelcher, 1998; Pierre & Peters, 2000; Kooiman, 2003; Bovaird, 2005; Bevir, 2009).

In public administration, governance usually refers to the steering of problem areas controlled by interdependent parties, organisations, and public-private partnerships (Kjaer, 2004; Rhodes, 2007; Hall, 2011a). This includes actions through which a society unifies itself to accomplish shared objectives (Dodgson et al., 2002), implying agreement among members on designating decision-making authority to a governing body (Ciccone et al., 2014). Therefore, governance as a political stance can be understood as a vertical[10], monocentric, and unilateral steering process, while public administrative stance is more horizontal, pluricentric, and multilateral in nature (Pierre, 2000; Bevir, 2010). In contrast, residing between the public, private and community sector, tourism literature gives an interesting context of governance. Traditionally in the public sector, governance embraces a ''top-down'', centralised and bureaucratic approach, considering government responsible for infrastructure provision, planning, control, marketing, promotion, and proactive development of public goods (Ruhanen et al., 2010). Recently, in line with the managerialist trend in Western countries, an alternative ''bottom-up'', decentralised and inclusive form of governance has been recommended, in which local communities and businesses are encouraged to take more responsibility for management (Vernon et al., 2005). Essentially, such contrasting views do not offer any agreement on the appropriate approach for exploring governance in the tourism sector.

However, Beritelli et al. (2007: 96) have merged these two perspectives together stating that *"the concept of governance consists of setting and developing rules and mechanisms for a policy, as well as business strategies, by involving all the institutions and individuals"*. Similarly, Nordin & Svensson (2007) put emphasis on social networks and relationships with a focus between the public and private sectors. Likewise, a few other

[10]Vertical refers to the legal structures underlying public sector organisations, which conform to the processes of authorisation and defined mandates. Horizontal concerns the moral and social obligations as perceived by organisations to report to stakeholders or the mutual arrangement between bodies of equal standing to provide public services (Boven, 2007; Hodges 2012)

scholars (e.g., Bramwell & Lane, 2010; Wan & Bramwell, 2015) in tourism literature have specified governance as involving governmental and non-governmental actors working together collectively, perhaps to secure a collective goal or social order. According to Jamal & Getz (1995: 193), *"no single organisation or individual can exert direct control over the destination's development process"* because each actor in the tourism sector holds a certain degree of power, resources, and access to networks. Hence, tourism literature merges the ideas of political, public, and private sector activity together in the study of governance (Palmer, 1998; Svensson et al., 2005; Nordin & Svensson, 2007). These various definitions discussed above, reflect the differing contexts in which governance is studied, along with the disciplinary perspective of the researchers.

Due to the fact that governance means different things to different people, the lack of well-defined scope for what governance encompasses allows users to choose and set their own parameters (Corkery, 1999; Agere, 2000: 4). Thus, governance can be conceived as a contextual and multidimensional concept and can be defined from a both universal to culturally specific perspectives (Sangita, 2002). Despite the fact that multidimensionality and complexities are innate to governance, a general consensus views it as a set of practices (laws, policies, or customs), which are formally or informally applied to allocate accountability and responsibility among the agents of a particular system (Travis et al., 2002; Brinkerhoff & Bossert, 2008; Siddiqi et al., 2009). Hence, the fundamental connotation of governance can be comprehended as the ability to navigate the society and economy and involves identifying effective ways of determining communal and mutual goals and ways of achieving them (Peters & Pierre, 2016).

Although it is difficult to acknowledge a specific definition of governance, the literature review shows that irrespective of the definition or context in which it is used, scholars generally agree on three common principles of governance. First, governance is not a substitute for government and the two terms cannot be used interchangeably (Hoff, 2003). The government covers a more limited domain than governance, which involves the

structures of the state and indicates concern regarding its formal institutions (Rhodes, 1996; Kjaer, 2004). In addition, governance is about the rules of the game and methods of steering it. It also denotes the way that non-governmental and governmental organisations often work together (Bramwell, 2011). Secondly, governance involves minimal government control, in which government has the role of supervision in the tasks that need to be accomplished (Newman, 2001; Mhone & Edigheji, 2003). Governance, for instance, does not have any hierarchy or involve any self-evident leadership (Breda et al., 2006). Finally, governance comprises various stakeholders who have interests in particular tasks (Kooiman, 1993; Stoker, 1998; Beritelli et al., 2007). For instance, some groups in society have comparatively more impact on government policy-making than others (Hill, 1997; Dredge & Jenkins, 2007). Hence, governance includes important power relations and stakeholder relationship management (Kooiman, 1993). Therefore, it would be unrealistic to consider governance as a purely horizontal or vertical process (Hendriks, 2013); rather, governance can be perceived as a hybrid of both vertical and horizontal processes (Stoker, 1998; Peters & Pierre, 1998; Haus et al., 2005). In that sense, governance includes both non-formal and formal arrangements emerging from the interaction of active stakeholders that have structural significance for public issues (Karkatsoulis, 2010; Barbazza & Tello, 2014).

Nevertheless, the concept of governance is becoming more and more diffused and dynamic (Barbazza & Tello, 2014) and the significance of governance has become recognised not only by academics but also by international organisations (Hall, 2011a; Stead, 2015). For example, for more than a decade, European Commission, World Health Organization, United Nations, and World Bank have emphasised the benefit of good governance and desirability of sound institutions for the development of a nation (Arndt & Oman, 2006; Holmberg et al., 2009). Thus, rather than searching for 'the meaning' of such a variously used word, it is perhaps more fruitful to investigate the perspectives in which 'governance' can be used (Colebatch, 2014). Hence, the current study seeks to explore the governance literature with the objective of identifying the key components for governance mechanism that can mediate the relationship between different institutional elements and

organisational safety practices. This is not the aim of the current study to distinguish what good or effective governance is; instead, good governance will be considered that which is effective. What will be examined in the current study are the components of governance systems, that give outcomes (organisational safety practices) some degree of effectiveness. Hence, in the following section, the current study identifies and discusses the components of good governance in depth.

2.4.2 Components of Governance

Apparently, due to the fact that demand for a measurable governance concept has risen exponentially (Knoll & Zloczysti, 2012), identifying the components of governance for a theoretical understanding seems to be incredibly difficult. While the large number of studies focused on governance have furthered our understanding of the topic, uniformity does not exist in the use of underpinning components. Moreover, the majority of studies have been limited to report the results investigating governance in particular applications and settings (Ness & Haugland, 2005; Hall, 2006; Gurran et al., 2007; Nordin & Svensson, 2007). Hence, the existing literature is considerably broad in scope but lacks depth, cohesion, and robust theoretical underpinnings (Ruhanen et al., 2010). However, assessing the quality of governance requires a full understanding of the components of a good governance mechanism (Bovaird & Löffler, 2003). Hence, there is a need for a comprehensive grasp of the governance components. Due to the heterogeneous nature of the governance concept, the current study conceptualises the function of governance based on several components– synonymous here with the attributes of governance, principles, elements, indicators, or dimensions.

According to the World Bank (2008: 259), along with thousands of individual governance components, there are at least 140 sets of governance components, which are publicly available. Some look at rules, some of how the rules are implemented, some at outcomes, and some are aggregate measures, summarizing more specific components. However, the well-known components of governance are those offered by *World Bank*

Governance Indicator (WGI), *Transparency International Corruption Index* (TI), *Fraser Institute's Economic Freedom Index* (EFI), *Freedom House Index* (FHI), and the *International Country Risk Guide* (ICRG) (Knoll & Zloczysti, 2012; In'airat, 2014). While over the years, different scholars have used the Freedom House components (e.g., Scully, 1988; Levine & Renelt, 1992; Sachs & Warner, 1995a; Isham et al., 1997), that index has been critiqued based on the fact that it only measures outcomes, rather than governance itself (Durham, 1999). Another problem is that, at though the Freedom House components measure important facets of any society such as civil and political liberties, they are less appropriate to observe other governance-related matters (Knack & Keefer, 1995).

In contrast, Knack & Keefer (1995) use the ICRG components (i.e., rule of law; corruption in government; quality of the bureaucracy; risk of expropriation of assets; repudiation of contracts) to develop their measure of governance. Ever since, different scholars have utilised specific components of the ICRG index. For example, Sachs & Warner (1995b) used 'rule of law', Wei (2000b) used 'corruption', Acemoglu et al. (2001) used 'risk of expropriation' and Rodriguez & Rodrik (2001) have used the 'bureaucratic quality' component. However, it is argued that the ICRG measure of corruption is actually designed as an indication of the political risk associated with corruption, rather than corruption per se (Galtung, 2005). This is often missed by researchers who prefer to use this index as a direct measure of corruption. In addition, the ICRG index is considered to be prone to measurement errors (Torrez, 2002). Hence, these criticism have impelled scholars to develop more composite and aggregate measures of governance (Williams & Siddique, 2008).

Perhaps, as a composite measure of governance, the TI corruption index is rather a frequent institutional measure in the literature (e.g., Ng & Yeats, 1999; Wei, 2000b; Gyimah-Brempong, 2002; Torrez, 2002). However, the concern regarding the TI index is that escalation of the country coverage (from 41 to 175) with the number of data sources (12

data sources)[11] makes it less useful for comparisons over time, such as that attempted by Gyimah-Brempong (2002). Moreover, another composite measure developed by Gwartney et al. (1996) is the Fraser Institute's Economic Freedom Index (EFI). While the index's components are commonly used to measures a country's governance mechanism towards economic freedom (Gwartney et al., 2014), it has been criticised as being a rather heterogeneous collection of components (Leschke, 2000). In addition, combining governance measures (e.g., legal structure and property rights) with components that could be labelled as 'outcomes', or policies resulting from the quality of the institutions (e.g., as monetary policy and price stability) is one of the problems with this index (De Haan et al., 2006). Such problems certainly do not make EFI a poor indicator of 'economic freedom' but do establish it as a comparatively deficient indicator of governance (Williams & Siddique, 2008).

While many of the existing composite measures serve as imperfect representations of fundamental concepts of governance (Islam & Montenegro, 2002), the World Bank governance indicator (WGI) measures different aspects of the quality of governance (Kaufmann, Kraay, & Mastruzzi, 2009). For example, WGI measures the quality of institution or governance based on the severity of corruption, the extent of civil liberties, bureaucratic efficiency, the rule of law, and the predictability of policymaking. The WGI components has been most commonly applied and quoted by different scholars (e.g., Kaufmann et al., 1999b; Kaufmann et al., 2006, 2009; Arndt, 2008), as a result of its comprehensive documentation, use of sophisticated methodology and substantial country coverage (Knoll & Zloczysti, 2012). In addition, the WGI index includes those components, which have been proven to be highly inter-correlated by other researchers such as Al-Marhubi (2004) and Bjørnskov (2006). Moreover, Claeys & Manca (2011) show that the components of the WGI index are not contemporaneously related and the findings are not biased.

[11] Further information can be obtained from Transparency International See <http://www.transparency.org/cpi2014/in_detail#myAnchor4>

However, different studies have argued the technical limitations of the WGI index measure. For instance, Thomas (2010) argued that the WGI components lack empirical evidence of construct validity, while Kurtz & Schrank (2007) warns that the index suffers from biases and poor sampling method. Moreover, Langbein & Knack (2010) remain uncertain about the WGIs ability to capture different fundamental concepts of governance, as it presents strong empiric proof of content overlap and repetitive constructs. Hence, although it is commonly accepted that governance matters (e.g., Mallette & Fowler, 1992; Shivdasani & Yermack, 1999; Combs & Skill, 2003), yet researchers need to consider some important methodological issues when measuring governance.

Probing for an ultimate set of components of governance is certainly an exercise in futility, and it is also questionable that such set of components will ever be established (Williams & Siddique, 2008). However, this should not prevent scholars from testing representative components of governance. Therefore, despite the limitations of cross-country comparability due to large standard errors, incompatibility, and the methods used to aggregate from different sources (Kaufmann et al., 2007), scholars focus on some common components of governance (e.g., Kurtz & Schrank, 2007; Langbein & Knack, 2010). For example, scholars like Agrawal (2001), Bavinck & Chuenpagdee (2005), Mahon et al. (2005) and Ostrom (2007) discuss the substantive components, e.g., equity, efficiency, and sustainability to guide the advancement of governance objectives and outcomes. Alternatively, scholars discuss procedural components of governance, which include the laws, rules, and standards to guide decision-making processes through which governance objectives are established and intended outcomes are achieved (e.g., Kooiman et al., 2005; Lockwood, 2010). These substantive and procedural components are critical to contemporary theories of governance that set standards for how interactions among components of the governance system, i.e. within and between the 'governing system' and the social 'system-to-be-governed', are undertaken (Kooiman, 2003; Ostrom, 2007; Turner et al., 2014).

In view of that, Lockwood (2010) identifies seven components of governance particularly identified for natural resource management (legitimacy, transparency, accountability, inclusiveness, fairness, connectivity and resilience). In the same way, in climate change literature, Gupta et al. (2010) describe accountability, responsiveness to society, equity (fair rules), and legitimacy as components of good governance for the adaptive capacity of society. This view is consistent with Armitage (2005), Brooks et al. (2005), and Plummer et al. (2013), who found accountability and responsiveness to be important governance components of positive climate change adaption. Graham et al. (2003) also believe such components are relevant across a broad range of circumstances and diverse governance arrangements.

In contrast, a systematic search of the peer-reviewed public health and social science literature shows that other components of governance have also a significant and positive relationship with health outcomes (see, Ciccone et al., 2014). For example, Holmberg & Rothstein (2011) demonstrate that corruption perception, effectiveness, and rule of law have significant positive relationships with a better health outcomes. Similarly, Olafsdottir et al. (2011) demonstrate a significant association between health care system and governance components (i.e., voice and accountability, control of corruption, political stability, government effectiveness. rule of law, transparency, and sustainable economic opportunities). Besides, Burchi (2011) illustrates that government effectiveness, control of corruption, and greater democracy results in lower famine mortality. These studies found positive and strong associations of governance components with different health outcomes. However, scholars like Shandra et al. (2004) illustrate mixed and inconsistent associations; and Rajkumar & Swaroop (2008) show a moderating effect of governance components with health outcomes (e.g., infant and child mortality).

In foreign aid and governance literature, different studies use similar components of governance to measure their impact on foreign aid and development issues (In'airat, 2014). However, studies show that out of all components, corruption is the main issue that impairs

aid effectiveness (e.g., Ades & Tella, 1997; Collier & Dollar, 2004; Lahiri & Raimondos-Møller, 2000; Alesina & Weder, 2002). In addition, Svensson (2000) and Neumayer (2003) illustrate that corruption has a weak role for donor selectivity of aid recipient countries. For example, most aid donors favour countries with voice and accountability (Isham et al., 1997), better political and civil rights (Alesina & Dollar, 2000), and higher population rates (Neumayer, 2003). Moreover, international business (IB) literature emphasises corruption as a prominent characteristic of low governance quality (Chang et al., 2014). Similarly, studies in economics, politics, and business have also identified that corruption determines the direction of economic growth (Mauro, 1995; Mo, 2001), development of fair and efficient markets (Boatright, 2000) and amount of domestic investment and efficiency of government (Knack & Keefer, 1995; Mauro, 1995).

In addition to corruption, IB literatures also illustrate that political stability, ambiguous regulations, trustworthiness, transparency, capricious policies, enforceability of legal agreements, or even terrorism have a major effect on foreign firms' investment decisions, and on a country's investment environment (Stevens, 2000; Globerman & Shapiro, 2003; Gani, 2007; Slangen & Van Tulder, 2009; López-Duarte & Vidal-Suárez, 2010). From the above discussion it is apparent that, while the precise concepts and components of governance vary, reflecting their different social roots and impacts (Knack & Keefer, 1995), there is a strong empirical correspondence across components and sources (Drori et al., 2006).

From the above representation of different studies from different academic roots, there is substantial variability in the components that have been used to describe the function of governance. For example, components such as 'accountability', 'control of corruption', 'rule of law' and political stability or 'formulating policy' are included consistently across different studies, while others, such as 'conflict prevention', 'equity' or 'fairness' and 'sustainability' are less so. Additionally, a special issue on the evaluation of the quality of public governance by Bovaird & Löffler (2003) lists 10 governance components,

which have been repeatedly mentioned, both in the practitioner and academic literature. Besides, another systematic literature review in the fields of tourism, business, health and political science conducted by Ruhanen et al. (2010), identifies 40 different components that define governance. In their review, 26 components have been identified both in political sciences and corporate management fields, while the six most commonly cited components are power, effectiveness, structure, involvement, transparency, and accountability. While it is apparent that many attempts have been made to identify the key components of governance, following the structure suggested by Hill & Jones (1992) and the conditions recommended by Barbazza & Tello (2014) for selecting governance components, the current study identifies the components based on three principles:

(1) Fundamental Value: those components indicating the primary interests of the governance function, serving as the guiding values or components expected of good governance;

(2) Actionable Process: those components that engage in the processes of governing, specifying actionable processes for which the system's agent/agency has oversight power; and

(3) Outcome: those components that determine outcomes or objectives of good governance, functioning as possible components for measuring improvements

Based on the above principles, the current study will use control of corruption as fundamental values of governance, whereas accountability and rule of law will be considered as actionable processes. These components are considered as underpinning components of 'good' governance practice universally (Barbazza & Tello, 2014). Furthermore, the outcome will be measured through the effectiveness and efficiency of organisational safety compliance and performance issues.

Consistent and reliable rule of law is the outcome of a strong institutional structure (North, 1993; Schleifer & Vishny, 1993) that significantly minimises transaction costs (LiPuma et al., 2013). Indeed, institutions become unstable and deficient due to inconsistent rules of law, ineffective legal frameworks (La Porta et al., 1998), and corruption in the

system (Ehrlich & Lui, 1999; Doh et al., 2003). LiPuma et al. (2013) argue that corruption in governments and erratic execution of rules reduce efficiency and indicate a weak governance system or institutional structure. In addition, Barro (1996) illustrates that rule of law is positively and significantly linked to economic development. Various scholars also state that rule of law is an efficient measure of governance quality and it can be expressed through less corruption in the system (Knack & Keefer, 1995; Rodrik et al., 2004; Durlauf et al., 2005).

Additionally, different studies put special importance on corruption, as it is damaging for economic development (Schleifer & Vishny, 1993; Mauro, 1995; Ehrlich & Lui, 1999; Aidt, 2009; Haggard & Tiede, 2011). According to Ackerman (2004) the principal element that assures a strong government, is accountability. Similar views have been put forward by various scholars, for developing a strong governance structure (e.g., Hyden, 1992; Göymen, 2000; Ackerman, 2004; Batterbury & Fernando, 2006; Siddiqi et al., 2009). Good governance requires that policymakers act in the public interest and being accountable to the public is the fundamental governance principle (Anne-Marie, 2000). However, all these three components prescribe legitimate modes of exercising power (Licht et al., 2007) and present distinct inter-relationships (Azmat & Coghill, 2005). Hence, establishing these three components is very important for good governance practice. However, it is important to mention that these components and processes of governance are not absolute — their importance can be expected to vary between contexts and over time (Bovaird & Löffler, 2003). In the following subsection each of these three governance components will be discussed in detail.

2.4.2.1 Control of Corruption

Corruption, economic growth and the quality of institutions are related through a complex web (Aidt et al., 2008). As with many other social systems, the links between the corruption-growth-institutions nexus are of a causal (Swaleheen, 2011), non-linear nature (Méon & Sekkat, 2005; Méndez & Sepúlveda, 2006; Aidt et al., 2008) and can be observed at

both the macro and micro level (Méndez & Sepúlveda, 2006; Aidt, 2009; Beekman et al., 2013). While corruption and development are decisively linked (Mauro, 1995; Shleifer & Vishny, 1993; Olken, 2006; Ades & Tella, 1997; Truex, 2011), the extent to which corruption affects development has been a matter of debate (Mahmud & Prowse, 2012). However, corruption has been generally defined as the exploitation of public power for private benefit (Bardhan, 1997; Sandholtz & Koetzle, 2000). Hence, it is believed to impede development, inhibit the purposes of governance, and reason of severe social, economic, and political costs (Burki & Perry, 1988; Mauro, 1995; Kaufmann et al., 1999a; Treisman, 2000; Damania et al., 2004; Swaleheen, 2011; Krawczyk et al., 2013).

Due to the severe negative impacts associated with corruption, it has drawn the attention and been given high priority by various scholars, international organisations, governments, and even by the general public in both developed and developing countries (Nguyen & Van Dijk, 2012; Koudelková & Senichev, 2015). Besides, it is implicit that corruption is evident in developing countries (Kaufmann et al., 2000), but the evil hand of corruption is rampant to various degrees in all over the world. Indeed, political economists like Wang & Rosenau (2001: 26) argue that "*no region, and hardly any country, has been immune*" from corruption. Hence, as a concept, corruption has gained prominence all over the world (Judge et al., 2011; Petrou & Thanos, 2014) and entered in most people's vocabulary. Yet, many people have rather a slippery and ambiguous concept of what corruption actually involves (Bassiouni, 2008: 963; Cools et al., 2010: 207; Debiel & Gawrich, 2013: 50) and become indecisive when closing the line between corrupt and non-corrupt actions. Hence, a closer look at the concept of corruption is necessary prior to its incorporation in the study context.

In literature, many different definitions of corruption have been proposed (e.g., Leff, 1964; Klitgaard, 1988; Friedrich, 1989; Huntington, 1989; Bardhan, 1997; Goorha, 2000; Monte & Papagni, 2007; Kolstad & Søreide, 2009; Kolstad & Wiig, 2009; Sims et al., 2012; Ufere et al., 2012). For example, in a broad sense, corruption *"designates that which*

destroys wholesomeness" (Klitgaard, 1988: 23). Besides it has symbolically been labelled as a *"cancer that eats into the culture, the political and economic fabric of society and destroys the functioning of vital organs"* (Amundsen, 1999: 1). However, debates about how to define corruption are still very much based on the notion of Heidenheimer (1970), who defines corruption in four different perspectives as contrary to the public opinion, or public interest, or breach of public office norms, and from the perspective of the market. For instance, scholars like Rogow & Lasswell (1970), Philp (2001), and Gardiner (2007) define corruption as behaviour contrary to the public interest, focused on enhancing the private interests of the office-holder rather than those of the public. Alternatively, Nye (1967: 419) defines corruption as a "*behaviour which deviates from the formal duties of a public role because of private-regarding (personal, close family, private clique) pecuniary or status gains; or violates rules against the exercise of certain types of private-regarding influence*". However, Brown (2006: 59) takes a more general and holistic approach, when he defines corruption as *"the abuse of entrusted power"*. However, Andersson & Heywood (2009) criticise this view, arguing that only those who use entrusted power can be seen as corrupt. Hence, an authoritarian whose power was obtained by force and who cannot be trusted, would not be perceived as corrupt.

Furthermore, various other sub-category definitions of corruption have been attempted, such as political corruption. These definitions of political corruption define corruption as a: *"mediated corruption"*, where an open, accountable democratic process is denied for private or political gain (Johnston, 1996: 332). In contrast, corruption has been defined as *"duplicitous exclusion"*, where people are excluded from decisions that affect them (Warren, 2006: 804). Besides, it has been defined as the *"violation of the spirit and the principles of democracy"* (Stapenhurst & Pelizzo, 2004: 4). However, despite the difficulty of settling on a particular definition, there is argument that corruption refers to behaviours, where the power of public office is used for personal gain in a manner that contravenes the rule of the game (Jain, 2001; Sundström, 2015). Hence, corruption is widely understood as *"the abuse of public power for private gain"* (Bardhan, 1997; Treisman, 2000: 399; Sandholtz

& Koetzle, 2000: 32; Beekman et al., 2013) which captures everything from embezzlement to nepotism, from extortion to bribery (Kolstad & Søreide, 2009; Kolstad & Wiig, 2009; Truex, 2011; Ufere et al., 2012).

Corruption, whether it is embezzlement or extortion or nepotism or bribery, influences a society in a variety of ways (Mauro, 1995; Li et al., 2000; Méndez & Sepúlveda, 2006; Ahlin & Pang, 2008). Theoretically, there are two broad viewpoints on the impact of corruption on development (Méon & Sekkat, 2005; Aidt, 2009; Nguyen & Van Dijk, 2012). The intuitive argument that corruption causes economic stagnation and increases poverty ('sands the wheel') (Myrdal, 1968) can be compared against the logic where it is seen to improve efficiency through overcoming market failures caused by bureaucracies ('greases the wheel') (Leff, 1964). Although many found a negative effect of corruption on important macroeconomic factors, empirically the argument whether corruption sands or greases the wheels of an economy is still doubtful (Buia & Molinari, 2012). Different scholars have a strong argument to the claim that corruption may speed up an otherwise sluggish bureaucracy. For example, Vial & Hanoteau (2010) demonstrate evidence of corruption greasing the wheel through growth at the plant level output and productivity growth. Additionally, empirical analysis conducted by Dreher & Gassebner (2013) on 43 countries over the 2003–2005 demonstrates that corruption can be positive and indeed increases private entrepreneurial activity significantly. Furthermore, Méon & Weill (2010) argue that corruption is even positively associated with efficiency in countries with extremely failed institutions.

While some evidence challenges claims as to the adverse effects of corruption (e.g., Leys, 1965; Huntington, 1989; Li et al., 2000; Méndez & Sepúlveda, 2006; Méon & Weill, 2010; Dreher & Gassebner, 2013), predictably, macro-level evidence supports the 'sands the wheel' logic, which has a long-standing tradition (e.g., Buchanan et al., 1962; Rose-Ackerman, 1999; Qizilbash, 2001; Aidt, 2009; Haque & Kneller, 2009). Indeed, Shleifer & Vishny (1998) coined the term 'the grabbing hand' to describe how corruption may act as a

troubled device, hampering efficiency. A variety of cross-country studies (e.g., Mauro, 1995; Mo, 2001; Ahlin & Pang, 2008) on corruption shows a negative impact on country-level economic growth and investments. In addition, negative effects of corruption has been liked with *economic equity* (Gupta et al., 2002), *economic tax rates* (Picur & Riahi-Belkaoui, 2006), *economic efficiency* (Bovi, 2002), *FDI investment* (Wei, 2000a; Voyer & Beamish, 2004) and the *degradation of natural resources* (Welsch, 2004). Moreover, studies found negative effects of corruption on political, legal, and socio-cultural aspects. For instance, while Torrez (2002) demonstrates the negative effect of corruption on political openness to international trade, Zekos (2004) argues that it hampers the progression of a nation's rule of law. In contrast, Gupta et al. (2002) show that corruption and educational inequality have an inverse relationship, while Akhter (2004) demonstrate that corruption negatively impacts the level of human development. Besides, a meta-analysis conducted by Campos et al. (2010) found evidence in favour of the "sanding the wheels" view of corruption. Hence, the preponderance of evidence suggests that corruption is not the best way to be more efficient (Méon & Sekkat, 2005).

The literature also documents evidence that corruption has an adverse effect on the micro-level economy at the firm level (Frye & Shleifer, 1997; Berkowitz & Li, 2000; Svensson, 2003; Fisman & Svensson, 2007; Rand & Tarp, 2012; Nguyen & Van Dijk, 2012). For example, Fisman & Svensson (2007) show that a one percent rise in bribery reduces firm growth by three percent. Similarly, Rand and Tarp (2012) illustrate the negative relationship between bribe payments and firm growth. Besides, the ambiguity of a corrupt business environment also discourages firms' investment and expansion strategies (Ades & Tella, 1997), obstruct change and innovation (Murphy et al., 1993) and management practices (Athanasouli & Goujard, 2015). However, though studies investigate the effect of corruption on macro-level compliance issues (Levi et al., 2009; Sundström, 2013), evidence on the consequences of corruption especially in firm-level compliance and performance is scarce (Jiang & Nie, 2014; Paunov, 2016; Hanousek et al., 2017). Moreover, to date, the existing studies provide little knowledge of how corruption distorts the choice

of enforcing regulations in firm-level compliance factor, especially in organisational safety issues. Hence, there is a need to investigate how control of corruption can affect firm level safety compliance practice and safety performances. Consequently, the current study considers 'control of corruption' as a major component of good governance practice.

2.4.2.2 Accountability

Accountability has become an eminent topic in governance literature (Haque, 2000; Ackerman, 2004; Gershberg et al., 2012). The increasing appeal of the concept can mostly be described by the advancement of new governance models, where holding governing bodies answerable for their activities has been extensively adopted (Erkkilä, 2007). Different scholars and policymakers alike commonly agree to the fact that accountability, as a part of governance practice, is an essential prerequisite for positive economic development (Evans, 1995; Grindle, 1996; Bresser & Spink, 1999; Rose-Ackerman, 1999; Schedler et al., 1999; Manzetti, 2003). However, due to escalating interest in 'accountability' as a concept, the definition has become ambiguous (Hall et al., 2007). In fact, accountability itself covers social life in different ways (Ritchie & Richardson, 2000). Therefore, scholars have argued that the meaning of the concept remains evasive (Schedler, 1999; Keohane & Joseph, 2001; Held & Koenig-Archibugi, 2005) and definitions of the concept have proliferated (Sinclair, 1995: 221; Mulgan, 2000; Dubnick, 2003: 2-3). While consistently difficult to define (Day & Klein, 1987), and theoretically loaded (Munro & Mouritsen, 1996), accountability can take many forms and can be used at different context across organisations and society at large (Sinclair, 1995; Haque, 2000). Hence, the first obvious step is to denote exactly what is meant by 'accountability'.

Accountability is a multipurpose concept with different elusive meanings to different people (Bovens, 2007; Joannides, 2012). In modern academic and political dialogue, 'accountability' often functions as a theoretical umbrella that encompasses various individual dimensions, such as integrity, responsibility, responsiveness, efficiency, democracy, equity or transparency (Mulgan, 2000; Dubnick, 2002). In fact, Koppell (2005)

identifies five different meanings of accountability; responsiveness, transparency, responsibility, controllability, and liability, each of which itself is a very wide-ranging notion themselves. However, Schedler (1999: 14-15) defines accountability as the combination of two ideas: answerability -*"the right to receive information and the corresponding obligations to release details"* -and enforcement -*"the idea that accounting actors do not just 'call into question' but also 'eventually punish' improper behaviour"*. In addition, Jones (1992: 73) defines accountability as a *"process of being called to account for some authority for one's actions', or a process of 'giving an account".* Both the definitions comprise the logic of answerability (Bovens, 2005; Dubnick, 2005: 410-411) and social interaction and exchange in terms of enforcement (Mulgan, 2000). Hence, in a generic sociological sense, accountability appears to offer a mutual platform that denotes the *"giving and demanding of reasons for conduct"* (Roberts & Scapens, 1985: 447; Messner, 2009; Joannides, 2012).

Accountability is regarded as answerable, i.e. *"the obligation to give an account of one's actions to someone else"* (Scott, 2006: 175). Such obligations are shaped and/or enforced through the acquisition of implicit norms and explicit standards (Kearns, 1966) and specific organisations, groups, or individuals become answerable for them (Mashaw, 2006). Implicit norms include mutuality and trust (Behn, 2001), policy objectives (Stone, 2002), democratic values (Sørensen & Torfing, 2005) and norms of principal-agent relationships (Milward & Provan, 1998), while, explicit standards include *"codified laws, administrative regulations, bureaucratic checks and balances, or contractual obligations to other organisations"* (Kearns, 1966: 66). According to Lerner & Tetlock (1999) the totality of these explicit standards and implicit norms related to the requirement of clarification of a conduct is normally referred to as accountability. Broadly, it can, therefore, be assumed that accountability is a state of affairs or the performance of an actor that comes close to 'responsiveness' and 'a sense of responsibility'—a willingness to act in a transparent, fair and equitable way (Bovens, 2007).

Nevertheless, Bovens (2005: 148) offers rather a compact notion of accountability, as *"a social relationship in which an actor feels an obligation to explain and to justify his or her*

conduct to some significant other". From this definition, it is apparent that accountability is mostly related to a delegation of power between actors (principal) and others (agents) that helps to align the interest between the principal and agent (Gray & Jenkins, 1993; Sinclair, 1995; Broadbent et al., 1996). However, to assign the role of agent and principal (i.e., who is who), the questions of who is answerable to whom and why they are answerable to each other needs to be answered (Erkkilä, 2007; Messner, 2009). Such arguments have given rise to the debate on accountability of stakeholders within and beyond organisational boundaries (Romzek & Dubnick, 1987; Deleon, 1998). Therefore, different forms of accountability have been distinguished based on vertical vs. horizontal (Barberis, 1998; Mulgan, 2000; Bovens, 2005; Hodges, 2012), direct vs. indirect (Polidano, 1998) and internal vs. external sources of authority (Romzek & Dubnick, 1987; Romzek, 2000). Such different forms of accountability verify that there are no universal solutions for structuring accountability and it can be functional and applicable to different contexts (Peters, 1989: 252-253; Sinclair, 1995; Romzek, 2000: 34-35; Dubnick, 2005: 37; Erkkilä, 2007). Hence, in the current research context, accountability will be considered as a check of government action on organisational safety activities, as it allows for the implementation of direct public control.

Accountability is vital to provide a democratic channel to regulate and monitor government behaviour in order to avoid the growth of power concentrations and to develop the learning ability and efficacy of public administration (Aucoin & Heintzman, 2000). It also provides the information needed for judging the propriety and effectiveness of the government (March & Olsen, 1995; Mulgan, 2000) and prevents corruption (Schedler, 1999; Strøm, 2000). In addition, it is considered as an instrument to drive governments, agencies and individual officials to be active in carrying out their commitments (Aucoin & Heintzman, 2000; Bovens et al., 2010). Indeed, in an event of oversights and faults; the likelihood of being punished by stakeholders motivates governments, agencies and individual officials to organise their actions more responsibly. Particularly, they tend to use external reporting instruments, which cover multiple areas such as financial control and

equity over public resources, cost and quality of services, supervision and use of resources and different other forms of accountability (Sinclair, 1995; Shaoul et al., 2012). As a result, accountability has made an impact on a diverse range of activities, from enforcement of workplace rights to service delivery (e.g., complaint mechanisms, community monitoring and social audit) to natural resources management to policy impact on community to the society at large (e.g., value for tax money or policy outcomes) (Almquist et al., 2013; Lambert-Mogiliansky, 2015). Hence, accountability is a crucial link in this study, as it provides a systematic device to confront responsible actors with information about their activities and require them to disclose the successes and failures of their policy.

In Bangladesh, the external pressures on organisations, e.g., laws, regulations, and effective supervision, do not seem to be working adequately, due to lack of accountability, poor control of corruption and weak rule of law (Azmat & Coghill, 2005). Hence, incorporating accountability as an answerable and actionable process will force organisational actors to be answerable for their activities; specifically, answerable to the principal (stakeholders, government or international governing body) regarding their compliance policy and employee wellbeing. It will also help the principals to monitor organisational administration policy on safety compliance practices and conduct of employee welfare matters. Nevertheless, due to the fact that accountability and control of corruption depend on the enforcement of effective formal legal rules (see Knack & Keefer, 1995; Mauro, 1995; Kaufmann et al., 1999b; O'Donnell, 2004), it is important to review the concept of 'rule of law' before integrating it into the study.

2.4.2.3 Rule of Law

The study of the 'rule of law' has a long history (Dawson, 2013) and the notion can be traced back to Aristotle (Levinson, 2011: 60) who wrote: "Law should govern". However, the origin of the concept can be first found in the book, *Leviathan*, Parts I and II by Hobbes ([1651] 2010: 165). In his book, he discusses the sovereignty of institutions that has the power of prescribing the 'rules' that will *"let every man know what goods he may enjoy, and*

what actions he may perform" to provide a social order. Subsequently, Dicey (1915) offered the rational underpinnings of the nature and general application of the rule of law, upon which the contemporary notion is shaped. Since then, many have incorporated the concept into their ideologies. However, during the last 20 years, there has been a resurgence in theoretical and empirical interest in the rule of law, particularly in political science, economics and law (Dawson, 2013; Gani & Scrimgeour, 2014). For example, various scholars have argued that the rule of law is not only associated with *economic development* (North, 1990; Acemoglu et al., 2001; Dam, 2006) but also with *democracy* (Diamond, 2008; Rigobon & Rodrik, 2005), *foreign aid allocation* (Brautigam, 1992; Burnside & Dollar, 2004; Kleinfeld, 2012), *poverty reduction* (Tebaldi & Mohan, 2010) and with the issue of *human development* (e.g., health and education—see Kaufmann et al., 1999a; Dawson, 2010). Yet the concept of the rule of law remains ambiguous and scholars have not been adequately attentive to resolving the issue (Haggard & Tiede, 2011).

In modern economic language, 'rule of law' means what North (1990) specifies as protection of property rights, which involves the legal rights in ownership of tangible and intangible property, mainly referring to 'law and order'. At the core, law and order are concerned about the level to which the behaviour of government jurisdiction and individuals follows formal legal rules, which is often identified as the procedural feature of the rule of law (Licht et al., 2007). However, within the existing literature, the concept is often divided based on a thick (broad, substantive) and a thin (narrow, formal) definition of rule of law (Janse et al., 2007; Koyama & Johnson, 2015). For example, narrow definitions by scholars such as Dicey (1915) and Fuller (1969) include that rules are public, not retrospective, and consistent over time and individuals are equally subject to the law, which is general and applicable uniformly to everyone. In contrast, broad definition by scholars such as Hayek (1960), Weingast (1997), and Haggard et al. (2008) focus on how the availability of legal proceedings secures institutional arrangements and human rights that are beneficial for the growth of a market economy. Hayek (1960: 213) argue that rules and regulations should be applied without regard to persons and should be of some stability so

that citizens can have reliable expectations of legitimacy and a certain level of abstraction. Additionally, in his broader definition, Booth (2007: 136) goes beyond the mere legal rules, arguing that "*the 'rule of law' is not conceived as a body of rules but as a set of principles that have been derived from the search for remedies to particular disputes".* While this definition brings different and new thought on the debate, Raz (2009) argues for a thinner and solely procedural based definition[12]. However, despite having broader and narrower definition, conventionally the concept is perceived as providing legal assurance and expectedness, so that individuals know and understand what is prohibited, permitted, and ordered (Buitelaar & Sorel, 2010; Ebbesson, 2010; Koyama & Johnson, 2015). Hence, as a reference point, the current study takes the orthodox ideal of legal rules that set principles and guide lawful behavioural actions.

In the domain of economic literature, the fundamental theoretic process linking economic development to 'rule of law' goes through contract enforcement and property rights (Coase, 1960; Alchian & Demsetz, 1973; Williamson, 1985; North, 1990; Dam, 2006). Various studies have demonstrated that strong rule of law is related to better long-run macro-level (Scully, 1988; Clague et al., 1996; Knack & Keefer, 1995; Keefer & Knack, 2002) and micro-level economic performances (Libecap, 1993; Alston & Libecap, 1996; Kaufmann, 2004; Malesky & Taussig, 2009). In contrast, political and legal scholars include institutional checks on executive discretion, as an essential part of 'rule of law' (Haggard & Tiede, 2011). It is argued that without implementing effective institutional checks and balances on executive discretion, contract enforcement and property rights cannot be credible (Buchanan et al., 1962; and Hayek, 1973 on constitutions; Dicey, 1915; Hayek, 2001; Cass, 2001 on the role of courts). For example, cross-national database on institutional checks on government has illustrated a positive relationship between institutional checks and *economic growth* (Henisz, 2000a), *telecommunications* (Henisz & Zelner, 2001; Stasavage,

[12] According to Raz (2009: 211) rule of law is a 'non-democratic legal system, based on the denial of human rights, on extensive poverty, on racial segregation, sexual inequalities, and religious persecution may, in principle, conform to the requirements of the rule of law'.

2002), *investment in infrastructure* (Henisz, 2002), *FDI* (Henisz, 2000b), and the *stability of policy* (Henisz, 2004). Besides, institutional checks on executive discretion can also influence control of corruption. For example, due to lack of formal institutional checks on executive discretion, countries in East Asia such as Vietnam, China, Indonesia, Malaysia, Thailand, Taiwan, and Korea suffer from widespread corruption in their transformative growth experiences (Campos et al., 1999; Rock & Bonnett, 2004).

Furthermore, 'rule of law' based governance not only has significant impacts on the political and economic aspects but also on social aspects (Haggard & Tiede, 2011). For example, in environmental literature, the general proposition is that industries with rule-based governance can curb the detrimental effects of market activities such as those causing water pollution associated with industrial activity. Meiners & Yandle's (1998) review of common law experience indicates that the rule of law can be effective in protecting environmental rights. Olson (1996) argued that legal systems that impartially establish clear rules and enforce rules of operation can facilitate productive cooperation among market players. Alternatively, absence or ineffectiveness of 'rule of law' can increase the difficulty of regulatory institutions in enforcing control measures or restrictive contracts, which can work in favour of firms where control of compliance may be difficult (Gani & Scrimgeour, 2014). As a result, the rule of law becomes an essential element in terms of compliance issues of industries. Hence, the current study implements the 'rule of law' as an actionable process of the governance system, which will control and regulate organisational and industrial safety compliance practices and policies.

The inclusion of the rule of law, control of corruption, and accountability in this literature is to capture specific attributes of a country's governance that are relevant for organisational compliance and policy formulation issues. The choice of these governance components is based on the contention that the quality of institutions (law and order, low corruption, the capacity of governments to formulate and implement sound policies, and the involvement of citizens in national policy-making) are fundamental in minimising

organisational disasters such as fire and collapse accidents. The current study focuses on organisational degradation and examining the compliance practice by manufacturing industries, which can be considered as an outcome of the market-based economic activity. According to Rodrik (2008) and Dixit (2009), market based economic activities cannot succeed unless appropriate institutions support governance. The study considers that measurement of good governance as a relevant aspect of institutional quality that can make a difference and facilitate market activities. Hence, the current study focuses on the rule of law, control of corruption and accountability for assessing the impact of good governance on organisational safety practices and policies.

2.4.3 Summary

Using the selected components will serve several useful purposes for this study. First, these components of governance will help to minimise the principal-agent conflict and reduce agency cost (P.145, 168-169). For example, moral hazard (the agent engaging in corrupt activities) should be reduced by ensuring that the principal has sufficient and reliable information about the agent and his actions (accountability and transparency) and can use rule of law to punish transgressions and maximise economic benefit. Secondly, the study will analyse the impact of good governance practice on the micro organisational practice rather than only focusing on the macroeconomic or political aspect of a developing country. For instance, if the rule is properly monitored and metered, rules become a barrier for corruption that makes it cheaper for organisations to comply with the rule rather than taking part in it (offering a bribe). Hence, apparently strong governance helps to change the organisational practice compared to weak governance setup. Finally, this study will try to comprehend the interplay between institutions, good governance and organisational safety practices; and how they combine to set the foundation for employee compliance and performance activities. Therefore, one of the strands of this study is to capture the inclusive effect of governance on organisational safety practice, rather than explaining the comprehensive mechanisms of the governance components.

Chapter 3

Conceptual Framework Development

3.1 Introduction

A conceptual framework is a depiction, either in narrative or illustrative form, of the presumed relationships between undeveloped thoughts or variables (Punch, 2013: 83). Developing the conceptual framework is believed to be the technique of streamlining the tasks of a research (Fisher & Buglear, 2010: 138). Fundamentally, the framework offers focus, simplicity, structure and coherence to the research tasks (Punch, 2013: 83) and manoeuvres confusion into clarity and certainty. In a qualitative study, developing a conceptual framework is relatively less essential or logical, as the study formulates and builds new theories and it is less structured in the description (Leedy & Ormrod, 2014: 142). However, in quantitative research, developing a framework is an essential phase, as based on well-developed theories, the quantitative study explains the research questions or hypotheses (Collis & Hussey, 2014: 210). Indeed, this is relevant to the current study, as based on different theories, the preceding chapter (chapters 2) have provided an in-depth literature review on the main ideas related to this research (i.e., institutional perspectives, good governance, safety climate, and safety performance). This suggests that the current study needs to develop a conceptual model to communicate the ideas and integrate those ideas into one diagram. For this reason, this chapter develops a conceptual research framework based on the literature discussed in previous chapters. In this conceptual framework, institutional perspectives represent the independent variables, whereas good governance and safety climate are the mediating variables, and organisational safety performance is the dependent variable.

The first section of this chapter presents the theoretical background that has been used to develop the research framework. Then the chapter outlines the interrelationships within the

institutional and safety climate factors based on the existing empirical research. Next, the chapter discusses the relationships between institutional perspectives, safety climate, and safety performance factors. The final section of the chapter discusses the interrelationships of governance factors along with their relationships with institutional perspectives, safety climate, and safety performance factors. Finally, the chapter uses the proposed hypothetical relationships to map theoretical framework and closes with a summary.

3.2 Theoretical Application of the Current Study

Evidence-based studies on safety and risk in the working environment and their related outcomes have dramatically surged throughout the last decades (e.g., Hofmann & Stetzer, 1996; Cheyne et al., 1998; Neal et al., 2000; DeJoy et al., 2004; Huang et al., 2006; Cavazza & Serpe, 2009; Kvalheim & Dahl, 2016). While in previous years understanding of preventive measures and interventions lagged behind due to methodological barriers, recent reviews show that knowledge on safety risk prevention and intervention is growing steadily (Ruotsalainen et al., 2006; Robson et al., 2007; Lehtola et al., 2008; Mengolini & Debarberis, 2008; Hale et al., 2010; Nielsen et al., 2010; Jongejan et al., 2012). However, having knowledge about something does not necessarily mean that the knowledge has been put into practice. In fact, the growing knowledge regarding safety risk prevention and intervention does not seem to have fostered any substantial development of the working environment (Hämäläinen et al., 2009; Schneider et al., 2010). Therefore, it is necessary to convert this evidence-based knowledge to functional policy and ensure that these instruments are being put into organisational practices (Hasle et al., 2014).

Now the question is what causes an organisation to conform to or absorb these policies? The more we comprehend the motives for conformity, the better we advance our knowledge of the instruments that make the policies work in an efficient manner. Institutional perspectives offer a vital theoretical lens on the organisational motives for conforming to societal efforts that

influence and drive the application of preventive occupational health and safety measures (Rocha, 2010). Institutional forces formalise behaviours and structure the constitution of regular economic activities (DiMaggio & Powell, 1983; North, 1990), hence regulating the actions of different economic actors in a particular environment (Scott, 2008b). In fact, organisations do not function in isolation; rather, they need to agree on the regulation of their surrounding environment (Hossain et al., 2015). Institutional pressure affects the way organisations shape their economic activities, strategies, policies, and operations in different types of market economies.

The institutional lens helps to prescribe behaviour that allows for legitimisation, explanation, and the motives for organisational behaviours and their practices (Hasle et al., 2014). Therefore, there is a need to better understand how different institutional perspectives can shape the implementation and functioning of occupational health and safety policy instruments in organisational practices. However, a limited number of scholars have paid attention to developing understanding of how different types of institutional perspectives systematically affect the implementation of safety climate practice in the organisation. Therefore, the current study aims to develop and empirically tests a conceptual framework to explain how three different institutional forces or perspectives (regulative, normative, and cultural-cognitive) systematically influence safety climate in Bangladeshi RMG industry.

Nevertheless, another question arises during the formation of the conceptual model. For instance, the theoretical viewpoint of the institutional perspective suggests that organisations conform to the expectations of institutions and stakeholders (e.g., norms, traditions, management fads, and so on) to enhance or protect their legitimacy (DiMaggio & Powell, 1983; Aldrich & Fiol, 1994; Scott, 1995). In that case, the question remains, while striving for legitimacy, why do organisations not always conform to the institutional forces? Indeed, organisations can sometimes challenge and control their institutional environments through

pro-active and deliberate strategies (Oliver, 1991; Suchman, 1995; Tsai & Child, 1997). In this scenario, the agency theory can provide important insights into organisations' motives to react in certain ways that are not prescribed by their surrounding institutions. Agency theory perceives that principals (i.e., institutions) and agents (i.e., organisations) are utility maximising individuals, where self-interested behavioural tendencies can create misalignment between their interests (Kim et al., 2005). Such misalignments result in agency costs (Wiseman & Gomez-Mejia, 1998). Hence, to control agents' self-serving behaviour and ensure agent-principal interest alignment, governance mechanisms have been prescribed (Eisenhardt, 1989; Hill & Jones, 1992; Davis et al., 1997).

The current study is grounded on a belief that governance mechanisms and an institutional perspective can help in explaining why, despite having an obligation to comply with institutional settings, developing countries like Bangladesh are facing organisational indiscretions, non-compliance and accident issues in the RMG sector. Taking an agency theory perspective towards governance, the current study shows how agency approaches are corresponding with the institutional elements at the micro levels (Henisz et al., 2012). The theoretical contribution of this approach is positioned in the extension of institutional and agency theory by defining their competence in synchronization across organisational levels. Simultaneously, it will contribute to existing literature by putting forward a multi-theoretical model which includes a governance mechanism to facilitate the impact of institutional perspectives on the adoption of organisational safety practice and compliance issues. However, there is little empirical evidence to explain how a governance mechanism can mediate the adoption of organisational safety climate practices through institutional perspectives. Therefore, the current study uses a conceptual framework, which involves governance mechanism as a mediating factor to evaluate the relationship between institutional perspectives and organisational safety practices and performance.

3.3 Relationships among Institutional Constructs

Even though it is firmly believed that institutions constrain organisational behaviours, institutions also offer purpose and stability to organisational behaviours (Scott, 2010). The foundation of such behaviours in which individuals engage and which organisational structures legitimise is thus considered as a combination of power, norm, and culture dependent processes that stop institutions from being continuously scrutinised (Wicks, 2001). In other words, different types of behaviours promote different types of legitimacy, which is the condition of conforming to relevant rules, normative support and alignment with cultural elements (Scott 1995: 45). Hence, since institutions can affect organisations in different ways and legitimacy can be obtained in many forms, there are several modes by which institutions are formed, sustained and become influential. In discussion of these issues, Scott (1995) provides a simple but comprehensive arrangement of three institutional perspectives: the regulative, the normative, and the cultural-cognitive. Together, these three perspectives are crucial in explaining three questions. The cultural-cognitive perspective addresses common frames of reference and taken-for-granted beliefs to tune up the behaviour in the organisational field; the normative perspective sets socially determined expectations driven by the obligations and morals of the members of the organisational field, whereas the regulatory perspectives focus upon conformity to sets of rational rules that have a powerful effect on how organisations interact with each other. These three perspectives affect organisational actions by structuring, endorsing, mediating, and channelling the institutional environment, which offers a foundation for legitimacy.

The regulative perspective represents regulations, policies, rules and laws that individuals or organisations must adhere to (Scott, 2008c; Veciana & Urbano, 2008). According to Scott (1995: 35), the regulative perspective guides and establishes the social behaviour by means of 'rule-setting, monitoring, and sanctioning activities'. In other words, it deals with the way a social community sets rules, monitors whether they are complied with, and how violation

of prescribed rules is sanctioned. Therefore, power is the central idea behind this regulative perspective, the source of institutional influence that assures conformity. This advocates a logic of 'consequentiality' (March & Olsen, 1989: 161) or 'instrumentality' (Scott, 1995: 35), through which organisations or individuals (agents) make rational choices for maximising self-interest and establish legitimacy by functioning in compliance with relevant legal obligations (Oliver, 1991).

The normative perspective represents the right and wrong, not from a legal point of view, but rather from a moral and social standpoint (Busenitz et al., 2000). It incorporates generally acknowledged informal prescriptions of desirable or acceptable human behaviour such as goals, beliefs, values, and norms (Hillman & Wan, 2005). Values set the standards of what is preferred or regarded as appropriate (e.g., creating social value or generating profits), whereas norms deal with the way things should be done (e.g., how to play fair in the market). Therefore, the normative perspective outlines human behaviour mostly through the influence of social obligation, rooted in a 'logic of appropriateness' (March and Olsen 1989: 161). This perspective is one of a subjective social reality often merged into regular routines that define roles and beliefs in the appropriate action required for people in particular social positions (Wicks, 2001).

The cultural-cognitive perspective represents taken-for-granted symbolic systems: habits, practices, or mental schemas which build upon neither norms or rules, but on commonly obtained views of the way things work around here (Hasle et al., 2014). These are the shared conceptions of reality or social knowledge through which individuals notice, categorise, and interpret stimuli from their environment (Owens et al., 2013). Its impact and legitimacy offered to a society stand on the common 'frame of reference' (Stenholm et al., 2013) or understanding of a certain context, which is approved and shared between individuals (Zucker, 1977). However, this institutional notion emphasises the existence and interdependence of the regulative, normative, and cultural-cognitive perspectives that provides different foundations

of social order (Scott, 2001; Drew & Kriz, 2012). Together, these three perspectives of institutions form a comprehensive set of protocols that identifies important problems and develops appropriate actions (Hoffman, 1999).

According to Scott (2008b), the regulative and normative perspectives can be mutually reinforcing, while the cultural-cognitive perspective is the bedrock of regulative controls and normative perception. Indeed, the cultural-cognitive perspective lays the foundation for the other two perspectives, as rules and norms must refer to institutionally founded entities (Scott, 2010). These three perspectives can exert an independent effect on social orders, while it is possible to identify situations in which one or another is predominant, and they appear in different combinations to collectively underpin existing social arrangements (Scott, 2010: 7). Nevertheless, the question remains, how do regulative, normative, and cultural-cognitive perspectives interrelate? Until now, little empirical research has been done to identify the relationships among these three perspectives. Further, various scholars (e.g., Scott, 2008a; Alexander, 2012; Abdelnour et al., 2017) have also urged that studies should seek to recognise the dimensions of the three institutional perspectives and develop understanding of how the perspectives relate to each other. Furthermore, according to Szyliowicz & Galvin (2010) socio-cultural, political and normative institutions are reflected through the regulations and legal system of a country. Hence, regulatory institutions cannot be considered to be developed in a vacuum. Rather, conventional institutional work scholars (e.g., Dobbin et al., 1993; Edelman & Suchman, 1997; Edelman et al., 1999; Dobbin & Dowd, 2000) have considered that particular legislative systems are shaped by the wider cultural and normative context. Therefore, to identify the relationships between institutional perspectives in the present research context, this study posits that:

***H_{1a}**: The cultural-cognitive perspective has a relationship with the normative perspective of institution.*

$\boldsymbol{H_{1b}}$*: The cultural-cognitive perspective has a relationship with the regulative perspective of institution.*

$\boldsymbol{H_2}$*: The normative perspective has a relationship with the regulative perspective of institution.*

3.4 Relationships among Safety Climate Constructs

Safety climate refers to employees' shared perception of safety-related policies, procedures, and practices in the workplace or the relative importance of safety in an organisation (Zohar, 1980; Cooper & Phillips, 2004; Huang et al., 2006; Beus et al., 2016). In a working environment, safety climate surfaces through the establishment of common perceptions of safety systems along with operational norms related to safety (Schneider et al., 2002). While different studies have analysed the composition of the safety climate constructs in organisations, no consensus has been reached on the structure of safety climate dimensions (Vinodkumar & Bhasi, 2009; Liu et al., 2015; Dahl & Kongsvik, 2018). For instance, meta-analysis and review of previous studies have established that management safety commitment is a recurrent dimension for the safety climate construct (Flin et al., 2000; Seo, 2005; Evans et al., 2007; Beus et al., 2010b). Additionally, Seo et al. (2004) identify management safety commitment, supervisor safety support, co-worker safety support, employee participation and competence as five common themes in the safety climate construct. Moreover, a review by Flin et al. (2000) on eighteen different safety climate surveys shows that management, safety systems, risk, followed by work pressure and competence are the most frequent dimensions.

On the contrary, other studies show that safety knowledge, supervisory support, safety training, safety communication, safety rules and procedures, co-workers support, and work pressure are commonly used dimensions of safety climate construct (e.g., Seo et al., 2004; Flin et al., 2006; Olsen, 2010; O'Connor et al., 2011; Brondino et al., 2012; Huang et al., 2012a). Even though safety climate constructs have differed from study to study, a systematic review on

safety climate (Chapter two) shows that safety climate usually includes management commitment, supervisors' safety support, safety training, safety communication, and risk assessment to measure safety in the manufacturing industry. As mentioned earlier, in Chapter two, these five different dimensions will represent the safety climate construct in the current study context.

3.4.1 Relationships between Management Safety Commitment and Other Safety Climate Factors

Management safety commitment has been recognised as the fundamental component of safety climate measurement by prior safety studies (e.g., O'Toole, 2002; Huang et al., 2006; Fernández-Muñiz et al., 2007; Beus et al., 2010a). Since management can affect the perceptions of different organisational factors among workers (Neal et al., 2000), their action is the most important factor for controlling the success of safety initiatives (Cui et al., 2013) and establishing a secure work environment (Bosak et al., 2013). Indeed, as management in organisations formulates safety policies, establishes procedures and sets objectives, their behaviour provides indications about work-related safety norms and actions expected to be valued, supported, and rewarded (Zohar, 2003; Morrow et al., 2010). As a result, in most situations, workers' actions and reactions in safety activities are directly affected by the actions of their leaders or by their management (Hsu et al., 2010). However, on a practical level, it is not adequate just to formally declare safety principles; rather, noticeable activities are required from the management (Fernández-Muñiz et al., 2012). Therefore, management should demonstrate safety commitment through their behaviours and practices to influence the prioritisation of safety in an organisation so that the employees can perceive such safety commitment (Hofmann et al., 1995; Griffin & Neal, 2000).

Management can clearly demonstrate their commitment toward safety through visible behaviours such as talking about safety (safety communication) and investing resources to

secure workplace safety (e.g., safety training). For example, management can communicate an attitude about safety concerns to the workers and subsequently such attitude influences the way workers conform to the workplace safety rules and practices (Flin et al., 2000; Rundmo & Hale, 2003). Additionally, management committed to safety can foster communication through an implicit and explicit statement to workers about the significance and value of workplace safety that ultimately influences workers' safety-related behaviours and attitudes (Manapragada & Bruk-Lee, 2016). Hence, possibly, the greater the managers' commitment to safety, the greater the flow of organisational safety communication. Moreover, organisational support theory assumes that employees will show positive work-related outcomes in exchange for training (valued resources) received from management (Michael et al., 2005). Management commitment can motivate workers to capture effectively the necessary information in safety training, which ultimately results in lower injury rates and helps with improving the organisational safety environment (O'Toole, 2002; Demirkesen & Arditi, 2015). Hence, apparently high safety commitment from management can have an impact on preparation of safety training that can predict the future injury rate of the employees (Huang et al., 2012a). Hence, the following hypotheses related to management commitment are suggested:

$\boldsymbol{H_{3a}}$*: Management safety commitment has a relationship with safety communication.*

$\boldsymbol{H_{3b}}$*: Management safety commitment has a relationship with safety training.*

Additionally, various scholars (Simard & Marchand, 1994; Thompson et al., 1998; Hsu et al., 2008) argue that management safety commitment positively influence supervisory practice. In fact, management establishes arrangements to facilitate policy execution, whereas supervisors implement those policies through situation-specific activities (Zohar, 2000). For instance, management safety commitment makes supervisors more cautious about safety administration, along with task directions, team collaboration, safety reporting and safety progress monitoring (Hsu et al., 2010). Furthermore, studies have confirmed that constant

support from management is essential to the success of safety interventions (e.g., Saksvik et al., 2002; Hale et al., 2010), as it is mandatory to assist supervisors to ensure workers' wellbeing (Hale & Hovden, 1998; Hale et al., 2010; Law et al., 2011). Therefore, from the above discussion the following hypothesis is suggested:

H_{3c}: *Management safety commitment has a relationship with supervisors' safety support commitment.*

3.4.2 Relationships between Supervisor Safety Support and Other Safety Climate Factors

While top management governs, supports, and reinforces organisational safety efforts, the contribution of the supervisor is perceived more in terms of actions taken and competence with which they handle their responsibilities (Bailey, 1997). Supervisors play a vital role in conveying management's commitment to workers through their task-oriented action patterns (e.g., supervisory safety practices/support) (Zohar & Luria, 2004; Olsen, 2010). Various studies show that supervisors' relationship with subordinates is more persuasive in inspiring subordinates' safety performance and outcomes than an organisation or upper management itself (Stinglhamber & Vandenberghe, 2003; Agnew et al., 2013; Kouabenan et al., 2015). Hence, supervisors have become a dynamic property for ensuring safety in manufacturing organisations (Michael et al., 2006). Previous research recommends that supervisors can influence the safety behaviours and attitudes of their subordinates in different ways. For instance, Mearns et al. (2003) state that first-line supervisors play a vital role in influencing workers' risk assessment and safe working practices in teams. Additionally, in a construction site setting, Meliá et al. (2008) argue that subordinates can see the supervisor's safety responses, which ultimately can affect the risk assessment of construction workers. Furthermore, a meta-analytic study conducted by Beus et al. (2010b) demonstrates that supervisors' safety referent role increases worker's awareness of workplace safety and thus

influences perceptions of job risk. Hence, it can be hypothesised that supervisors' support can influence employees' perception regarding safety within an organisation and hence, the following hypothesis is suggested:

H_{4a}: *Supervisor safety support has a relationship with employees' safety risk assessment.*

Supervisors, particularly in RMG manufacturing settings, are typically responsible for applying safety procedures and coordinating safety training for workers. In that situation, through the training, workers witness how their superiors execute their company's safety policies and procedures. Different studies have shown that supervisors support in training has a substantial impact on employees' drive to transfer training into the workplace setting (Van der Klink et al., 2001; Worsfold & Griffith, 2003; Scaduto et al., 2008). According to Grossman & Salas (2011: 113) supervisors can provide support in several ways and at multiple stages of the training process. For instance, before the training, supervisors can demonstrate their support by conveying training goals and objectives, and generally informing employees of the criteria of acceptable performance (Cohen, 1990; Seaman & Eves, 2006; Lisa & Holly, 2007). When workers understand specific goals and receive relevant information before training, they perceive the responsibility to acquire knowledge and identify training as compulsory (Locke & Latham, 2002; Chiaburu et al., 2010). In addition, after training, supervisors can support workers to transfer newly acquired skills in the workplace (Taylor et al., 2005; Robbins & Judge, 2013: 554). Therefore, seemingly supervisors' support can influence workers' preparation and motivation for safety training and ultimately facilitate the transfer of their learning to safety behaviours. This leads to the following hypothesis:

H_{4b}: *Supervisor safety support has a relationship with safety training.*

Regular communication between supervisors and subordinates are a crucial organisational feature. Supervisors' support has long been associated with the level of

employees' safety communication. For instance, Hofmann & Morgeson (1999) suggest that workers become more committed to safety when they perceive positive organisational support and obtain safety support from supervisors. In addition, Kath et al. (2010) show that supervisors' safety support increases safety communication. Such a relationship is also supported by the study conducted by Casey & Krauss (2013) in a South African mining site. Since, in the RMG manufacturing settings, top management directives are interpreted and delivered by supervisors, in the current study, it is expected that supervisors' support will facilitate management's safety commitment and improve safety interaction with workers. Therefore, to identify the relationships between supervisors' support, and safety communication and training, this study suggests the following hypothesis:

H_{4c}: *Supervisor safety support mediates the relationship between management safety commitment and safety communication.*

3.4.3 Relationships between Safety Communication, Safety Training and Employees' Safety Risk assessment

Employees' perception of inherent risk may be derived from overestimation or underestimation of hazards in their workplace setting (Slovic et al., 2000: 116; Riley, 2014). That being the case, companies rely on training programmes to upskill employees to prepare for making the right choice on the floor when it comes to recognising the hazard and reacting accordingly. The underlying assumption is that training may increase employees' awareness, abilities, and skills on perceiving and managing safety-related risks in their workplace and thereby controlling residual risks and workplace injuries (Leiter et al., 2009). For instance, Rundmo (1992, 1994) notes that satisfaction with companies' safety training affects workers risk assessment. A study on industrial workers by Arezes & Miguel (2008) shows that training is strongly correlated with risk assessment. Additionally, Leiter et al. (2009) demonstrate that workers receiving requisite safety training are presumed to be equipped to tackle the hazards that they encounter. Furthermore, Biassoni et al. (2015) in their study with expert drivers show

that rather than specific risk awareness, general awareness of risk assessment increases with practical exercises in training. Likewise, Gürcanlı et al. (2015) confirm that safety and health training have a positive effect on risk assessment, where trained operators have higher scores for awareness of severity of accidents than others without training. Hence, it can be assumed that the RMG manufacturing workers' awareness of their perceived risk can improve through their job-specific safety training.

Communication related to risk is a dominant factor in many encounters, especially developing employees' risk assessment. Communication is effective at tackling fear, mistrust, and uncertainties regarding safety, as risk assessment is grounded on information about risks (Starren et al., 2013). It is suggested that individuals are likely to reflect on information and information from different sources can benefit and is ultimately necessary to develop judgement on hazard-related risks (Wogalter et al., 1991; Wogalter et al., 1993; Wogalter et al., 1999). For example, Hornikx (2005) demonstrate that information in the form of explanation, experts, statistics, or cases can develop the perception of the probability and undesirability of any consequences. Other scholars have also shown the importance of communication in developing the mental model of hazardous risks associated with the workplace. For instance, Meliá et al. (2008) show that risk assessment of accidents is predicted negatively and significantly by safety information. Riley (2014) argues that warning messages can draw individuals' attention and in turn, influence their risk assessments. Additionally, a study in Iran by Givehchi et al. (2017) states that perceptions of the status of workers' health and safety are influenced by safety communication.

Moreover, communication not only creates awareness but also improves the connection between perceived risk and the preparedness to take protective actions (Hahm et al., 2016). For example, Oah et al. (In Press) argue that, along with recognition, praise and regular worksite visits, basic on-the-job training, education and communication regarding safety hazards can

lower workers' risk assessment and increase protective behaviours. However, according to Xia et al. (2017) little research has explained the conditions through which workers develop their risk assessment and hence knowledge about the means through which risk assessments affect safety behaviours is inadequate. Since risky behaviours depend on a logical understanding of the way people think about risk, it is extremely important to identify the factors through which risk is perceived (Weber et al., 2002). Hence, for the RMG manufacturing setting, the current study suggests the following hypotheses:

H_5: *Safety communication has a relationship with employees' safety risk assessment.*

H_6: *Safety training has a relationship with employees' safety risk assessment.*

3.5 Relationships between Safety Climate and Safety Performance

Different theoretical accounts (e.g., the theory of reasoned action; Fishbein, 1979, the expectancy-valence theory; Vroom, 1964) can explain and predict the relationship between safety climate and safety performance (Hofmann & Morgeson, 1999; Zohar, 2000; Neal & Griffin, 2006; Hon et al., 2014). These theories assume that employees with lower motivation will comply less with safety rules and regulations and will have higher incident rates (Probst & Brubaker, 2001). One such theoretical explanation can be derived from the social exchange theory (Blau, 1960, 1964) and social reciprocation principles (Gouldner, 1960). According to Cropanzano and Mitchell, (2005), social exchange theory (SET) is amongst the most influential conceptual paradigms that explains workplace behaviour. Although different views of social exchange have emerged, theorists agree that social exchange involves a series of interactions that generate obligations (Emerson, 1976). Within SET, these interactions are usually seen as interdependent and contingent on the actions of another person (Blau, 1964). SET also emphasises that these inter-dependent transactions have the potential to generate high-quality relationships. One of the basic tenets of SET is that relationships evolve over time into trusting,

loyal, and mutual commitments. To do so, parties must abide by certain "rules" of exchange. Rules of exchange form a *"normative definition of the situation that forms among or is adopted by the participants in an exchange relation"* (Emerson, 1976: 351). In this way, rules and norms of exchange are "the guidelines" of exchange processes. Thus, the use of SET in models of organisational behaviour is framed on the basis of the exchange rule principle.

Majority of the management research focuses on expectations of reciprocity; where SET proposes that when employees perceive the organisation is certainly interested in their welfare, the norm of reciprocity is invoked and employees develop an implicit obligation to reciprocate with beneficial organisational behaviours (Neal & Griffin, 2006; Mearns & Reader, 2008). Reciprocity denotes the situation when one party is obliged to offer something in return for a benefit received, creating a *"mutually gratifying pattern of exchanging goods and services"* (Gouldner, 1960: 170). Therefore, when organisations provide support and invest in employees' well-being/welfare, they could instigate workers' reciprocating behaviour through complying with rules and policies and ultimately enhance safety performance (Eisenberger et al., 1990; DeJoy et al., 2004; Mearns et al., 2010; Curcuruto & Griffin, 2018).

Tsui et al. (1997) have found that a positive workplace environment experienced by employees can be reciprocated by performing their core tasks to a high standard and by carrying out citizenship activities. Hofmann et al. (2003) found that safety climate moderated the relationship between leader-member exchange and safety citizenship behaviours. In addition, other scholars (e.g., Tucker et al., 2008; Griffin & Curcuruto, 2016; Reader et al., 2016) argue that perceived organisational support can provide clues that the organisation indeed promotes the active involvement of workforce and in turn influence employees' safety participation and proactive role in safety management.

Social exchange theory also supports the argument that a supportive safety management environment can initiate higher commitment from employee through extra-role safety

behaviours i.e. *safety voice* (Tucker et al., 2008), *workers' participation and effectiveness in ensuring safety* (Simard and Marchand, 1995), *proactive risk-reporting* (Saracino et al., 2015), *co-workers support* (Brondino et al., 2012), and *housekeeping* (Geller, 2002). Besides, social exchange theory has been used to describe the relationships that develop between employees and their *leaders* (Liden et al., 1993; Settoon et al., 1996; Gerstner & Day, 1997; Sparrowe & Liden, 1997), *organisation* (Eisenberger et al., 1986b; Eisenberger et al., 1990; Settoon et al., 1996; Moorman et al., 1998), *co-workers* (Ensher et al., 2001; Deckop et al., 2003; Flynn, 2003), as well as with *suppliers* (Perrone et al., 2003) and *customers* (Houston et al., 1992; Sheth, 1996). Hence, in general, these results suggest implied obligations arising through social exchanges, which could be reciprocated through employees' higher levels of commitment and performance (Mearns et al., 2010). The emphasis on social exchange reveals that occupational safety is part of the dynamic interaction between organisations and employees, in which employees equally respond to the substance and the perceived commitment of organisational safety arrangements (Zohar, 2000; Griffin & Neal, 2000; Hofmann et al., 2003; Clarke, 2006b; DeJoy et al., 2010).

In the safety literature, it has been shown that a positive safety climate in which management is committed and gives priority to safety can enhance employees' belief of safety commitment and behaviour (Griffin & Curcuruto, 2016), which has been described by Morrow & Crum (1998: 310) as a *"positive spill-over effect*". In a similar vein, Hofmann & Morgeson (1999) claim that individuals working in a positive safety climate environment can reciprocate behaviours through more active involvement in safety. Additionally, other studies have emphasised how supportive and participative managerial styles, supervisors, and co-workers are related to a higher employee safety commitment (e.g., Tucker et al., 2008; Clarke, 2010; DeJoy et al., 2010; Mearns et al., 2010; Brondino et al., 2012). Hence, perceived managerial commitment and organisational endorsement of safety programmes can be reciprocated by employees' active commitment to safety participation and compliance. However, examining the relationship between safety climate and safety performance, different

studies endorse different consequences. For instance, various meta-analyses and other studies (e.g., Clarke, 2006b; Christian et al., 2009; Brondino et al., 2012) identified that safety climate is more related to safety participation than safety compliance. However, more recent studies (e.g., Agnew et al., 2013; Hon et al., 2014; Barbaranelli et al., 2015) suggest that safety climate has a stronger influence on the level of employees' safety compliance than participation. Therefore, an aim in the current study is to identify the effect of safety climate factors on both safety participation and safety compliance and thereby we suggest the following hypotheses:

$\boldsymbol{H_{7a}}$***:*** *Safety climate factors have a relationship with employee's safety compliance.*

$\boldsymbol{H_{7b}}$***:*** *Safety climate factors have a relationship with employee's safety participation.*

The safety climate is an important antecedent to identify workplace security (accidents/injuries) in various work settings (Johnson, 2007; Griffin & Curcuruto, 2016; Ajslev et al., 2017). Various meta-analytic studies have identified that safety climate is a vital predictor of objective safety conditions (incidence of accident/injury) and subjective safety conditions (self-reported behaviour) across countries (Christian et al., 2009) and across industries (Clarke, 2006b). According to Wallace et al. (2006) the higher the perception of safety climate in an organisation is, the lower the accident rates are. In study conducted on the gas and oil companies, scholars (Mearns et al., 2001b, 2003) have found safety climate to be an important predictor of employee workplace accidents. Zohar (2000) in his study on manufacturing industry identifies that injuries requiring medical attention have been predicted by the safety climate. Alternatively, different factors of safety climate can also function directly as indicators of safety performance for workplace security. For instance, management's commitment (Zohar, 2000; Fernández-Muñiz et al., 2012) and supervisory actions (Johnson, 2007) are found to be related to the prevention of future incidents and reduce the human and economic cost of industrial accidents. Furthermore, training (Christian et al., 2009) and safety communication

with subordinate workers (Zohar, 2002b; Zohar & Luria, 2003) are also found to be related to safe behaviours and higher workplace security (fewer accidents and injuries).

In contrast, other studies have found no or marginally significant relationships between safety climate and accidents/injuries. For instance, Clarke (2006b) found that safety climate was significantly related to safety compliance and participation, but weakly related to occupational injuries. Hahn & Murphy (2008) found safety climate to be marginally significant predictor of self-reported accidents. Moreover, in a recent study, Kvalheim et al. (2016) raised the question whether safety climate can be used as an indicator of workplace security at plant level. Their analysis, based on three different incidents, presents inconclusive results. Similarly, Cooper & Phillips (2004) failed to identify any relationship between changes in safety climate, safety behaviour or changes in accidents rates and concluded that such relationships are not as clear-cut as is often assumed. Hence, due to such inconclusive results, the current study assumes that all the safety climate factors have relationships with workplace security and sets the following hypothesis for the RMG industrial setting:

H_{7c}: *Safety climate factors have a relationship with employee workplace security.*

3.6 Relationships between Institutional Perspective and Safety Climate

The institutional perspective has become a substantial paradigm and critical theoretical lens to understand organisational phenomena (Wan & Hoskisson, 2003; Peng et al., 2008; Kim et al., 2010). North (1990: 3) postulates that institutions are *"the rules of the game in a society or, more formally, are the humanly devised constraints that shape human interaction".* In this sense, organisations are the players who are bound by formal and informal institutions. Formal institutions refer to governmental rules, laws, or conventions (Scott, 2008b; Bruton et al., 2010), while informal institutions denote socially erected and culturally diffused guidelines that individuals and organisations must adhere to (Stephan et al., 2015). Hence, these institutions act not only as authoritative rules and constraints for behaviour (North, 2005; Scott, 2010) but

also as implicit taken-for-granted guidelines for organisational actions (Powell & DiMaggio, 1991).

Scott (1995) has offered a simple but convenient framework of where to look for institutional aspects of organisations and separates informal institutions into two further types of institutions: normative and cultural-cognitive. While the normative perspective of institutions refers to social expectations and obligations regarding the proper behaviour modelled on prevailing dominant morals, obligations, or norms, the cultural-cognitive perspective refers to collective understandings in a society that are closely defined by cultural values (Javidan et al., 2006; Stephan & Uhlaner, 2010; Bruton et al., 2010). Given that organisations are embedded in, and influenced by, these informal and formal institutions, organisations receive strong institutional coercion to adapt to institutional expectations in order to acquire societal legitimacy (Meyer & Rowan, 1977; DiMaggio & Powell, 1983). By absorbing such coercion, organisations continuously manifest their legitimacy to remain on favourable terms with their constituencies and convince larger publics (Rocha, 2010); otherwise, neglecting such coercion may put organisational existence at risk. Therefore, organisations tend to conform to the institutional prescription of what is considered and specified as appropriate and productive.

Institutions are more than merely a grounding condition. Rather, according to Ingram & Silverman (2002: 20) "*institutions directly determine what arrows a firm has in its quiver as it struggles to formulate and implement strategy and to create competitive advantage*". This argument is definitely logical in the context of developed economies (Ring et al., 2005) as the impact of institutions has been demonstrated on organisational *diversification policies* (Wan & Hoskisson, 2003), *innovation and strategic change* (Lewin et al., 2004) or *corporate policies* (Clougherty, 2005). However, the institutional perspective offers different conditions when considering the emerging economies, because it presents a powerful challenge to the traditional

ways of understanding organisational behaviours (Peng & Delios, 2006). As a result, straightforward adoption and expansion of the conventional global approach may not be adequate and appropriate (Schlie & Yip, 2000; Peng et al., 2008). Hence, in the current research context, the institutional perspective will be very helpful because it will provide important insights and logical clarification of organisational motives to react to safety-related behaviours in emerging economy settings.

In most cases, the institutional perspective has been brought to the context to offer an explanation the adoption of or intention to adopt any organisational behaviour (Bhakoo & Choi, 2013; Huo et al., 2013). A similar argument is also supported by Rogers et al. (2007: 557) who state that *"research has considered the influence of institutional factors on the initial adoption of organisational forms and practices, but not the ongoing internal use of techniques adopted in response to institutional pressures".* Indeed, different studies have used an institutional perspective to examine the intention to adopt *innovation* (Cao et al., 2014), *inter-organisational system* (Teo et al., 2003; Bala & Venkatesh, 2007), *IT assimilation* (Liang et al., 2007), *supply chain management* (Liu et al., 2010; Huo et al., 2013), and *B2B e-marketplaces* (Son & Benbasat, 2007). However, in terms of safety climate literature, only two studies have used an institutional perspective in terms of *intention to adopt occupational safety* in universities (Hossain et al., 2015) and *application of safety climate* in the construction industry (He et al., 2016). This paucity of research shows that, till now, scholars have paid little attention to the influence of institutional perspectives on the implementation of safety climate in an organisation. Therefore, the current study examines the impact of institutional forces on the implementation of safety climate factors within the RMG manufacturing setting, contributing to the knowledge of institutional theory in safety climate research.

3.6.1 Relationships between Regulative Perspective and Safety Climate

The most explicit coercion presented by the institutional perspective relates to the regulation of organisational behaviour through directives or rules established and maintained by an authority. Coercive pressure commonly stems from a variety of authoritative sources, including parent corporation, resource-dominant organisation or state (Teo et al., 2003; Stephan et al., 2015). These authoritative bodies take the crucial role of compelling organisations to adopt proper safety measures to safeguard their people. In almost every country, laws and regulation are established by autonomous communities or especially by the government exercising its power through monitoring and sanctioning, which forces organisations to adopt policies to ensure compliance and alter their behaviours (Esteban-Lloret et al., 2014). Such coercion through power play is regarded as a regulative process (Lawrence, 2008). The regulative process can be demonstrated in various forms and at different levels, with different degrees of enforcement (Paauwe & Boselie, 2003). As the current research context relates to the safety climate, regulatory pressures can be derived from international, national and industry levels.

Specifically, in the context of Bangladesh, international-level pressures include ILO, Bangladesh Accord, and Alliance of Bangladesh initiatives on strengthening the labour inspection system, training practices, building a safety culture in the workplace, registration of trade unions, prevention of child labour and many others. Alternatively, national level regulative pressure comes from the National Tripartite Plan of Action (NTPA), bipartite plans agreed between the social stakeholders and the government, by establishing compliance monitoring cells (CMC) and the national labour laws. Industry-level mechanisms come from the Bangladesh Garments Manufacturing Exporting Association (BGMEA) which includes establishing building codes, ensuring fire drills, safety training, and a group insurance scheme for the garment workers. Currently, only the factories that can satisfy the co-ordinated scrutiny

from such regulative authorities can continue and survive in the RMG industry. Hossain et al. (2015) in their study show that government legislation and its practical implementation have a positive impact on the intention of occupational health and safety adoption. In addition, He et al. (2016) demonstrate that the mandatory power of law and order has a positive impact on safety commitment and employee involvement, and applicability of safety procedures and practices. Furthermore, Hasle et al. (2014) have suggested that coercion through labour inspection can influence workplace conditions. Therefore, the authoritative activities, whether in the form of national laws or company specific conditions, can significantly influence the implementation of safety climate in RMG manufacturing companies. Hence, the following hypothesis is proposed:

H_{8a}: *The regulative perspective has relationships with organisational safety climate factors.*

3.6.2 Relationships between Normative Perspective and Safety Climate

In contrast to the regulative perspective of the institution, the normative and cultural-cognitive perspectives influence organisational behaviours in a much less persuasive way. The normative perspective causes stability by establishing socially stimulated codes, conventions, roles, procedures, and routines for behaviour that is driven by morals and obligations (Alexander, 2012). According to Scott (2008b: 55), *"normative systems define goals or objectives but also designate appropriate ways to pursue them."* In that sense, normative pressures are derived from the logic of appropriateness, through which organisations seek to behave in a manner that is considered as valid among their peers within their professional network (DiMaggio & Powell, 1983; Deephouse, 1996). Therefore, it is argued that normative pressure stems from professionalisation (Greenwood et al., 2002).

A variety of professional associations, trade associations, consultants, and/or accreditation agencies endorse certain beliefs, norms, and values within organisations that

result in normative isomorphism (Huo et al., 2013; Esteban-Lloret et al., 2014). Such beliefs, norms, and values are disseminated and established within professional fields through information diffusion activities such as professional consultation, conference communication, association participation, formal education and professional training (DiMaggio & Powell, 1983; Teo et al., 2003). This leads to the establishment of shared expectations, to which organisations conform in order to maintain legitimacy, achieve benefits, and pledge their acceptability in a specific organisational network (John et al., 2001; Liu et al., 2010; Bhakoo & Choi, 2013). Surrounded by these professional fields, organisations can steadily advance their understanding of the commonly established professional beliefs and values and then change their behaviours accordingly.

Professionalisation standardises practices and procedures into a readily accessible collection of behavioural patterns that are normatively endorsed and appropriated (Pasamar & Alegre, 2015). Thus, such behaviours can be diffused quickly across different industrial and organisational fields (Raffaelli & Glynn, 2014). For instance, organisations comply with the International Standardization Organisation (ISO) norms and become certified, as they presume that conformity with the standards helps to lure more customers and promote competency (Darnall, 2006; Delmas & Montes-Sancho, 2011). In addition, using the examples of accounting and law firms, Greenwood & Hinings (1996) show that the standards, firms normally use, become so regular and stable across an organisational field that actors perceive such standards as the correct ways of doing things. Hence, professional associations strengthen the values and norms in such a way that these values and norms become increasingly more internalised.

In a safety study, He et al. (2016) identify that while normative pressure is related to safety commitment and involvement, the application of safety procedures and practices are not related to the normative perspective. Conversely, Esteban-Lloret et al. (2014) clearly identify that implementation of managers training is influenced by normative institutional pressure. In

addition, different studies show the positive impact of normative pressure such as on *adoption of electronic health records* (Sherer et al., 2016), *technological innovation* (Bunduchi et al., 2015), *work-life balance* (Pasamar & Alegre, 2015), *entrepreneurship* (Lim et al., 2016), *foreign direct investment* (Trevino et al., 2008), and *supply chain management* (Bhakoo & Choi, 2013). Similarly, in the RMG manufacturing industry, it can be assumed that normative pressures can influence the implementation of organisational safety climate. For instance, industry consultants and associations such as the Bangladesh Accord, Alliance of Bangladesh or BGMEA not only exert coercive pressures but can also act as vital channels for norm-diffusion by providing safety training, professional certification, organising seminars, and advocating the significance of safety. Through these channels, participant organisations can further recognise the standards and practices that need to be implemented to improve their safety climate. Hence, in the current study it is expected that the normative perspective can influence organisational safety climate factors and this assumption leads to the following hypothesis:

H_{8b}: *The normative perspective has relationships with organisational safety climate factors.*

3.6.3 Relationships between Cultural-Cognitive Perspective and Safety Climate

The cultural-cognitive perspective represents prevailing perceptions and frames of a society (Stenholm et al., 2013; Zhao et al., 2017). The perspective states that individuals and organisations behave according to a subconscious understanding instead of purposefully following regulative or normative obligations (Bruton et al., 2009). Regulative and normative obligations have their root in self-interested behaviour (Wicks, 2001). However, if they are associated and established with different cognitive or cultural supports, institutional control operates through processes that are adopted, shared and independent of any particular interests of organisations or individuals (Lawrence, 2008). The cognitive elements are linked with *"schemas, frames, inferential sets, and representations affect the way people notice, categorize, and interpret stimuli from the environment"* (Kostova, 1999: 314). Alternatively,

cultural frameworks *"guide understanding of the nature of reality and the frames through which that meaning is developed"* (Hoffman, 1999: 353), which are then replicated through imitating (Trevino et al., 2008; Walsh et al., 2014). In that sense, cognitive elements of institutions yield organisational isomorphic behaviour in the form of mimicking patterns of successful practices that have strong cultural endorsement. Hence, such cultural and cognitive rules and frameworks form a fundamental part of taken-for-granted beliefs and thus, organisations often mimic them spontaneously (Deligonul et al., 2013).

Despite having normative and regulative pressures that influence organisational behaviour, there are times when organisations mimic the behaviour of other organisations that have the reputation of being pioneers or have a certain advantage in the execution of strategies or practices (Esteban-Lloret et al., 2014; Hossain et al., 2015; Krell et al., 2016). Scholars (e.g., DiMaggio & Powell, 1983; Lawrence et al., 2001; Teo et al., 2003; He et al., 2016) argue that such reactions generally occur due to uncertainties, especially when organisations confront new technologies or regulatory challenges, or when organisational objectives are ambiguous, or from inadequate understanding of a risky situation. Mimicking successful organisational counterparts helps other organisations to minimise their cost and to avoid the risks that are tolerated by early-movers (Zsidisin et al., 2005; Huo et al., 2013; Pasamar & Alegre, 2015). In addition, the mimetic behaviour of an organisation may also surface from the universality of a practice in their industrial setting. DiMaggio & Powell (1983) and Teo et al. (2003) argue that imitating prevalent practices can help organisations to obtain the status of legitimacy or social eligibility in a broader societal structure. Hence, with an intention to obtain social legitimacy, imitating the behaviour of leaders and practices that have been dominant or successful in a sector, has been shown to be an influential factor in the activities of other organisations (Esteban-Lloret et al., 2014; Raffaelli & Glynn, 2014; Pasamar & Alegre, 2015; Sherer et al., 2016).

Neo-institutional scholars (i.e., DiMaggio & Powell, 1991; Selznick, 1996; Scott, 2001) perceive that the cultural-cognitive perspective (i.e., mimetic pressure) has more impact on organisational conducts and activities than the societal requirements of the normative or regulative perspectives. For instance, a study by Yiu & Makino (2002) demonstrates that the cultural-cognitive perspective has a stronger impact on decisions of entry-mode choice than the normative perspective. In addition, Trevino et al. (2008) illustrate that the institutionalisation process is more deeply rooted in the cognitive perspective than the regulative perspective. Furthermore, Sherer et al. (2016) have found that mimetic forces are as strong as normative forces on electronic health records adoption in U.S. health care. However, Liu et al. (2010) show that mimetic pressures do not have any impact on a company's intention to implement electronic supply chain management systems. Similarly, Hossain et al. (2015) also have identified that mimetic pressure does not significantly influence occupational health and safety adoption in Bangladeshi private universities. Nevertheless, other studies show that the cultural-cognitive perspective has impact on the decisions of *producing environmentally sustainable products* (Butler, 2011), *corporate disclosure of sustainability strategies* (Reid & Toffel, 2009), *adopting grid computing* (Messerschmidt & Hinz, 2013), *manager's training* (Esteban-Lloret et al., 2014), *supplier integration* (Huo et al., 2013), *adoption of information systems* (Krell et al., 2016), *CSR practices* (Kim et al., 2013), *macro-level entrepreneurship* (Valdez & Richardson, 2013) and *interfirm trust and branding performance* (Zhao et al., 2017). Last but not least, He et al. (2016) in their study show that mimetic force has a stronger impact than regulative force on the implementation of workplace safety systems, procedures and work practices. In that sense, the cultural-cognitive perspective supposedly can influence the implementation of organisational safety climate factors in the Bangladeshi RMG manufacturing industry. Hence, such evidence and assumption lead to the following hypothesis:

H_{8c}: *The cultural-cognitive perspective has relationships with organisational safety climate factors*

3.7 Relationships between Institutional Perspective and Safety Performance

While all three institutional perspectives exert notable influence on organisational behaviour and practices (James, 2005), they also make an impact on individual behaviour values and preferences (Scott, 2008b). According to March & Olsen (1989) all these institutional rules, norms, culture, code, procedures, and conventions offer an outline for action and provide details on both the organisational structures and the actions of individuals within those structures. For example, Walsh et al. (2014: 89) have illustrated that stronger normative institutions can lead to a higher level of individual engagement (citizenship behaviour). In addition, Susskind et al. (2014) show that institutional influence has a significant impact on individuals' attitudes, beliefs, and perceptions toward affirmative action[13] programmes. Furthermore, in safety literature, He et al. (2016) show that all three institutional pressures significantly affect employee safety involvement. Moreover, they have found that institutional mimetic force motivates *"individuals to avoid unnecessary dangers and have a sense of belonging"* (p.238). Likewise, the current study also assumes that all three institutional perspectives will have a relationship with employees' safety behaviour and thus impact safety performance in RMG manufacturing industry in Bangladesh. Therefore, the following hypotheses are proposed:

$\boldsymbol{H_{9a}}$***:*** *The regulative perspective has a relationship with safety performance factors.*

$\boldsymbol{H_{9b}}$***:*** *The normative perspective has a relationship with safety performance factors.*

$\boldsymbol{H_{9c}}$***:*** *The cultural-cognitive perspective has a relationship with safety performance factors.*

3.8 Mediation Effects of Governance between Institutional Perspective and Safety Climate Factors

The theoretical viewpoint of institutional perspectives suggests that organisations conforming to the expectations of institutions (DiMaggio & Powell, 1983; Aldrich & Fiol, 1994)

[13] Affirmative action (AA) is a series of activities conducted by an organisation that applies resources to eliminate or prevent discrimination from occurring in the workplace among protected classes.

to enhance or protect their legitimacy (Scott, 1995). By following institutional expectations or directions, organisations exhibit alignment of social and corporate values (Cardinale, 2018). Hence, interest in legitimacy pushes organisations to embrace managerial practices that are seen to have societal value and acceptance (Berrone & Gomez-Mejia, 2009). However, if institutions enforce taken for granted frameworks for acceptable and preferable behaviours and if institutions are so essential that these frameworks are repeatedly conformed to, why do organisations often change or fail to practise these existing rules? This issue has been termed the paradox of embedded agency (Holm, 1995: 398; Seo & Creed, 2002: 223) which refers to the tension between the action of an agent and institutional acceptance (Battilana et al., 2009). This issue has inspired substantial theorizing on the relationship between agency and institutional structure (Holm, 1995; Barley & Tolbert, 1997; Beckert, 1999; Bernard & Philippe, 2006; Smets et al., 2012) and agency theory offers a helpful complementary lens to offer an answer and solution to this problem.

Agency theory is unquestionably among the leading theories of economic organisation and management (Raelin & Bondy, 2013; Bosse & Phillips, 2016). The theory revolves around the relationship between the agent and the principal and the way agents behave in boundedly rational ways (Shi et al., 2017). The proponents of "Agency Theory" assume that each party acts in its own self-interest (Gomez-Mejia and Balkin, 1992). An agency relationship is related to or resulting from a contract under which principals engage agents to perform some service on the former's behalf, involving the delegation of decision-making authority to the latter (Jensen & Meckling, 1976). The essential feature of the agency problem emerges when both principal and agent are likely to have diverging interests and goals due to the agent's self-interested behavioural tendencies (Jensen & Meckling, 1976; Eisenhardt, 1989; Arrow, 1994; Kiser, 1999).The agent may shirk or engage in self-serving behaviours such as using work time and organizational resources for personal gains.. According to Musacchio et al. (2015), the institutional pressure to pursue social objectives often clashes with organisational profitability.

For instance, governments may drive organisations to establish a venture in a remote territory or reduce unemployment or offer lower price or incentives for workers that might increase organisational operating cost (Shirley & Nellis, 1991; Bai & Xu, 2005). In such a situation, the agency problem emerges as organisations will probably encounter a *"double bottom line"* situation involving complex social goals beyond profitability (Musacchio et al., 2015: 118) or against the basic idea of shareholder value maximisation. The principal-agent framework thus suggests how institutions can ensure that organisations protect and maximize their wealth by putting in place drivers of good governance practice (Shleifer & Vishny, 1997).

In addition, organisations might proactively seek to crafting their environment by bending rules and regulations that will yield a more favourable situation for them (Hillman et al., 2009), which ultimately initiates greater agency cost (Bosse & Phillips, 2016). Agency theory suggests that alignment of interests between principal and agent is the ultimate way to mitigate such agency cost (Hoenen & Kostova, 2015; Nell et al., 2017). Various internal and external controls can be adopted to achieve this objective and one such control mechanism is effective principal monitoring of agents (Dharwadkar et al., 2000; Filatotchev & Wright, 2011; Zhou et al., 2017). Since, given the possibility that agents might maximise their individual utility at the expense of the principal's utility (Davis et al., 1997), a strong governance mechanism can play a vital role to align the utility functions between principal and agent (Dharwadkar et al., 2000; Berrone & Gomez-Mejia, 2009; Shi et al., 2017). Furthermore, governance can also limit the agent's self-serving behaviour (Rashid, 2015; Bosse & Phillips, 2016). For instance, scholars (Beasley et al., 2000; Chen et al., 2006) have shown that governance mechanisms that focus on disciplining and monitoring can reduce managerial misconduct in the form of financial fraud. In addition, Filatotchev & Wright (2011) have shown that governance factors can substantially affect the performance outcomes of organisational strategic decision choice. Therefore, with the help of agency theory, the current study presumes that governance mechanisms can align

between the institutional intention of achieving safety standards (principals' interest) and organisational safety practice (agents' behaviour) and safety performance.

Governance offers an outline through which management tasks are executed (Muller, 2017: 5) and it is *"ultimately concerned with creating the conditions for the ordered rule and collective action"* (Stoker, 1998: 155). Organisations indeed are often suspected of taking advantage of weak laws and regulations in developing countries where they avoid accountability, perform illegal practices, behave discriminatorily, and violate human rights in the pursuit of short-term gains and profitability (Kolk et al., 1999; Shamir, 2004; Waddock, 2008). In such a situation, Licht et al. (2007) argue that implementing rule-of-law, ensuring accountability and avoiding corruption are the social norms of governance that can restrict unacceptable behaviours and practices, either by ruling elites or by organisations or by individuals. For instance, Locke et al. (2007) in their analysis of Nike company producing in different countries show that variation in working conditions appears to be the result of a county's inability to enforce the rule-of-law. In addition, McCall & Pruchnicki (2017) state that accountability helps to establish and maintain safety resilient organisations. Athanasouli & Goujard (2015) demonstrate that corruption can affect and deteriorate organisations management practice and decrease aggregate productivity. Furthermore, Franco-Santos et al. (2017) show that various governance practices are beneficial for the well-being of academic staffs. Moreover, Müller et al. (2016) identify that corporate governance mediates the relationship between the frequency of ethical issues, trust and control of temporary organisations. Likewise, the current study assumes that a governance mechanism will mediate the relationships between the institutional perspectives and organisational safety practices. This leads to the following hypotheses:

H_{10a}: *Accountability mediates the relationship between institutional perspectives and the safety climate factors.*

$\boldsymbol{H_{10b}}$: *Anti-corruption mediates the relationship between institutional perspectives and the safety climate factors.*

$\boldsymbol{H_{10c}}$***:*** *Rule-of-law mediates the relationship between institutional perspectives and the safety climate factors.*

3.9 Direct Effects of Governance on Safety Performance

Governance has become a fundamental mechanism for development (Azmat & Coghill, 2005) through which an organisation arranges itself systematically to acquire collective ends (Dodgson et al., 2002). Governing institutions, as powerful groups, can influence the behaviour of organisations by enacting structural arrangements, which are designed to be accountable, transparent, and responsive to the demands of a society (Brinkerhoff, 2004; Ciccone et al., 2014). Such arrangements minimize exposure to opportunism by governing inter-organisational exchange (Das & Teng, 1998; Jap & Ganesan, 2000; Liu et al., 2009; Li et al., 2010) and thus, influence organisational performances (Huang & Chiu, 2018). However, the evidence as to whether enhanced governance improves performance is somewhat inconclusive. For instance, Barry & Tacneng (2014) identify that governance matters in changing the incentives and behaviour of banks to perform better financially, while Hartarska (2005) and Mersland (2009) did not find any difference. Similarly, while some studies show that governance has a positive impact on collaborative performance (Das & Teng, 2001; Fang et al., 2011; Holloway & Parmigiani, 2014), other studies argue that governance has an inverse-U shaped relationship with collaborative performance (Gu et al., 2008; Noordhoff et al., 2011; Villena et al., 2011; Huang et al., 2014a). However, it is well recognised that governance mechanisms enable government and organisations to work together to provide a basis for improvement and help to achieve desired performance outcomes (Lockwood, 2010; Ciccone et al., 2014).

A variety of empirical studies have addressed the relationship between governance mechanisms and performance. For instance, Ghantous et al. (2018) demonstrate that

governance contributes to the impact on franchisors' international relationship performance. In addition, Niesten & Lozano (2015) show the role of governance in sustainable supply chain management adoption and improved performance (e.g., environmental & economic performance). Besides, studies identify the effect of specific governance mechanisms on performance outcomes. For example, Kong et al. (2017) show that the anti-corruption campaign significantly enhances the financial performance of central state-owned enterprises in China. Furthermore, analysing 55 UN-REDD programme partner countries, Sheng et al. (2016) identify that increased corruption can result in increased carbon emissions and decrease in programme investment. Besides, Haider et al. (2017) show that corruption weakens the effect of government ownership on reducing financial constraint and with higher financial constraint organisations perform unsatisfactorily. Hence, the current study assumes that anti-corruption as a governance mechanism will impact organisational safety performance in the Bangladeshi RMG manufacturing industry. Thus, an assumption leads to the following hypothesis:

$\boldsymbol{H_{11a}}$: *Anti-corruption has a relationship with safety performance.*

Similarly, a study conducted by Chen et al. (2016) based on industry and service sectors in Taiwan confirms that expectations of management practices of accountability are positively related to employee task performance. Additionally, Guidice et al. (2016) provide evidence that accountability offers a powerful beneficial effect on task and challenge performance. Furthermore, a study conducted by Dewachter et al. (2018) identifies that civil-society-led social accountability offers high water service performance in Ugandan districts. Moreover, rule-of-law, as a governance mechanism, is widely assumed to be essential for economic growth (Haggard & Tiede, 2011). Butkiewicz & Yanikkaya (2006) signify the power of maintaining rule of law for promoting economic growth. Additionally, a comparison conducted by Dawson (2010) between Jamaica and Barbados demonstrates that difference in the rule of law has an effect on difference in democratic consolidation and social and economic development

processes. Furthermore, in cross-border acquisition, Thenmozhi & Narayanan (2016) show that rule of law has a significant impact on post-acquisition performance. Based on the above discussions, the current study similarly assumes that accountability and rule-of-law as governance mechanisms will impact organisational safety performance. Hence, the current study sets the following hypotheses:

$\boldsymbol{H_{11b}}$: *Accountability has a relationship with the safety performance.*

$\boldsymbol{H_{11c}}$: *Rule-of-law has a relationship with the safety performance.*

3.10 Relationships among Governance Dimensions

The elements of governance are intimately linked together (Azmat & Coghill, 2005). Thus, ensuring accountability, reducing corruption, and implementing the rule of law are all critical elements of effective governance practice that authorises legitimate modes of exercising power (Licht et al., 2007). However, rule of law is the only way through which a country upholds its law and order; punishes illegal activities, and ensures individual rights and freedom (Nwabuzor, 2005; Skaaning, 2010). Tyler (2003) argues that to prevent public misconduct and private abuse of power, there is no alternative to the implementation of rule of law. Hence, rule of law is not only an important link between the political, social and economic relationships in a society but also impacts organisational and managerial practices. For instance, Gani & Scrimgeour (2014) show that clear and stronger rule of law facilitates productive cooperation and forces firms to comply with industrial standards to mitigate water pollution. Alternatively, ineffectiveness or lack of rule of law can intensify the difficulty in enforcing control measures or restrictive agreements (Haggard & Tiede, 2011). For instance, inherent flaws and loopholes in rules work in favour of Bangladeshi RMG companies where safety compliance control is difficult (Caleca, 2014). However, if the rule of law is well designed, comprehensive and properly put into practice, then control procedures can be imposed without difficulties and organisations would be more likely to comply.

Since there is an emerging consent that strong rule of law is consequential (Dawson, 2013), it becomes an essential element for limiting business malpractices to attain societal goals. For instance, promoting reformatory action by penalising organisations in the event of non-compliance, or safeguarding the confidentiality of client/patient records, or improving corporate financial accountability in the markets can be ensured by executing rule of law. The rule of law describes specific responsibilities to be followed by organisations and requires complete documentation to reveal how personnel decisions and actions taken comply with the law – the issue of accountability (Breaux et al., 2009; Joshi, 2017). Hence, being accountable is a legal responsibility for an actor (whether an individual or an organisation) (Brown & Moore, 2001: 570).

Selznick (2016: 26) states that the rule of law is the rational foundation for establishing and spreading the norm of accountability. For instance, Chisolm (1995: 143) argues that *"legal rules play a central role in defining and implementing standards of accountability"*. Additionally, in a recent study, Hyndman & McConville (2017) show that charity managers being accountable as a response to formalised expectations (i.e., rules, regulations and contractual obligations) from institutions and trustees. Moreover, Fox (2015) shows that, in India, the national rural right-to-employment law is one of the most significant examples of a grassroots social accountability initiative. Similarly, the current study also assumes that rule of law influences the implementation of organisational accountability in terms of safety compliance in the Bangladeshi RMG manufacturing industry. This an assumption leads to the following hypothesis:

$\boldsymbol{H_{12a}}$***:*** *Rule-of-law has a relationship with accountability.*

Corruption is also inherently related to the rule of law. Since the study of Leff (1964), the view that weak rule of law fosters a high level of corruption has been embraced. Different studies also show that the absence of corruption is a manifestation of obedience to the rule of

law. For instance, Haggard & Tiede (2011) argue that the rule of law involves restraints on the use of private power that limits corruption. Dawson (2013) shows that Barbados has stronger rule of law that reduces corruption, compared to the weak rule of law implementation and higher corruption in the Jamaican state. In addition, a study on 130 countries by Herzfeld & Weiss (2003) illustrates that a well-established legal system significantly reduces the level of corruption. Hence, in brief, the assumption is that in countries with strong rule of law, confirm that no one is above and beyond the law and legal action helps to reduce corrupt behaviours.

A study conducted by Davis (2004) on sanitation and water administration in India and Pakistan offers evidence that regulation on civil servants is likely to reduce corruption. Furthermore, a recent study by Kim et al. (2018) on a nation-wide investigation in Chinese state-run universities, state-owned enterprises, and local governments suggests that anti-corruption policy will only succeed when legal action is enforced on the top-level officials. Moreover, a meta-analytic study conducted by Judge et al. (2011) identifies that legal factors are strongly correlated antecedents of corruption. Therefore, the current study assumes that the effective rule of law is essential for reducing corrupt behaviours in Bangladesh RMG manufacturing companies. This postulation leads to the following hypothesis:

H_{12b}: *Rule-of-law has a relationship with anti-corruption behaviour.*

Even if rule of law has important and widely applicable effects or implications, the unlawful, clever, or risk-taking individual will always be attracted to the chance of using public power to achieve private gains. Hence, it is very difficult to permanently or completely eliminate corruption (Mookherjee, 1997: 105; Fjeldstad & Tungodden, 2003; Petrou & Thanos, 2014). The question remains, how can it be controlled? Accountability has always been touted as a path to curb the levels of corruption. The economics and political science literature (e.g., Shleifer & Vishny, 1993; Fackler & Lin, 1995; Linz & Stepan, 1996; Bailey & Valenzuela, 1997; Laffont & Meleu, 2001) have extensively discussed the role of accountability in controlling the corrupt

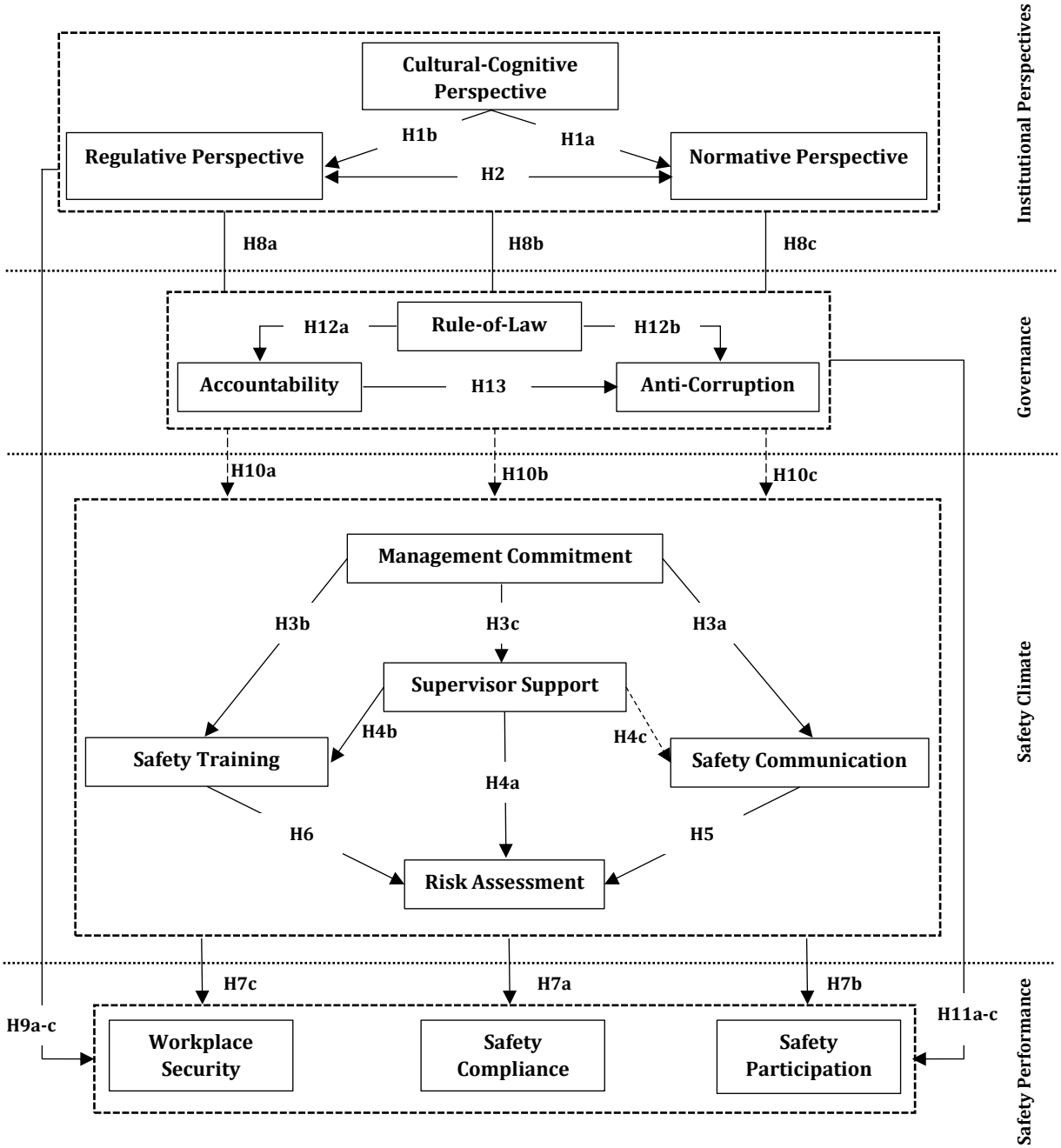
behaviours. For instance, Lindstedt & Naurin (2010) argue that making information available through a strong accountability mechanism can control corruption. Further studies also show that vertical accountability—external sources (i.e., access-to-information legislation, media rights, political pluralism, rights, and culture) that hold leaders accountable can control public corruption (e.g., Brunetti & Weder, 2003; Diamond & Morlino, 2004; Wampler, 2004; Xin & Rudel, 2004; Relly & Cuillier, 2010; Relly, 2012).

In addition, Lederman et al. (2005) show that increased accountability through monitoring of governments can influence the level of corruption. Lambert-Mogiliansky (2015) reveals that social accountability mechanisms (e.g., social audit, community monitoring, citizen report cards, and complaint mechanisms) can play a significant role in strengthening enforcement and thus reducing the level of corruption. Besides, a recent study conducted by Murphy & Albu (2018) shows that how accountability policies based on discourses of corruption led to the downfall of the Ben Ali regime in Tunisia. Therefore, the current study also postulates that accountability can reduce the level of corrupt behaviours of Bangladeshi RMG manufacturing companies. Such a statement leads to the following hypothesis:

H_{13}: *Accountability has a relationship with anti-corruption behaviour.*

Inclusive of the research hypotheses suggested above, a comprehensive new research model has been developed. Figure 3.1 depicts all the research hypotheses of the current study.

Figure 3.1: The Proposed Research Framework



3.11 Summary

Drawing on the different theoretical underpinnings and existing research findings, this chapter offers a research framework for the current study. To achieve the research objectives, the chapter outlines 29 different hypotheses. The proposed hypotheses try to identify the antecedents of institutional perspectives, governance, safety climate and safety performance.

In addition, the chapter proposes relationships among these antecedents. Furthermore, the chapter proposes the hypothetical relationships to address the impact of institutional perspectives on safety climate and safety performance. Besides, to identify the mediation effect of governance on the relationships between institutional perspectives and safety climate, the study outlines three different hypotheses. Finally, the chapter ends with a representation of the research framework. The following chapter will discuss the approach and methodology applied in data collection for the research and the analysis techniques selected for hypothesis testing.

Chapter 4

Research Methodology

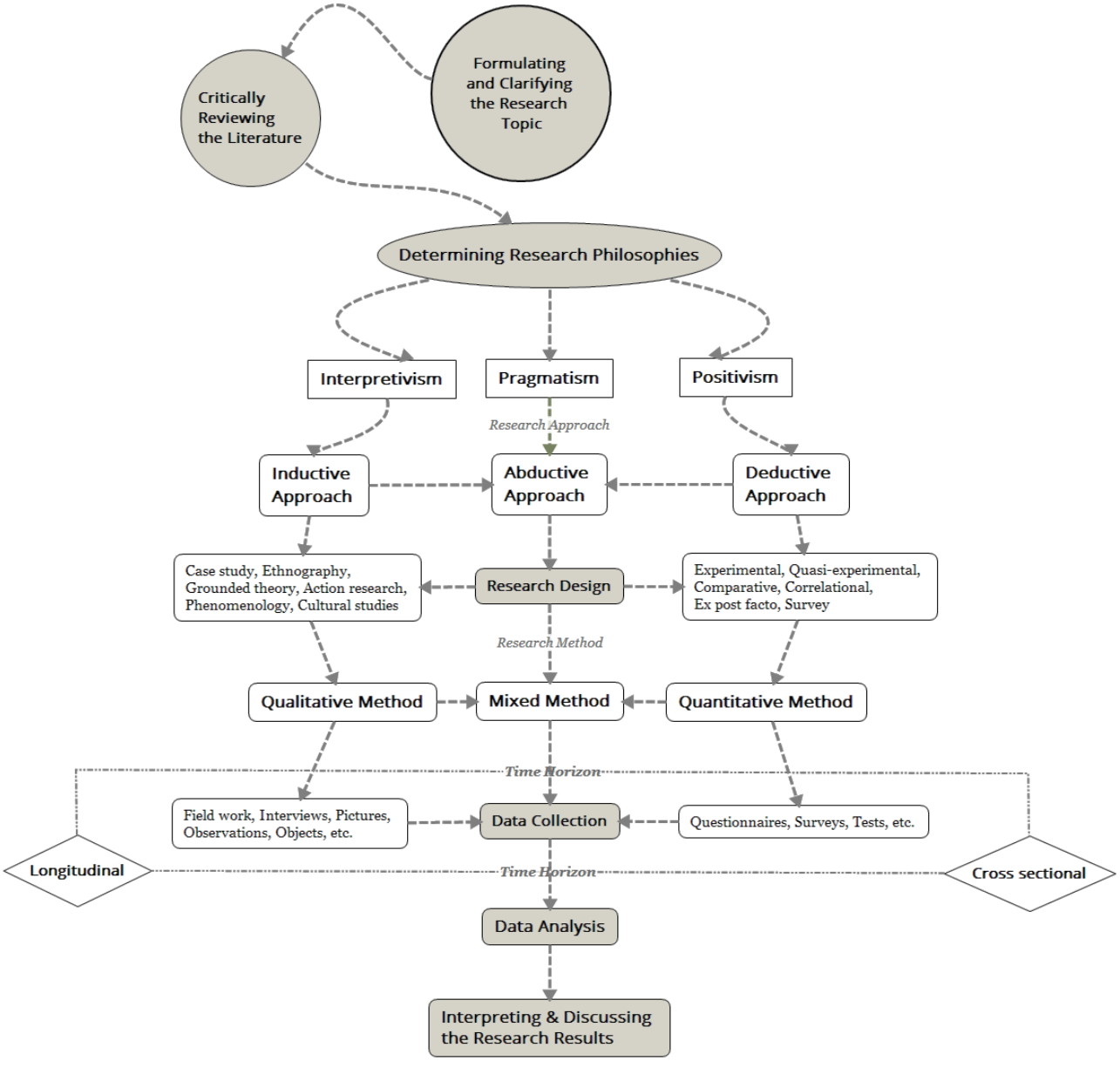
4.1 Introduction

Chapter Four emphasises the theories related to research philosophy and its methodological applications. The chapter outlines the different phases of the methodology adopted in the current study. Firstly, the chapter discusses different assumptions of research philosophy followed by different types of research approach. Secondly, the chapter explains the research methodology, while the subsequent section describes the research strategy. Next, an outline is given of the data collection process, which includes survey methods, questionnaire design, and its validity and reliability. The last part of the chapter presents the methods used in analysing the data.

This chapter offers a justification of the methodological approach applied in the study. The research design and analytical procedure of any research should have a precise methodological approach grounded in its research objectives and structure. It is a process where researchers find solutions to the particular problem through systematic scientific inquiry (Saunders et al., 2012: 5; Sekaran and Bougie, 2016: 13). Hence, to fulfil the gaps identified in the literature review, the current study adopts the most fitting methodological process, illustrated in Figure 4.1. The figure summarises a variety of types of research paradigms, methodologies, approaches, strategies, choices, time horizons and methods of collecting data. To justify the reasons behind the selected approaches of this study, a preliminary discussion on the research philosophy is provided in the following section, which complements the focus of the study. This chapter also provides an insight on research strategy, research design, data collection instruments, and analytical methods. Therefore, the goals of this chapter are to:

- Justify the selected philosophical position, and research approach, and to explore the strengths and limitations of the approaches.
- Provide a brief explanation and justification of the selected research methodology.
- Explain the research methods and analytical process that have been used in the study.

Figure 4.1: Different Stages of Research Process



Sources: Adapted from Collis & Hussey (2009), Denzin & Lincoln (2011), Creswell & Clark (2011), Bryman (2012), Saunders et al. (2012)

4.2 Research Philosophy

Researchers interpret and interrelate social settings differently and try to understand the dynamics of social entities based on specific underlying philosophical assumptions. These philosophical assumptions revolve around some specific doctrines and processes that control the beliefs and actions of a researcher (Cohen et al., 2013). Such doctrines are recognised as research paradigms (e.g., positivism, interpretivism, pragmatism), which are critical to scientific inquiry. According to Kuhn (1962: 32), a paradigm is "*an integrated cluster of substantive concepts, variables and problems attached with corresponding methodological approaches and tools*". It refers to a constellation of beliefs, values, norms, and opinions that emphasise the rationale and importance of conducting a research (Sarantakos, 2005). Therefore, the research paradigm provides a scientific structure, pattern, and framework involving a conventional set of theories, methods and ways of defining data (Collis & Hussey, 2014).

Paradigms drive the philosophical assumptions with which researchers respond to central queries in designing their research (Ruona & Lynham, 2004). Based on the queries, researchers may want to identify the nature of reality (ontology), what counts as knowledge and how knowledge claims are justified (epistemology), and the nature of value and what is intrinsically worthwhile (axiology). Each of the assumptions refers to the nature and evolution of knowledge that guides researchers' observation towards implementing the most fitting process of conducting a research (methodology) (Saunders et al., 2012; Collis & Hussey, 2014). According to Easterby-Smith et al. (2012), philosophical assumptions can contribute to the research methodology in three different ways. Firstly, the coherent formation of philosophy can influence specific research methods and strategy. Secondly, inclusive understanding of research philosophy can enable a researcher to critically assess different methods and methodologies to have backup strategies for unforeseen pitfalls at the initial phase of the research. Finally, philosophical stance may let researchers adapt different methods or may stimulate the

intention to try different methods beyond the researcher's comfort zone. Hence, considering the importance of a philosophical stance and its association with the research methodology, strong cohesion needs to be established between the research aim, questions, methods, and selected philosophical stance. Otherwise, researchers may encounter various overriding inconsistencies throughout the research process. The following subsections further discuss each philosophical assumption in detail and provide a justification for embracing one.

4.2.1 Ontological Assumption

Prior to discussing the type of ontology used in the study, it is important to define ontology. Ontology can be interpreted as the science of existence (Lawson, 2004), which is concerned about the nature of reality and whether social phenomena can be identified through individuals' perception (Saunders et al., 2012). Ontology refers to the question of how the world is constructed (Saunders et al., 2009; Marsh & Furlong, 2010). This orientation questions whether *"social entities can and should be considered objective entities that have a reality external to social actors"* (objectivism) (Bryman, 2012: 32) or whether *"social phenomena are created from the perceptions and actions of social actors"* (subjectivism/constructionism) (Saunders et al., 2009: 108). Objectivism views social entities as having an existence, is uninfluenced by social actors, which implies that a researcher with this orientation will be unbiased by the judgment or perception of the participants. On the other hand, subjectivism proposes that reality is socially constructed (Berger & Luckmann, 1966) and thus, the reality is constantly modified by its actors. According to Gray (2016: 21), objectivists represent that the *"world is independent of our knowledge of it – it exists out there"* while subjectivists believe *"there are multiple realities and ways of accessing them"*. The following Table 4.1 summarises the differences between the objective and subjective stances.

Table 4.1: Differences between Research Objectivity and Subjectivity

	Subjectivity	Objectivity
View of Human Behaviour	Dynamic, situational, social, and personal	Regular and predictable
Most Common Research Objectives	Explore, discover, and construct	Describe, explain and predict
Focus	Wide-angle lens; examines the breadth and depth of phenomena	Narrow-angle lens: tests a specific hypothesis
Nature of reality	Multiple realities; subjective	Single reality; objective
View of Social entities	Social phenomena are the actions of social actors	Social phenomena are external to and independent of social actors
Research Approach	Negotiate interpretations of the subjective world	Objective techniques applied to acquire truth
Role of Researcher	Researcher and their biases may be known to the participants in the study, and participant characteristics may be known to the researcher.	Researcher and their biases are not known to the participants in the study, and participant characteristics are deliberately hidden from the researcher. (double-blind studies)
Outcomes	Specific or focused conclusions that are less generalizable	Generalizable conclusions, which are applicable to other populations

Sources: Adapted from Denzin & Lincoln (2011); Sarantakos (2013); Saunders et al. (2012)

Table 4.1 demonstrates that orientation to the objectivist stance depends more on the top-down approach, where existing theories drive the laws and logic in developing research hypotheses to be tested through collected data. The objective of this orientation is to describe, explain, and predict a phenomenon that is independent of social actors and generalizable to other populations. In contrast, the subjectivist orientation rests more upon the bottom-up approach, where new constructs and philosophies are driven by the thoughts of the social actors rather than existing theories. This orientation examines the breadth and depth of phenomena to explore, discover, and construct new concepts, which are applicable to a specific population and so its conclusions are less generalizable.

In order to identify the relevant ontological assumption, the research questions offer the best possible guideline (Teddlie & Tashakkori, 2009). Thus, it is important to evaluate the research questions of the current study. The research questions of the current study sought to quantify the data for explaining the causal relationships between different constructs, which suggests an objectivist view. Objectivism identifies causal relations and essential rules that explain the predictability of human social behaviour (Holden & Lynch, 2004). Furthermore,

investigating a theory is one of the pre-requisites of the objectivists stance (Creswell, 2014). Thus, given the requirements, the current study intends to investigate the causal relationship between institutional elements, governance, organisational safety, and performance issues using multiple theoretical aspects, which fits well into the objectivist ontological orientation and seems the most apt selection to carry out the study.

4.2.2 Axiological Assumption

Axiology is concerned with the role of researchers' values within a research (Collis & Hussey, 2009; Saunders et al., 2009). The role of researchers' values within a research process is very important to establish a reliable or credible research (Saunders et al., 2009). Heron (1996) states that people's actions are guided by their individual values and thus, values provide a guideline to understand the research result and the way the researcher is conducting it. Researchers can embrace either of two differing axiological perspectives: value-free or value-laden involvement, which is directly interrelated with the ontological assumption. Researchers with an objectivist orientation consider that their research process is value-free, which is independent and unaffected by their research activities and they claim perceive to the examined phenomena objectively (Collis & Hussey, 2009). Alternatively, researchers with a subjectivist orientation believe that the research process and interpretation of the result are highly driven by their involvement (Saunders et al., 2012). In this perspective, researchers perceive that they are the part of societal views, cultural practices, and upbringings that cannot be separated from what is being researched and for that reason, this value-bound view plays a large role in deducing results.

In view of its positivist orientation, the current study uses a highly structured methodological approach and follows a strict methodological protocol, so that the research will be free of subjective bias and objectivity will be achieved. Moreover, the respondents will not be influenced by the values, beliefs or characteristics of the researcher, as the researcher will

not interview the respondents directly. The collection of the data will be conducted by a questionnaire, which is considered as a involving low to moderate interaction with the respondents and so entails less bias. In consequence, the chance of the researcher's values playing a role in the research process is relatively minimised. Therefore, the study is considered to be value-free, as the researcher is assumed to be independent and capable of examining the phenomena without being biased by it or influencing it.

4.2.3 Epistemological Assumption

Epistemology is concerned with what we define as acceptable knowledge (Bryman, 2012). According to Cohen et al. (2013: 7), epistemological orientations construct "*the very base of knowledge - its nature and forms, how it can be acquired and how it can be communicated to human beings*". Epistemology put emphasis on what is being researched and its relationship with the researcher (Saunders et al., 2012). The relationship can be determined by identifying the way the researcher recognises the world, and answering what is considered as acceptable knowledge (Walliman, 2015). In other words, epistemology assists the researcher to determine the foundation of the research process. The orientation has two different approaches, in which one implies that phenomena are evident and assessable and can be authentically regarded as knowledge (the positivist view), while the other view implies that phenomena are always subjective and influenced by the social structures of reality (interpretivist view). To identify the difference between the two approaches, Smith (1983: 10-11) states that, *"in positivist research facts act to constrain our beliefs; while in interpretive research beliefs determine what should count as facts"*. However, epistemological concerns about what is accepted as knowledge can be explained by three different research paradigms: positivism, interpretivism and pragmatism. Table 4.2 illustrates the underlying beliefs of contemporary research paradigms.

Table 4.2: Summary of Research Paradigms and Distinguishing Characteristics

	Positivism	Interpretivism	Pragmatism
Ontology	Reality is real and apprehensible; objective	Multiple local and specific "constructed" realities; subjective	Reality is constantly renegotiated, debated, interpreted out of the social situation; objective and exists independently of the human mind
Epistemology	Researchers are objective by viewing reality through a "one-way mirror"	Researchers are "passionate participant" within the world being investigated	Researchers are trying to find out the means and change is the fundamental purpose
Axiology	Value free research inquiry	Value laden research inquiry	Values play a large role in interpreting results
Nature of knowledge	Non-falsified hypotheses that are probably facts and laws	Individuals and collective reconstruction that may unite around consensus	Inter-subjectivity, emic and etic viewpoints; respect for nomological and ideographic knowledge
The goal of knowledge process	Record constant conjunctions of observable events. Identify surface regularities and patterns	Understand how human begins make individual and/or collective sense of their practical world and engage in a situation	Build intelligible models of human active experience, which provide insights for organising the world of experience
Status and shape of knowledge	Correspondence conception of knowledge. An iconic representation of real-as-is. Researchers try to explain and predict.	Plausible interpretations that fit lived experience. Narratives supported by thick descriptions, and, in certain currents within interpretivism, generic statements	Plausible interpretations that fit experience and are viable for intentionally acting. Generic models and achievable propositions.
Methodology	Time and context-free generalisation are desirable. Possible and real cause of social scientific outcome can be determined reliably and validly via the quantitative method	Hermeneutical/dialectical; impossible to differentiate fully causes and effects; inductive reasoning. Through the qualitative method, time and context-free, generalisation is rather desirable not possible	Thoughtful/dialectical eclecticism and pluralism of methods and perspectives; determine what works and solves individual and social problems
Method	Usually Quantitative, which includes sampling measurement and scaling, statistical analysis, questionnaire	Usually Qualitative, which includes qualitative interviews, observation, case study, life history, focus group, narrative etc.	Combination of any qualitative and quantitative methods. In addition, data mining, expert review, usability testing, physical prototype etc.

Sources: Adapted from Guba & Lincoln (1994); Crotty (1998); Perry et al. (1999); Barker et al. (2001); Sobh & Perry (2006); Teddlie & Tashakkori (2009); Saunders et al. (2012); Avenier & Thomas (2015)

According to Table 4.2 positivism adheres to the view that knowledge is obtained through observation and it can be measured (Collis & Hussey, 2014). In this paradigm, the researcher interprets the phenomenon through the objective approach and identifies persistent concurrences of observable events and patterns. According to Collins (2010: 38) positivism has an *"atomistic, ontological view of the world as comprising discrete, observable elements and events that interact in an observable, determined and regular manner".* Moreover, Researchers

referring to this paradigm usually adopt a deductive and value-free approach, which is independent of what is being researched and has no provisions for human interests within the study (Crowther & Lancaster, 2008; Saunders et al., 2012; Collis & Hussey, 2014; Creswell, 2014). However, as this paradigm relies upon experience as a basis of knowledge, a number of vital concepts, e.g., cause, space, and time cannot be measured, from the perspective. Another shortcoming of this paradigm is its lack of in-depth insight into issues, due to its view of the world as external and objective. Nevertheless, these shortcomings of positivism can be overcome by interpretivism.

Interpretivists perceive that knowledge is developed from socially constructed reality rather than objectively determined and perceived (Carson et al., 2001; Neuman, 2007). They consider that reality is multiple and relative, in and that the process of investigating knowledge is value-bound (Teddlie & Tashakkori, 2009) and thus, they incorporate human interest into the research. In this paradigm, researchers produce new knowledge and try to cultivate it with the help of participants, as *"the interpretivists seek to determine motives, meanings, reasons, and other subjective experiences that are time and context bound"* (Hudson & Ozanne, 1988: 511). Therefore, the goal of the interpretivist paradigm is to comprehend and construe in-depth knowledge on how humans develop individual or mutual senses of their social world and engage in a situation (Hudson & Ozanne, 1988; Neuman, 2007). However, the interpretivistic paradigm has its own disadvantages. For example, given the subjective nature of the paradigm, there is an apparent risk of bias on the part of the researcher. Furthermore, the generalisation of the outcome is not possible, as the conclusions are deeply imbued with personal values and perceptions, which also weakens the reliability and representativeness of data to a certain extent.

While the above stated paradigms differ totally in their view of the nature and foundation of knowledge, the pragmatic paradigm combines the strength of both the positivist and

interpretivist paradigms. Pragmatists believe that reality is constantly renegotiated, debated, and interpreted and a particular standpoint cannot entirely offer a complete depiction of reality (Saunders et al., 2012). Hence, pragmatists attempt to understand reality by *"tracing its respective practical consequences"* (James, 2010: 36). It has a basic concern with human action and practice as both the cause of problems and as the sphere to which theories should contribute usefully. Above all, the pragmatist approach reveals the way to both theorising practice and reflexivity (circular relationships between cause and effect) of the process of generating new knowledge. However, Kumar (2014) believes that regardless which paradigm is used, a researcher should embrace specific values concerning bias in the study and maintain impartiality with regard to the process and conclusion of the research. Hence, considering the research context, questions, problems, and associated values, the study embraces a positivistic epistemological standpoint.

The current study mainly focuses on macro and micro aspects of organisational setting and performance, which are objective in nature. Hence, interpretivism does not fit well in the context, because while subjectivity offers the prospect of capturing in depth situation of an organisation, replication and generalisation of the study are unlikely, as conclusions drawn may be specific to a particular organisation (Gable, 1994: 2). Furthermore, the interpretive paradigm refers to dialogue, which may generate rich and different views of the situation, but participants' insight may bias the process and thus, be inappropriate for the current study. Furthermore, the theories applied, i.e., the institutional perspective, agency theory, social exchange theory, and organisational safety climate are consistent with an objective standpoint (Guldenmund, 2000: 221-222; Miner, 2007: 356-359). For example, safety climate theory is about the attitudinal climate with regard to safety within an organisation, which discusses the relationships, correlations and, in general, comparisons, bringing the issues of quantification and objectivity (Coyle et al., 1996; Guldenmund, 2000). In addition, the study intends to discover how to improve organisational safety climate to enhance employee workplace

performance, which is rooted in the positivist paradigm, wherein implementing practical measures in the organisation to gain higher performance, is the fundamental concern (Swanson, 1995).

Finally, to understand universal laws, researchers need to observe and record the social phenomena in a systematic manner and interpret the underlying principles that have triggered the phenomena to happen. For that reason, positivists place emphasis on scientific and quantifiable observations to evaluate the results and to test hypotheses empirically (Saunders et al., 2009). For instance, many of the previous studies including Griffin & Neal (2000); Huang et al. (2007); Wu et al. (2008); Brondino et al. (2012); Hon et al. (2014); and Barbaranelli et al. (2015) investigate various phenomena related to organisational safety climate and performance from a positivistic perspective. Drawing on the previous studies, this research tries to determine the common patterns of cause-and-effect that can be used as a basis for predicting and controlling natural phenomena. In view of that, the current study fits well into the positivistic epistemological orientation. Besides, the positivist paradigm will facilitate replication and generalisation of the study outcome. However, the study also leans towards a pragmatic view. The study requires to explore institutional perspectives, governance practices, and safety climate factors, as these can vary depending on the specific organisational domain. Hence, an in-depth examination was required for a better understanding of the context and practices. For that reason, current study uses an informal discussion with ten industry professionals to investigate the institutional elements that influence the adoption of OHS practices by individual organisations in addition to factors that ensure good governance practices, and issues any organisation should be concerned of in regard to maintain safety practices. These discussions assisted the study to formulate survey questionnaire with stronger inferences of the complex phenomena of RMG industry-specific issues. Hence, it can be argued that the study is also influenced by pragmatic epistemological stance.

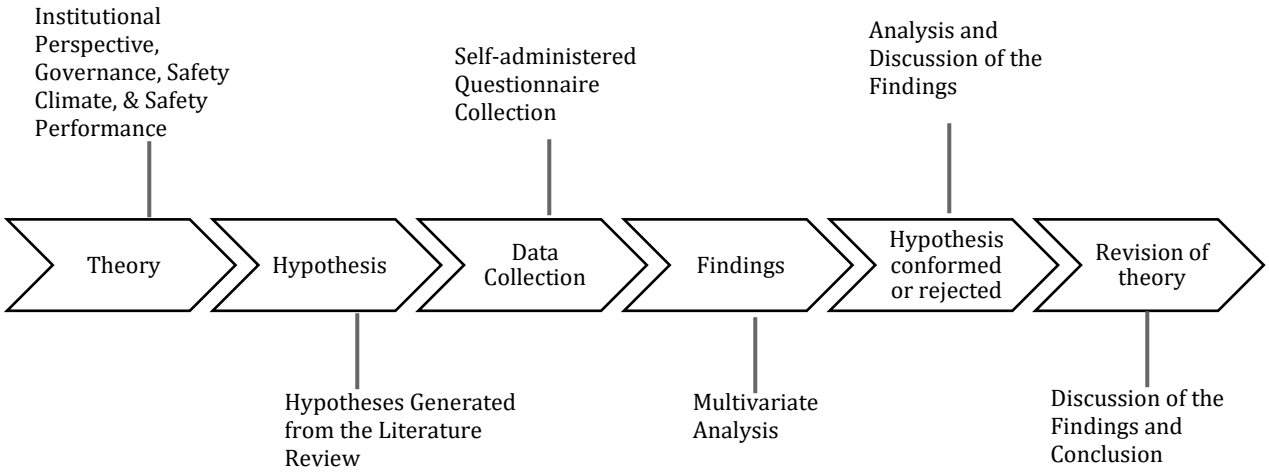
4.3 Research Approach

The research approach is concerned with how theory is involved in the research process (Saunders et al., 2009) or more precisely, it is concerned with the theoretical foundations of a research (Ghauri & Gronhaug, 2010). A research approach can be inductive or deductive in nature (Hussey & Hussey, 1997; Bryman, 2012; Saunders et al., 2012; Wilson, 2014). According to Collis & Hussey (2014: 7), the inductive approach *"describes a study in which theory is developed from the observation of empirical study".* This approach begins with detailed observations of the world, which are further transformed into the logical generalisation of identified patterns and relationships to build a theory (Neuman, 2007). While this approach offers high flexibility and limited structure to understand the unique attributes of a situation, it has the problem of being too subjective, lacking replicability and generalisability of the study, and lacking transparency (Bryman, 2012). On the other hand, the deductive research approach is *"a theory testing process which commences with an established theory or generalisation and seeks to see if the theory applies to specific instances"* (Hyde, 2000: 83). In this approach, researchers develop a clear theoretical position prior to a highly structured way of collecting data and testing hypotheses. This approach *"follows the path of logic",* as it deduces the assumption from the propositions of the theory (Snieder & Larner, 2009: 16). Although this approach overcomes the limitations of the inductive approach, it has its own drawbacks. For example, the approach has been criticised for its rigid design, artificial sense of accuracy in the measurement process, and static interpretation of social life while analysing relationships (Bryman, 2012).

However, the two research approaches are guided by different philosophical positions of the research (Saunders et al., 2009) and with a positivist philosophical orientation, the current study exhibits an attention to theory testing (deductive approach). Furthermore, the choice of research approach also depends on the richness of the literature, the research problem, research design, researchers' personal experience, and the nature of the audience (Creswell,

2014: 19-21; Anderson et al., 2015: 48). Hence, based on the recommended aspects of selecting a research approach, the current study fits well with the deductive approach. Adopting this approach helps to explain the causal relationships between constructs of the study, as a deductive approach includes construction of hypotheses which are subjected to testing, while the inductive approach does not deal with hypotheses. Primarily, this deductive study goes through a literature review to understand the previous studies and existing theories of research related issues. Depending on the previous theoretical findings, the study conceptualises a theoretical framework to find the relationship between institutional aspects, governance, organisational safety climate, and performance issues. With the help of the existing literature on the investigated phenomena, the study develops the variables that generate the research hypotheses and items for measuring each research construct. Finally, data are collected and analysed with a highly structured methodology, through which the original theory is confirmed or modified. Figure 4.2 summaries the chronological steps for the deductive approach implemented in this study.

Figure 4.2: Steps of Deductive Approach for Research



Source: Adapted from Bryman (2012)

4.4 Research Methodology

The research methodology is a strategy that outlines the underlying assumptions governing the choice and implementation of a particular research method to attain desired outcomes (Crotty, 1998; Creswell, 2014). It offers a design, procedure, and strategy to derive solutions for any research problems or questions (Kerlinger & Lee, 2000). To obtain the solutions, research methodology typically converts the research paradigm into guidelines for conducting the research (Sarantakos, 2005). Hence, the methodology is guided by the researcher's ontological and epistemological assumptions (theoretical orientation) and by their approach towards the research (Gray, 2004). According to scholars (e.g., Bryman, 2012; Saunders et al., 2012; Collis & Hussey, 2014; Creswell, 2014; Wilson, 2014) research methodology can be identified into two basic categories: quantitative and qualitative. Despite the similarity in their names, the two are different in their methodological characteristics, techniques, ways of treating data, and data collection processes. The qualitative methodology involves defining experiences, highlighting meaning, and discovering the reality of a phenomenon, whereas the quantitative methodology is concerned with measuring, quantifying, or discovering the extent of a phenomenon (Coolican, 2014). Table 4.3 outlines the fundamental assumptions related to qualitative and quantitative methodologies.

Table 4.3: Assumptions Related to Qualitative and Quantitative Methodologies

	Quantitative	Qualitative
Ontology	Objective reality, the researcher is independent of that which is researched	A subjective reality where the researcher interacts with that being researched
Epistemology	Positivist perspective, search for Truth; justification by empirical confirmation of hypotheses; universal scientific standards	Interpretivist perspective, individual and group justification; varying standards
Axiology	Value-free and unbiased	Value-laden and biased
Aim	Quantitative/numerical description, causal explanation, and prediction. Offer generalizable findings providing a representation of objective outsider viewpoint of populations	Qualitative/subjective description, empathetic understanding, and exploration. Offer particularistic findings; provision of insider viewpoints
Perspective of Inquiry	Nomothetic: focuses on general statements that account for larger social patterns that form the context of single events or individual behaviour and experience	Idiographic: observe the minute details of everyday life to construct an overall portrait
Logic of Inquiry	Deductive	Inductive

Quality Criteria	Internal and external validity, Reliability	Credibility, Transferability, Dependability, Conformability, Authenticity
Research Design	Experimental, quasi-experimental, single subject and descriptive, comparative, correlational, ex-post facto	Phenomenology, case study, ethnography, grounded theory, cultural studies
Those Being Researched	Randomly selected sample, proportionally representative of the population	Usually a small number of non-representative cases
Data	Questionnaires, surveys, tests, etc. in the form of numbers and statistics	Written documents from fieldwork, interviews, pictures, observations, objects, etc.
Data Analysis	Identify statistical relationships among variables.	Use descriptive data; search for patterns, themes, and holistic features; and appreciate difference/variation.

Sources: Adapted from Guba & Lincoln (1994), Castellan (2010), Collis & Hussey (2014), and Creswell (2014)

Table 4.3 illustrates that a qualitative approach perceives reality as socially constructed and knowledge is interpreted subjectively in order to examine the answers to the research questions. It is associated with the inductive process, where patterns or theories are developed to understand intricate specifics of a phenomenon, which are sometimes difficult to find and develop through the quantitative approach (Corbin & Strauss, 2014; Creswell, 2014). In contrast, quantitative approach is conventionally related to a positivistic orientation where researchers conduct structured, scientific, and systematic inquiry links a phenomenon (Saunders et al., 2009; Bryman, 2012). It underlies the deductive approach (Ghauri & Grønhaug, 2002) where the aim is to identify direct and exact cause-and-effect relationships through a theory-laden process. The quantitative approach offers a scientifically concrete response to the research questions, which is objectively well-defined and measured through statistical tools and techniques (Rosner, 2010).

However, both approaches have their own weaknesses, which are complemented by each other's strengths. While the qualitative approach is criticised for its lack of generalizability and replicability issue, the quantitative approach supplements that with its ease of replication and generalizable nature (Easterby-Smith et al., 2012). Besides, enhancing the quality of the studies through reliability and validity is difficult to measure in a qualitative approach, whereas, quantitative studies are more competent in that area. Alternatively, in a quantitative approach,

it is difficult to say 'why' individuals approve or disapprove of a certain phenomenon, while the qualitative approach offers more comprehensive and rich in-depth data to interpret the situation (Bryman, 2012; Saunders et al., 2012). Moreover, a quantitative approach is not appropriate for interpreting a historical process involving changes (Morgan & Smircich, 1980). However, neither of these methodologies is inherently superior to the other. The appropriateness of implementing any approach is decided by the context, objective and nature of the study.

The philosophical orientation of this study favours a quantitative research strategy (Easterby-Smith et al., 2012). Adopting a positivistic stance, this study exhibits a focus on theory testing and involves a deductive approach. The literature review helps to develop a research framework for analysing the relationships between institutional aspects, governance, organisational safety climate, and performance issues. Adopting a quantitative approach will help to establish the causal patterns behind institutional elements affecting organisational safety climate. In addition, several previous studies have also used a quantitative approach in safety research (e.g., Mearns & Flin, 1999; Cheyne et al., 2002; Zohar & Luria, 2005; Beus et al., 2010b; Bahari & Clarke, 2013; Fernández-Muñiz et al., 2014; Barbaranelli et al., 2015). Drawing on the above studies, this study uses a quantitative approach to investigate the research context. The quantitative approach provides the possibility of generalizing the outcomes of this research beyond the boundaries of the observed sample. In addition, this approach will ensure the replicability of this research, as the study will not be influenced by the values, beliefs, or any other characteristics of the researcher. Besides, due to the measurable nature of the quantitative approach, the reliability and validity of the study can also be assured. Hence, considering the philosophical stance and implicit benefits adopted, this study involves a quantitative approach to conduct the research.

4.5 Research Strategy

Research strategy refers to the way researchers position their study with a specific direction to answer the research questions (Bryman, 2012; Saunders et al., 2012; Creswell, 2014). It helps a researcher to organise, implement, and govern the research. While research strategy provides powerful guidance, *"it needs to be complemented with methods that can guide the research on a more detailed level"* (Johannesson & Perjons, 2014: 39). However, despite the availability of a variety of strategies that a researcher cause to find the solutions of the research problems, the choice is directed by the objectives and characteristics of the study being undertaken (Collis & Hussey, 2014). According to Johannesson & Perjons (2014), questions regarding suitability, feasibility, and ethicality with respect to research questions, resources, and effect on the research environment can define the type of strategy that needs to be carried out.

Based on consideration of such issues, the current study uses the survey as a strategy. In the field of management and business research, the survey is used extensively as a strategy for accumulating and examining quantitative data to answer questions of who, what, when, where and how much/many (Collis & Hussey, 2014; Sekaran & Bougie, 2016). It offers a precise medium for evaluating evidence about a population and provides a researcher further control over the research process (Saunders et al., 2012). In the current research, the survey is used as a strategy because this strategy is suitable to identify the impact of institutional structure on organisational safety actions and performance (cause-and-effect relationship) to answer the research questions. Besides, the current study intends to investigate the association between different constructs, which is the fundamental drive of correlational surveys[14] (Neuman, 2007; Bryman, 2012; Collis & Hussey, 2014). Secondly, in order to economically collect a large amount of data within a short period of time, that is easy to standardise and compare, survey

[14] Correlational survey tries to determine whether there is any relationship between different variables or not, while descriptive survey tries to identify and count the frequency of a specific population.

as a strategy is the most feasible option from a practical point of view. Finally, considering the possible influence on the research environment, the study uses a survey strategy.

Given that the issues of the research are sensitive to the garments industry of Bangladesh and the population (workers) for responding on those issues are vulnerable, the study makes sure that the participants are not affected by participating in the survey. Hence, the survey strategy was suitable as it allowed all participants to remain anonymous and left them with the option to withdraw from the survey at any time. Furthermore, most safety climate and performance studies use the survey as a research strategy by using questionnaire and/or interview instruments, which offers the current study support for selecting survey as a research strategy. Hence, considering all the above aspects of the research, the current study uses the survey as a research strategy to create, structure, and present the results in a more scientific way.

4.6 Time Horizon

To set up a research plan, time is a significant element to consider. In this respect, researchers consider two different types of studies: cross-sectional and longitudinal studies. A cross-sectional study is designed to acquire information regarding a phenomenon, condition, setting, or issue in different contexts at the same point in time (Kumar, 2014; Somekh & Lewin, 2005). Generally, this type of study selects different groups of people or organisations to discover how factors differ at a given point in time (Bryman, 2012; Sekaran & Bougie, 2016). Alternatively, a longitudinal study is an observational method through which the same subjects are repeatedly observed over a period of time (Saunders et al., 2012; Collis & Hussey, 2014). This type of study is useful to recognise the patterns of change in relation to time and to collect factual information constantly (Somekh & Lewin, 2005; Kumar, 2014). However, longitudinal study has a weakness of being time consuming, costly, and difficult to analyse due to the richness of data. Furthermore, due to repeated interviewing of the same sample, the study

suffers from the control-effect issue (behavioural change of respondents) and sample mortality issue, which increases over time weakening preliminary representativeness (Cohen et al., 2013: 272)

However, cross-sectional studies also have its shortcomings (Cohen et al., 2013), as they are most fitting for studies that are developed based on theory, focus on relatively concrete and externally verifiable constructs, and include different measurement scales (Rindfleisch et al., 2008). The current study is the cross-sectional. Given that the study embraces a correlational survey that investigates the effect of institutional elements on organisational safety climate and performance through the mediating roles of good governance at a single point of time, the cross-sectional approach is suitable for the study. Furthermore, considering the issue of limited time frame, associated cost, and viability of analysing the huge amount of data, the cross-sectional approach is most fitting for the study.

4.7 Data Collection

Data collection is one of the most significant phases of conducting a research, which is done through a systematic process of gathering and measuring information on targeted variables (Ghauri & Gronhaug, 2010). It is a fundamental technique to improve the consistency of hypotheses, answer relevant questions, assess results, and estimate future possibilities and developments (Newman & Benz, 1998). Accurate collection of data is vital to uphold the integrity and quality of a research, which ultimately provides convincing and credible solutions to the research problems. While data collection methods vary by subject discipline, the emphasis on ensuring accurate and honest collection remains the same. Different scholars, e.g., Ghauri & Gronhaug (2010), Bryman (2012), Collis & Hussey (2014), and Wilson (2014), identify quantitative and qualitative methods for the data collection process. The basic difference between these two methods is the way they accumulate the data.

Qualitative data collection methods afford more depth and provide insights into the social world, whereas quantitative methods offer precise measurements of social actions, which can be described by the predictive power of statistical analysis (Bryman, 2012). Qualitative data are easier to understand, provide more details and put emphasis on the context, and explain the context that is being investigated. However, it is time-consuming to collect, subjective in nature, difficult to summarise, generalise, and evaluate analytically and thus, criticised for lack of reliability and transparency. In contrast, quantitative data may not be as rich or as detailed as that collected by qualitative methods, but it includes a relatively large number of subjects and increases the possibility of generalising the results. Its logical, critical, and analytical approach provides objectivity and accuracy of the results and thus, provides more reliability and validity of the outcome. Moreover, such data can be collected from two different sources: secondary and primary (Saunders et al., 2012).

Collection of secondary data refers to the technique in which researchers collect data through existing literature where data have already been collected and analysed by other scholars (Kothari, 2004). This is a commonly used technique to develop the theoretical foundations of the research concepts and identify gaps within the researched field (Saunders et al., 2012). Furthermore, Lancaster (2005) states that secondary data sources, such as the internet, conferences, government reports, surveys etc., can also be used to develop research constructs. For the purpose of the current study, various sources, including authentic web pages, organisational reports, and newspapers have been used for secondary data collection point. For example, the study uses various reports and publications from *Alliance for Bangladesh Worker Safety, Accord on Fire and Building Safety in Bangladesh, International Labour Organisation (ILO) Bangladesh, Better Work Bangladesh, Occupational Health and Safety Assessment Series (OHSAS 18001) Guideline* etc. Along with the existing literature, these openly available sources helped in structuring and developing the questionnaire for a purpose different from that of preceding scholars (Gray et al., 2007).

On the other hand, primary data is of data that is extracted directly from the information participants provide during the investigation (Saunders et al., 2012; Creswell, 2014). There are two main techniques for accumulating quantitative primary data: survey and experiments. This study uses the survey as the method to systematically record the respondents' perceptions and attitudes (Groves et al., 2009). According to Ghauri & Gronhaug (2010), the survey is an effective and efficient way to acquire the attitudes and opinions of the participants in order to understand cause and effect relationships. Since the current study explores cause-and-effect relationships between the proposed constructs, based on the viewpoints of garment worker, survey as a data collection method is the best fit for the research. Moreover, it is easy to administer and cost-effective (Saunders et al., 2009) and through survey, a large number of respondents and a broad range of data can be collected (Thietart, 2001). In addition, most social science studies use the survey as a conventional method (Lancaster, 2005), which also reinforces the idea of employing survey as the best possible data collection process for the current study. The following section presents a discussion of the survey method in the context of this research study.

4.7.1 Survey Method

The survey method is typically the most common tactic used in the quantitative research (Easterby-Smith et al., 2008; Ghauri & Gronhaug, 2010). In general, scholars perceive surveys as authoritative and comparatively easy to explain and understand (Saunders et al., 2012). Unlike other data collection methods, the survey is considered as a more reactive procedure that allows the respondents to be conscious of the context in which they are being examined (Neuman, 2007). However, in the survey, a variety of instruments can be used by a researcher. This study uses a questionnaire to elicit reliable responses from the selected sample. The questionnaire allows researchers to analyse and describe the relationships among the constructs, more precisely cause and effect relationships (Saunders et al., 2012). According to Gratton & Jones (2004), the questionnaire provides accessibility, structured data, possible bias

reduction, anonymity and extra time for respondents. Additionally, using a questionnaire is one of the most efficient modes of collecting responses from a relatively large sample (Bryman, 2012). Therefore, this research uses a questionnaire as an instrument for data collection.

4.7.1.1 Collection of Survey Data

Questionnaires can be administered in different ways to collect survey data. For example, questionnaires can be distributed and data can be collected through a postal survey, telephone interview, face-to-face interview, email/internet-based survey, group administered survey, etc. (Hussey & Hussey, 1997; Collis & Hussey, 2014). Table 4.4 shows that each technique of data collection has its advantages and disadvantages in terms of speed of the data collection process, interviewers' influence, access to respondents, the response rate and the costs associated with the process. For example, while respondents' anonymity can be highly maintained in a mail survey, response rate can be very low at times. Alternatively, even though questionnaire length can be long, and the cost associated with conducting a face-to-face interview is very high, the maximum response rate can be achieved through this process. In addition, various other issues, such as the education level of the respondents, countries' communication infrastructure including the internet and postal system, and development the process of a country, can also influence the selection of the data collection mode. Considering such issues, in the current study data were collected through a self-administered questionnaire in group settings (group administered survey).

Table 4.4: Modes of Data Collection in Surveys

	Face-to-face Interview	**Telephone Interview**	**Mail Survey**	**Internet Survey**	**Group Survey**
Data Collection Speed	Moderate-Fast	Very Fast	Slow	Instant	Moderate-Fast
Respondents' Cooperation	Excellent	High	High	High	Excellent
Questionnaire Length	Long	Moderate	Varies depending on incentives	Moderate	Long
Response Rate	Very High	Medium	Low	The software can assure	Very High
Possibility of Confusion	Low	Low	High	High	Low

Interviewer's Influence	High	High	None	None	High
Interviewer's Supervision	Moderate-High	Moderate-High	None	None	Moderate-High
Respondents Anonymity	Low	Moderate	High	Respondent can either anonymous or known	Low-Moderate
Ease of Follow-up	Difficult	Easy	Easy	Difficult, unless email address is known	Difficult
Cost	Highest	Low-Moderate	Lowest	Low	Moderate-High
Open-ended Response	Best	Moderate	Poor	Poor	High

Source: Adopted from Oppenheim (2000: 101-103); Plooy (2001: 171); Gray et al. (2007: 127-129); MacDonald & Headlam (2008: 17); Cooper & Schindler (2014: 225); Trochim et al. (2015: 173-174)

In this type of survey, self-administered questionnaires are distributed directly to a sample of individuals within a group (Plooy, 2001: 170). Typically, administration of questionnaires in a group setting affords researchers several advantages. For example, this type of approach allows each respondent to feel personally involved in the research process by completing his/her own questionnaire and returning it to the researcher on completion. This results in a higher response rate than the other types of data collection method (Trochim et al., 2015: 173). Moreover, in case of any problem with the clarity of the questionnaire, the respondents can immediately ask for an explanation (Birmingham & Wilkinson, 2003; Collis & Hussey, 2014).

Furthermore, considering the education level, time, and availability of the respondents, group distribution is very suitable for the current study process (Oppenheim, 2000; Trochim et al., 2015). Besides, a study conducted by Job & Bullen (1987) shows that group treatment can have greater reliability than the face-to-face interview treatment. They also concluded that, while maintaining anonymity can be a weakness, the advantages of the group administered questionnaire may outweigh those of the face-to-face interview for assessing the reactions of the respondents. Most of all, various scholars like, Glendon & Litherland (2001), Gordon et al. (2007), Cavazza & Serpe (2009), Brondino et al. (2012), and Navarro et al. (2013) have used self-administered questionnaires in a group setting within safety climate research. Hence,

following the path of those researchers, the current study also implemented a group administered survey to collect the data.

4.7.1.2 Research Population

Research population refers to a well-defined group of objects or individuals that have common characteristics or binding traits (Kumar, 2014; Sekaran & Bougie, 2016). It is the aggregate of *"all possible number of units or elements"* that conform to a set of specifications (Gray, 2016: 155). However, evaluating the entire population is impossible due to its size and lack of research resources and thus, researchers select a representative sample group for estimating the overall population. Accordingly, to get an appropriate representative sample group, it is first necessary to identify research population. At first, the study focuses on Ready-made garments (RMG) factories in Bangladesh. Based on the compliances and standards maintained by these factories, they can be divided into two categories: Compliant and Non-compliant factories. Based on these two different categories, the study targets supervisors and line-workers who are in directly related with safety practices. According to Zohar (2010: 1518) *"the operationalization of safety climate, should involve employees evaluating the relative priority of safety such that the overall level of safety climate represents the shared perceptions of the priority of safety compared to other competing priorities"*. Hence, given the fact that the study analyses the perception of employees regarding their safety environment in the company, supervisors and line workers are the appropriate individuals to recognize and report the actual safety conditions of the factories.

A population can be examined by using two different approaches: selecting a sample or taking a census. Census is a structured technique for collecting, recording, and examining information regarding every member of the entire population (Baffour et al., 2013). In contrast, selecting the sample is a process through which a fraction of the population is specified to exemplify the characteristics of the entire population. While census eliminates sampling error

and offers a reliable and accurate measure, it is a laborious, costly, and time-consuming process that is applicable for a population with heterogeneous nature (Shryock & Siegel, 2013: 407). For these reasons, although taking a sample offers less accurate measurement than census due to the margin of error associated with the process, considering the homogeneity of the population, cost, and time, the current study adopted the sampling method to collect the data. The following section discusses the sampling technique that were adopted to select the representatives of the research population for the data collection process.

4.7.1.3 Sampling Technique

To make sure that the collected data would be likely to offer well-grounded assumptions and convincing conclusions, a sufficiently large, representative sample needs to be collected in the data collection process (Field, 2009; Hair et al., 2016). To ensure similar characteristics of the entire population in a sample, selection of a suitable sampling technique is essential for a research. Sampling techniques are often categorised into probability and non-probability techniques (Bryman, 2012; Saunders et al., 2012; Sekaran & Bougie, 2016). Probability samples are selected in such a way that every member of a population has a known and equal probability of being selected, while in non-probability sampling, this is not the case (Teddlie & Tashakkori, 2009). Non-probability sampling is economical, time-saving, and effective when the population is limitless, but it is criticised for its probable biases towards the sample, less generalizability, and incapability of representing the population and making statistical inferences (Daniel, 2011). Alternatively, probability sampling overcomes the limitations of non-probability sampling and depends on the underlying theory of normal distributions, which provides the most reliable results reflecting the characteristics of the population (Teddlie & Yu, 2007; Creswell, 2014). Probability sampling can be conducted through simple random sampling, systematic sampling, stratified sampling, cluster sampling or through multi-stage cluster sampling (Thietart, 2001; Ghauri & Gronhaug, 2010; Collis & Hussey, 2014; Saunders et al., 2012). Alternatively, non-probability sampling can be conducted through five different

techniques: purposive, snowball, quota, self-selection and convenience sampling (Bryman, 2012; Collis & Hussey, 2014).

The current study used the stratified random sampling technique to collect the data. Saunders et al. (2009: 221), explain stratified sampling as a modification of random sampling in which the population is divided into two or more relevant and significant strata based on one or several attributes. Stratified random sampling can provide higher precision (Ghauri and Gronhaug, 2010) and assure representation of all groups in the sample (Collis & Hussey, 2014). In the current study, the population was split according to two stratification criteria. First, factories were selected based on location (factories situated in Dhaka and nearby locations). Secondly, the population was divided based on the factory risk compliance status (risky and non-risky) provided by *"Accord on Fire and Building Safety in Bangladesh"* and *"Alliance for Bangladesh Worker Safety"*. Then, to select samples randomly, the study used the random function [=Rand()] in Excel to generate random numbers between 0 to 1. After generating the random numbers for each stratum, the first 64 factories sorted by smallest to largest random values were selected for each risky and non-risky compliance status. Using two different criteria will increase the precision of the sample, as it will ensure that each of the strata is represented proportionally within the sample. Furthermore, while simple random and systematic sampling focus on comparable traits of individuals within a unit, stratified random sampling puts emphasis on individuals in a group that reveals a diversity of different traits. Besides having two strata i.e., factory compliance status and location, may influence the variables that are being measured and increase the efficiency of estimation of the overall population.

For this study, 128 factories were surveyed and overall 354 questionnaires were distributed, from which 256 usable responses were retrieved. In each factory, a group of two people including one supervisor and one line-worker was selected for the data collection process (who had more than one year of work experiences). They were asked to be in a room

to answer the questionnaire, which took approximately one hour fifteen minutes. Participation in this survey was voluntary and took place during the work time. Anonymity and confidentiality were guaranteed, as no personal information (name, address, phone number, salary etc.) were required for the questionnaire. Furthermore, permission was granted by the top management of the factory. In some factories, supervisors were unavailable to attend the survey due to a huge load of work, in such cases, the study acquired data from only one line-worker of that factory. While respondents were answering the questionnaire, the survey administrator was present to answer any queries. Once the questionnaire was completed, the respondents were asked to place it in the attached envelope, seal it, and hand it directly to the survey administrator. The following section discusses the sample size taken for the study, using a stratified random sampling technique.

4.7.1.4 Sample Size

Sample size refers to the number of individuals observed in a survey to derive interpretations about a population. In any research, determining sample size is extremely crucial due to the fact that it impacts several dynamics of a research, such as appropriateness of the methods, fit of a model, accuracy and power of a model parameter estimates (Iacobucci, 2010; In'nami & Koizumi, 2013). Especially, determining appropriate sample size is critical for structural equation modelling (SEM) (Hair et al., 2010) and yet, it is often challenging for researchers to find a consensus to determine the suitable size of a sample (Wolf et al., 2013). However, various rules-of-thumb exists in the literature, including (a) 10 cases/observations per indicator (Nunnally, 1994), (b) 5, 10, or even 20 cases/observations per free parameter (Bentler & Chou, 1987; Hoogland & Boomsma, 1998; Kline, 2015), (c) minimum sample size of N=100–200 (Boomsma, 1985; Tinsley & Tinsley, 1987; Ding et al., 1995; Tabachnick & Fidell, 2007).

In addition, determining the sample size also relies on the number of indicator variables

per latent factor. For example, Boomsma (1985) and Marsh & Hau (1999) state that for 6 to 12 indicators per factor in a CFA model, a sample size of N=50 is adequate, while for 3 to 4 indicators per factor in a CFA model, a sample size of N=100 is sufficient. However, a CFA model with only 2 indicators variable requires a sample size of at least N≥400 (Marsh & Hau, 1999; Boomsma & Hoogland, 2001). Furthermore, in addition to the above-stated rules-of-thumb, sample size also dependent on many other factors. For instance, sample size depends on the estimators of the model (e.g., Maximum Likelihood, Multiple Linear Regression, Weighted Least Squares Mean and Variance-Adjusted) (Fan et al., 1999), and complexity of the model (Kline, 2015). Besides, sample size is also influenced by the treatment of missing data (Brown, 1994), nature of multivariate normality (West et al., 1995; Anderson, 1996), design of the study (e.g., longitudinal or cross-sectional; Muthén & Muthén, 2002), or even on observed indicators reliability (Anderson & Gerbing, 1988; Velicer & Fava, 1998). Therefore, rather relying only on the rules offered in the literature, more individual-model-focused and empirically grounded methods in relation to different parameter precision and power have been recommended (e.g., Satorra and Saris's method, Monte Carlo simulation, methods based on model fit indices, or Kim's method) (In'nami & Koizumi, 2013; Wolf et al., 2013). The following Table 4.5 illustrates different combinations of effect size and power level to estimate the minimum sample size for the SEM.

Table 4.5: Sample Size Estimation Based on Statistical Effect Size and Power Level

	Small anticipated effect size			**Medium anticipated effect size**			**Large anticipated effect size**		
Anticipated effect size (Cohen's d)	0.1	0.1	0.1	0.3	0.3	0.3	0.5	0.5	0.5
Desired statistical power level	0.6	0.8	0.9	0.6	0.8	0.9	0.6	0.8	0.9
Number of latent variables	14	14	14	14	14	14	14	14	14
Number of observed variables	42	42	42	42	42	42	42	42	42
Probability level	.05	.05	.05	.05	.05	.05	.05	.05	.05
Min. sample size to detect effect	1,653	2219	2697	155	208	252	39	51	62
Min. sample size for model structure	200	200	200	200	200	200	200	200	200
Recommended min. sample size	1653	2219	2697	200	208	252	200	200	200

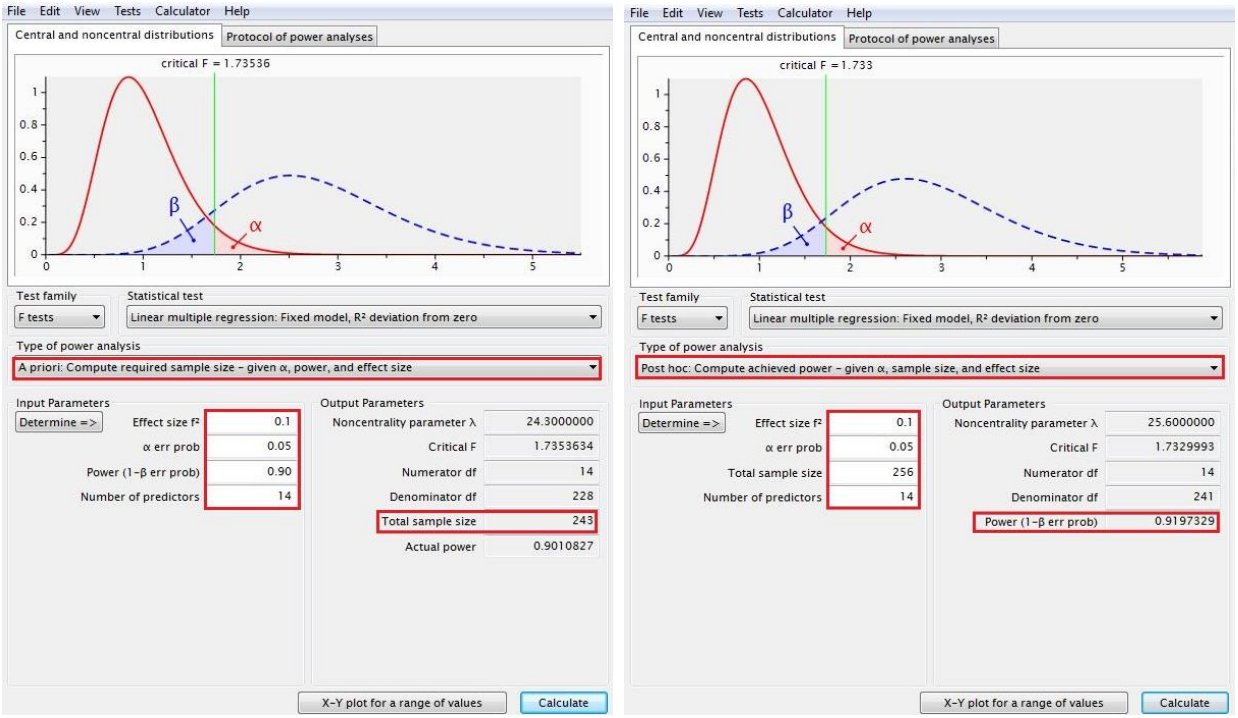
In Table 4.5, the minimum sample size required is estimated by using anticipated statistical power levels, probability, and effect size suggested by Christopher Westland (2010).

The current study uses Cohen's (1988: 17) recommended effect sizes, r=|.1| (small effect size), r=|.3| (medium effect size) and r=|.5| (large effect size). The power levels have also been set to three different points: .60, .80, and .90 for 14 latent variables with at least three indicators per factor (42 overall observable variables). The estimation shows that the current study needs a minimum sample size of N=200 for the model structure and larger effect size requires a smaller sample size to detect the effect. Hence, considering the above discussion and supported by the following accounts, a sample with a size of N=256 can be considered as adequate to reliably determine the effects.

1. According to Harrington (2009: 29-31, 45-48), Bagozzi (2010: 212), Iacobucci (2010: 95) and Hair et al. (2010: 23), the sample size N=256 is sufficient to offer assured and reliable maximum likelihood estimation solutions.
2. According to Marsh & Bailey (1991) and Marsh et al. (1998), the complexity of the model, which is measured by the ratio (r) of the observed variables (p) to the latent factors (f), can be used to determine the minimum sample size. They state that the minimum required sample size, N=400, when r=2; N=200, when r=3; N=100, when r=4; and N=50, when r=12. Based on their suggested ratio, the current study has a ratio of 3 (42 observed variables/14 latent factors), which suggests the study has an adequate and acceptable sample size (N=256) for conducting the required statistical analysis.
3. Higher missing data requires a larger sample size to maintain reliable power of the findings (Harrington, 2009) and according to Hair et al. (2010: 46) with more than 10% of missing values, a study requires larger sample size. In the current study, all the variables have 0% missing values, which suggests the large sample a size of 256 is more than adequate.
4. Finally, by utilising a software package called G*Power, the priori and post-hoc analysis suggests that the sample size (N=256) is appropriate for the current study. A priori analysis based on effect size f^2=.1 (see Cohen, 1988: 17), significance level α=.05, the

desired statistical power 1-β=.90 with 14 predictors, showed that the required sample size is N=243. Alternatively, a post-hoc analysis shows that the study has sufficient statistical power 1-β=.919 with a suitable effect size f^2=.1 for the number of acquired sample size (N=256) for the study. Figure 4.3 illustrates the analysis for sample size adequacy in G*power software.

Figure 4.3: G*Power Priori and Post-hoc Analysis for Sample Size Adequacy



4.7.2 Questionnaire Design

The questionnaire is one of the major vehicles for extracting primary data (Collis & Hussey, 2014). The design of a questionnaire affects the validity, reliability, and the response rate of collecting data (Saunders et al., 2012). Therefore, to maintain the quality of the questionnaire, it should not contain double barrelled questions or ambiguity and should be organised in order (Lancaster, 2005; Brace, 2008). Further, Zikmund et al. (2013) state that relevance (avoiding unnecessary information) and accuracy (reliable and valid information) are necessary to maintain the quality of a questionnaire. Neuman (2006) stresses the

importance of avoiding leading and loaded questions, jargon and technical terms, and avoiding overlapping responses, for a good questionnaire. In addition, Saris & Gallhofer (2007) point out the importance of providing appropriate response scales to ensure the respondents' understandings of their choices. Previous literature and related studies are among one of the major sources for developing a valid and consistent questionnaire (Hussey & Hussey, 1997).

The questionnaire for the current study was developed in three stages. First, 10 country managers, programme directors, enterprise and compliance advisors, CEOs and academics from eight governmental/international organisations, universities and garment manufacturing companies were interviewed. To make sure that the interviewees understood the research context and could discuss it appropriately, interviews were conducted in an unstructured manner. Secondly, based on the review of the literature and analysis of the interviews, some tentative applicable statements were derived to develop the questionnaire items. While preserving the main logic, the items were marginally or entirely altered according to the requirements of the research setting. While designing the questionnaire, an attempt was made to be clear about the required information, cautious regarding the choice of wording, and avoid leading and loaded questions to simplify the questionnaire.

After drafting the questionnaire, further testing was necessary before the main survey. For example, Boudreau et al. (2001) argue that even with a skilled researcher and using a pre-validated measurement, research instruments should be pretested before being used in a final survey. Furthermore, MacKenzie et al. (2011) mention that assessing data by pilot tests is essential even if the instrument is developed with pre-validated scales. Hence, to establish the face validity of the questionnaire, a pre-test was conducted (Gray et al., 2007) and further, to measure the content validity, a pilot–test was carried out (Neuman, 2007). However, as the survey was based on Bangladesh, where the official language is Bengali, to obtain meaningful results, it was also necessary to establish uniform meaning in both Bengali and English

languages to ensure that participants clearly understood the questionnaire (Douglas & Craig, 2007). Therefore, before conducting the pre-test and pilot-test, translating the questionnaire were important and the following section briefly discusses it.

4.7.2.1 Translation

When a questionnaire is developed in one language to accumulate information from samples with another language, then the items might not be interpreted correctly and describe the experience of individuals accurately. Therefore, it is essential to translate the questionnaire, to ensure that the measurement instrument draws correct assumptions. There are different approaches to translating a questionnaire such as direct translation, back translation, collaborative translation, decentring translation, etc. (Harkness & Schoua-Glusberg, 1998; McGorry, 2000; Saunders et al., 2009). Even though different approaches have different benefits and drawbacks, the most common practice of scrutinising the accuracy of translation is back translation (Harkness, 2003; Douglas & Craig, 2007). The method requires at least two bilingual native individuals in the process to translate independently. Due to its filtration process, the method provides insights into potential egregious errors (Douglas & Craig, 2007) and minimise bias (Craig & Douglas, 2005) and thus, it is deemed to be one of the most accurate translation processes (Marin & Marin, 1991; Harkness, 2003). Therefore, the current study implemented the back-translation process for converting the questionnaire into Bengali.

A number of steps were applied to translate the questionnaire. Firstly, one highly qualified academic individual and one professional translator, who are both familiar with Bengali and English languages, were assigned to translate the questionnaire independently. The academic individual translated the questionnaire from English to Bengali and then the rendered version was translated back into English by the professional translator. Secondly, the researcher evaluated and compared both version for any disparity and tried to recognise mistranslations, missing words or any other issues. However, no differences were found

between the two version of the questionnaire. Then, the translated Bengali questionnaire was pretested for its coverage, clarity, and comprehensibility. The following section discusses the process of pre-testing the questionnaire.

4.7.2.2 Pre-testing the Questionnaire

Pre-testing is necessary to confirm that not only does the translation signify the accurate interpretation of the original version of the questionnaire, but also the meaning is understood clearly by the target population (Douglas & Craig, 2007). Pre-testing a questionnaire helps to establish the accuracy, content/face validity, and reliability of its items (Johnson & Rapp, 2010) and assists in improving the presentation and scales of the question (Creswell, 2014). Hence, as suggested by Hardesty & Bearden (2004) to establish the content validity and enhance reliability, three experts from the related field and two academics were asked to rate the items on their representativeness of the relevant construct. As the objective of the study was to generate a list of items that would be inclusive as possible, in this phase, expert judges were asked to recommend any further items that they thought were missing from the scale. For that reason, along with the research questionnaire, a comment form of remark (Appendix C) was sent to the expert reviewers. After the comments sent by the reviewers, e.g., simplifying confusing words, improving clarity, removing duplication, after reducing the length of the question, a few amendments were made, and the number of items was reduced from 217 to 202. The updated questionnaire was then sent for pilot testing.

4.7.2.3 Pilot testing the Questionnaire

Pilot testing is a revealing process where an assessment is conducted to identify any potential inadequacy and issues related to the instrument and data collection technique. Boudreau et al. (2001) consider that a pilot study is a preliminary judgment of predicting problems, that measures whether the questionnaire is providing the data needed to meet the research objectives. The process also investigates the reliability and validity of the

questionnaire (Brace, 2013). Therefore, pilot-testing offers the opportunity to comprehensively analyse the research design, theoretical framework, and the sampling strategy. Regardless of whether the researcher develops an entirely new instrument, or obtains and embraces an instrument from prevailing literature, it should be pilot-tested *"in virtually all circumstances"* (Robson, 2002: 383). Hence, in the current study, a pilot study were conducted to (a) identify the items and contents that may not be meaningful for the respondents (face and content validity), (b) assess the reliability and design of the questionnaire, (c) assess the data collection procedure, and (d) estimate the completion time for the questionnaire.

While there is a debate on the appropriate sample size for a pilot study (e.g., Kolb (2008) and Saunders et al. (2012) state a minimum of 10 participants; Malhotra & Birks (2007) state 10-30 participants), the current study involves 87 participants in the pilot-testing stage. 48 line-workers and 39 supervisors were selected from different garment factories to participate in the process. The pilot-test revealed that participants could understand most of the items properly and complete the questionnaire on time. However, exploratory factor analysis demonstrated that a few of the items had problems, which resulted in changes in content and length. Pilot testing led to removal of various items, which were problematic (e.g., Regulative: 1 Item, Normative: 5 Items, Cultural Cognitive: 1 Item, Accountability: 1 Item, Anti-corruption: 2 Items, Rule-of-law: 1 Item, Management Commitment: 3 Items, and Supervisor's Safety Support: 3 Items) and modification of a few other items. The final questionnaire was reduced to 183 items that are appropriate to measure the research variables in RMG manufacturing settings. Exploratory factor analysis demonstrated that generally, all constructs were reliability to use for the main study. The results of pilot-testing are presented in Appendix D (Table D.1 to Table D.4)

4.7.2.4 Instrument Composition

The final version of the instrument contained 183 items to measure the concepts of the research as perceived by a sample from ready-made garment factories in Bangladesh. Table 4.6, Table 4.7, Table 4.8, Table 4.9 reveal the operationalization of the constructs of the data collection instrument. In Table 4.6, a total of 46 items is used to measure the institutional perspective construct in which 15 items are regulative, 17 are normative and 15 are cultural-cognitive items. In Table 4.7, 38 items are used to evaluate the governance construct, where 16 items are about accountability, 10 items are used to assess anti-corruption, and 12 items concern rule of law. Furthermore, Table 4.8 shows that to evaluate the safety climate construct, the study used a total of 67 items, of which 16 measure management commitment, 12 assess supervisor's safety support, 14 items are for safety communication, 15 items are for safety risk assessment, and 10 items measure safety training. Moreover, Table 4.9 shows that 22 items were used to measure safety performance (workplace security: 9 items; safety participation: 8 items; safety compliance: 5 items). Lastly, 10 items were used to elicit demographic information about the participants.

To measure the perceptions of the participants, various types of scaling techniques, e.g., dichotomous, rating, or semantic differential scales can be used (Weathington et al., 2012). Based on prior scholarly work detailed in Table 4.6, Table 4.7, Table 4.8, Table 4.9 to understand the participants' degree of agreement about the items; this study adopted Likert's five-point psychometric scale, which starts from "strongly agree" [1] and ends at "strongly disagree" [5]. The five-point Likert scale is a simple way for respondents to express their responses and easily managed by researchers (Saunders et al., 2012). It has been shown that more response options (e.g., 7/9 point Likert scales) do not add extra benefit to the questionnaire and can create more confusion (Elmore & Beggs, 1975; Parasuraman, 2000). Besides, Sekaran & Bougie (2016) point out that adding more options does not increase the reliability, rather, a five-point scale is as good as other scales for generating honest and reliable responses.

4.7.2.4.1 Basic Information

The first part of the questionnaire includes demographic information, such as gender, age, education, level of work experience, working position, type of work, factory type, and working hours. The next parts of the questionnaire involve questions related to the factors that have been identified for each dimension involved in the study.

4.7.2.4.2 Constituting Items for the Institutional Perspective

Developing the measurement scale for the institutional perspective variables was one of the challenging tasks in this study. For the advancement of institutional theory, scholars such as Dacin et al. (2002) have urged other scholars to make use of qualitative research strategies, as the drivers of institutional perspectives can vary depending on the specific organisational domain. Therefore, the difficulty of unveiling the nature of different institutional perspective may explain why previous studies have sought to use secondary data to measure different institutional perspectives (Cheng & Yu, 2008). This tendency contributes to the inadequacy of operationalised scales for institutional perspectives. However, Kostova & Roth (2002) argued more objective measures of institutional perspectives can possibly be developed and used. Based on this recommendation, various scholars have used their own objective measures, which were used in this study to construct the measurement scale for the institutional perspective.

This part of the questionnaire was developed based on three institutional dimensions, namely regulative, normative and cultural-cognitive. The items for the regulative dimension include an assortment of different inspections related to fire safety, building the structure, safe electrical line instalment, proper housekeeping unit, installation of firefighting equipment, assessment of the regulatory bodies, punishment, etc. The normative institutional dimension includes items related to standards suggested and governed by the regulatory bodies, for example, visiting factories, assessing the density of the workers, encourage maintenance of

health and safety practices, providing employee facilities and benefits etc. Finally, the cultural-cognitive dimension comprises items associated with values (e.g., right to form labour union, moral obligation of the factories, assuring labour rights, giving importance to workers wellbeing), beliefs (conforming successful practices, providing safety training, offering good working conditions, promoting collective dialog) and assumptions (offering compensation, ensuring employee welfare, resolving conflicts etc.). The measures for the institutional perspectives used in the current study are shown in the following Table 4.6.

Table 4.6: Operationalization of Institutional Perspective

Dimensions & Items	Related Studies
Regulative	
1. Government officials inspect whether the electrical wirings are adequately secured in my factory	(DiMaggio & Powell, 1983), (Bridges & Villemez, 1991), (Greening & Gray, 1994), (Scott, 1995), (Suchman, 1995), (Wicks, 2001), (Pavlou, 2002), (Zimmerman & Zeitz, 2002), (Hensmans, 2003), (Teo et al., 2003), (Khalifa & Davison, 2006), (Huigang et al., 2007), (Heugens & Lander, 2009), (Ahlstrom & Bruton, 2010), (Liu et al., 2010), (Lin & Sheu, 2012), (Bhakoo & Choi, 2013), (Stenholm et al., 2013), (Guo et al., 2014), (He et al., 2016), (Susskind et al., 2014), (Hossain et al., 2015), (Pasamar & Alegre, 2015), (Nadvi & Reichert, 2015)
2. Government officials inspect whether the factory's building structure is strong enough to support heavy equipment	
3. Government officials inspect whether the gas lines are adequately secured in my factory	
4. Government officials review fire safety maintained by our company	
5. Government officials review that our company's fire inspection certificates are up to date	
6. Government officials review whether the fire exits in my factory are designed properly	
7. Government officials ensure that the operating machines are covered and well-fenced	
8. Government officials inspect whether the firefighting equipment are installed properly (e.g., fire alarms, automatic fire sprinklers, and hand-held fire extinguishers)	
9. The government closes factories if they do not comply with the recommended standards and guidelines for maintaining good workplace conditions	
10. Government officials review whether my company conducts evacuation drills every 3 months	
11. Government ensures that our company implement maximum eight working hours a day (without the overtime)	
12. Government officials inspect whether all floors, stairs and pathways are sufficiently wide (e.g., the width of an exit corridor should be 3.6ft)	
13. Government officials review the appropriateness of our factory's production layout (e.g., 3ft space between one machine to another machine)	
14. The government punishes factory owners in the case of any disaster that happens due to negligence	
15. Government officials ensure that our factory has good housekeeping storage	
Normative	
1. The government/BGMEA/international association requires my company to follow the labour standard suggested by the them	(Pfeffer & Salancik, 1978), (Greening & Gray, 1994), (Suchman, 1995), (Scott, 1995), (Cannon & Perreault, 1999), (Wicks, 2001), (Zimmerman & Zeitz, 2002), (Teo et al., 2003), (Khalifa & Davison, 2006), (Heugens & Lander, 2009), (Ahlstrom & Bruton, 2010), (Liu et al., 2010), (Lin & Sheu, 2012), (Pi-Tzong et al., 2012), (Guo et al., 2014), (Pasamar & Alegre, 2015), (He et al., 2016)
2. The government/BGMEA/international association requires my company to implement employee health and safety practices	
3. The government/BGMEA/international association officials visit our factory to monitor safety and health practices maintained by our company	
4. The government/BGMEA/international association requires my company to make sure that the factory is not over-crowded	
5. The government/BGMEA/international association requires my company to eliminate sources of ignition	
6. The government/BGMEA/international association requires my company to control the storage of flammable and combustible materials	
7. The government/BGMEA/international association requires my company to make sure that all floors, stairs and pathways always remain free from any blockade	
8. The government/BGMEA/international association requires my company to make sure that the entrance doors are always open	
9. The government/BGMEA/international association requires my company to ensure that the workers are allowed to one-hour rest and meal in a day	
10. The government/BGMEA/international association requires my company to ensure that workers are entitled to sick leave and annual leave	

11. The government/BGMEA/international association requires my company to ensure an equipped dispensary, doctor, and nursing staff for employees	
12. The government/BGMEA/international association requires my company to ensure separate toilets for male and female workers	
13. The government/BGMEA/international association requires that employees should not be harassed if any workers want to join a trade union	
14. The government/BGMEA/international association requires my company to have an in-house canteen for every 100 workers	
15. The government/BGMEA/international association requires worker's right to collective bargaining with an owner	
16. The government/BGMEA/international association requires my company to guarantee that the workroom is not stressful	
17. The government/BGMEA/international association requires my company to provide personal protective equipment to its employees (e.g., mask, gloves, aprons etc.)	
Cultural-Cognitive	
1. The government/BGMEA/international associations attach great importance to safety initiatives to improve working conditions	(Mezias, 1990), (Haveman, 1993), (Greening & Gray, 1994), (Scott, 1995), (Haunschild & Miner, 1997), (Westphal et al., 1997), (Wicks, 2001), (Pavlou, 2002), (Teo et al., 2003), (Hensmans, 2003), (Honig & Karlsson, 2004), (Khalifa & Davison, 2006), (Huigang et al., 2007), (Liang et al., 2007), (Heugens & Lander, 2009), (Ahlstrom & Bruton, 2010), (Liu et al., 2010), (Lin & Sheu, 2012), (Bhakoo & Choi, 2013), (Messerschmidt & Hinz, 2013), (Susskind et al., 2014), (Hossain et al., 2015), (Pasamar & Alegre, 2015), (He et al., 2016)
2. The government/BGMEA/international associations attach great importance to safety training for owners/employees to minimise safety risks	
3. The government/BGMEA/international associations attach great importance to raising awareness of labour rights	
4. The government/BGMEA/international associations attach great importance to promoting different programmes to ensure employee welfare	
5. The government/BGMEA/international associations encourage imitating the safety guidelines that most successful companies are practising	
6. The government/BGMEA/international associations think that ensuring workers health and safety is a moral obligation for my company	
7. The government/BGMEA/international associations attach great importance to promoting workers' right to form/join a trade union	
8. The government/BGMEA/international associations focus on the collective dialogue between factory owners and worker's for the resolution of any conflict	
9. The government/BGMEA/international associations focus on registering trade unions to assure labour rights	
10. The government/BGMEA/international associations believe that employee health and safety is equally important as production	
11. The government/BGMEA/international association endorses that to continue in the business, factory owners should ensure good working conditions for the workers	
12. The government/BGMEA/international association endorses that to continue in the business, factory owners should ensure labour rights	
13. The government/BGMEA/international associations attach great importance to providing free medical treatment for workers who get injured in workplace incidents	
14. The government/BGMEA/international associations ensure that families of workers who are killed or permanently disabled from workplace accident get compensation from the factory owners	

4.7.2.4.3 Constituting Items for Governance

The third part of the questionnaire put emphasis on governance practices, which are the measures of governance. This construct includes three dimensions, namely, accountability, anti-corruption, and rule of law. Items of the accountability construct involve issues related to factories obligation, assurance, disciplinary actions, employer-employee dialogue, and responsibilities (e.g., offering necessary support to pregnant workers). Further, the anti-corruption construct reflects issues related to abuse of discretion, extortion/misuse of information, conflict of interest, favouritism, and bribery. Lastly, the rule of law items concern whether power abuse is penalized, fairness of adjudicative procedures, enforceability of contracts, distorting the course of justice/right to be informed, human rights etc. The measures for governance used in the current study are shown in the following Table 4.7.

Table 4.7: Operationalization of Governance

Dimensions & Items	Related Studies
Accountability	
1. My company is accountable to government for periodical inspection of all fire protection equipment's	(Sinclair, 1995), (Ackerman, 2004), (Brinkerhoff, 2004), (Gibbons et al., 2006), (Ezzamel et al., 2007), (Bovens, 2007), (Hall et al., 2007), (Hochwarter et al., 2007), (May, 2007), (Bovens et al., 2008), (Molenaar et al., 2009), (Lockwood, 2010), (Lu & Li, 2011), (Figueiredo & Deorsola, 2011), (Chen et al., 2012), (Iacono, 2013), (Moller, 2013), (Barbazza & Tello, 2014), (Ciccone et al., 2014), (Ebrahim et al., 2014), (Hochwarter et al., 2014), (Social Accountability International, 2014), (Arslanagic-Kalajdzic & Zabkar, 2015), (Aveling et al., 2015), (Black et al., 2015), (Bolívar et al., 2015), (Hall et al., 2015), (Peng et al., 2015), (Swinburn et al., 2015)
2. My company is accountable to the government for regular supervision of building structural safety	
3. My company is accountable for a regular audit of electrical wiring safety	
4. My company promotes active involvement of staff in safety meetings.	
5. My company regularly arranges employer-employee dialogue about safety performance	
6. My company organises an awareness programmes to communicate safety and security issues	
7. My company offer compensation to workers for a work-related injury, disability, or death	
8. My company has established a health and safety committee	
9. My company has allocated a full-time safety representative on site	
10. My company has a resting place for employees	
11. My company provides pure drinking water facilities	
12. My company has hygienic sanitary facilities	
13. My company has effective waste disposal systems	
14. My company allows four months maternity leave	
15. My company provides equal employment opportunity	
16. My company shows empathy on personal issues	
Anti-corruption	
1. My company does not force us to hide any safety problem with the factory	(Ogus, 2004), (Luo, 2005), (Jong-Sung & Khagram, 2005), (Collins et al., 2009), (Tonoyan et al., 2010), (Spencer & Gomez, 2011), (Sööt & Rootalu, 2012), (Thede & Gustafson, 2012), (Tabish & Jha, 2012), (Pillay & Kluvers, 2014), (Social Accountability International, 2014), (Athanasouli & Goujard, 2015), (Graycar & Monaghan, 2015), (Cuervo-Cazurra, 2016)
2. My company does not threaten or attack us if we want to join a trade union	
3. My company involves all workers when forming any committee	
4. My company provides appointment letters and pay-slips	
5. My company does not conceal child labour by issuing fake certificates from factory doctors	
6. My company gives us the right to refuse unsaf e work	
7. I think, my company gets inspection certificates with proper investigation and audit	
8. I think, my company does not pay money to officials/police not to take legal action against any violation	
9. I think, my company does not pay money to auditors to ignore any compliance disputes	
10. I think, my company does not illegally give sub-contracts to other non-compliant factories	

Rule-of-Law	
1. My company will be penalised if any accident happens in our factory	(La Porta et al., 1999), (Busenitz et al., 2000), (Frye & Zhuravskaya, 2000), (Child & Möllering, 2003), (O'Donnell, 2004), (Fogel et al., 2006), (Goodrum, 2007), (Stoian & Filippaios, 2008), (Zhang & Gao, 2008), (Bingham, 2010), (Tonoyan et al., 2010), (Skaaning, 2010), (Haggard & Tiede, 2011), (Kaufmann et al., 2011), (May, 2011), (Portela, 2012), (Voigt, 2012), (Tabish & Jha, 2012), (Wu, 2013), (Roxas & Chadee, 2013), (Graycar & Monaghan, 2015), (Cherchye & Verriest, 2016), (Thenmozhi & Narayanan, 2016)
2. My company will be punished in case of violation of labour rights	
3. My company will be fined if they set up factories without following the appropriate building and fire safety codes	
4. My company does not force employees to sign dismissal letters without any proper reason	
5. My company does not force pregnant women to be dismissed	
6. My company applies a maximum eight working hours a day	
7. My company pays us the minimum wage (5300 takas) for our job	
8. My company pays employees' salary every month	
9. My company does not force us to work more than 2 hours of overtime each day	
10. My company has group insurance for the employees	
11. My company has a minimum age of employment	
12. Labour law of our country protects employee interests and rights	

4.7.2.4.4 Constituting Items for Safety Climate

The fourth section of the questionnaire was developed based on review of previously validated multilevel safety climate surveys and items were adapted for use within the garment manufacturing industry (See Table 4.8). The measurement instrument was designed to get employees perceptions regarding five different safety climate aspects of their workplace (management commitment, supervisor's safety support, safety communication, risk assessment, and training). Management commitment includes items that ask about management's efficiency, enforcement, and encouragement regarding the safety of the workers, which reflects their commitment towards the employees' welfare. The second dimension of the safety climate construct (i.e., supervisor's safety support) comprises items related to the attitude, behaviour, traits, support, and reward practices of factory supervisors. Next, safety communication items involve questions related to safety information, knowledge regarding safety actions and work procedures, safety feedbacks, safety signs, instructions about safety hazards and emergency execution plan.

The fourth dimension of the safety climate construct includes safety risk assessment, which is mainly developed on rational judgements and cognition of risk perception. The study measures an employee's emotional components by asking about their concern and their feeling about safety. This dimension inquiries about the risk associated with working in the factories, i.e., identification of workplace hazards (fire, electric, and chemical), fire exits, workplace environment (lighting, noise control, humidity, and temperature), secure usage of machines, and so on. Lastly, safety climate includes safety training, which contains items that reflect issues related to training on the indication of fire and hazard components, reporting near-miss incidents and locked doors, safety induction training, emergency evacuation drill, et cetera. The key studies that influenced the item generation for safety climate measurement are outlined in the following Table 4.8.

Table 4.8: Operationalization of Safety Climate

Dimensions & Items	Related Studies
Management Commitment	
1. My company monitors that the electrical wirings are not exposed and adequately secured	(Cohen, 1977), (Zohar, 1980), (Cheyne et al., 1998), (Cox & Cheyne, 2000), (Zohar, 2000), (Cox et al., 2000), (Mearns et al., 2003), (Silva et al., 2004), (Zohar & Luria, 2005), (Huang et al., 2006), (Johnson, 2007), (Lu & Tsai, 2008), (Hahn & Murphy, 2008), (Lin et al., 2008), (Wu et al., 2008), (Zhou et al., 2008), (Høivik et al., 2009), (Olsen, 2010), (Beus et al., 2010b), (Cigularov et al., 2013), (Cui et al., 2013), (Vinodkumar & Bhasi, 2009), (Bahari & Clarke, 2013), (Bosak et al., 2013), (Navarro et al., 2013), (Hon et al., 2014), (Milijić et al., 2014), (Ghahramani & Khalkhali, 2015), (Liu et al., 2015)
2. My company monitors that the building structure is strong enough to support heavy equipment	
3. My company ensures that the all firefighting equipment is installed properly (e.g., fire alarms, automatic fire sprinklers, and hand-held fire extinguishers)	
4. My company ensures that emergency and evacuation procedures are rehearsed every 3 months	
5. My company communicates how to work safely to its employees	
6. My company acts quickly to eliminate sources of ignition	
7. My company appreciates my ability to identify hazards in the factory	
8. My company considers employees' suggestions to improve working conditions	
9. My company ensures we have properly designed fire exits	
10. My company makes sure that the exit doors remain free from any blockage	
11. My company makes sure that the exit doors are not locked	
12. My company ensures that the factory is not over-crowded	
13. My company ensures a factory's production layout is well organised	
14. My company is committed to providing safety training to its employees	
15. My company makes sure to control flammable materials storage	
16. My company acts quickly to repair cracks in beams, columns, or walls	
Supervisor's Safety Support	
1. My supervisor encourages employees to attend safety training programmes	(Cohen, 1977), (Hofmann & Stetzer, 1998), (Hofmann & Morgeson, 1999), (Cox & Cheyne, 2000), (Varonen & Mattila, 2000), (Barling et al., 2002), (Mearns et al., 2003), (Zohar & Luria, 2004, 2005),; (Silva et al., 2004), (Kelloway et al., 2006), (Evans et al., 2007), (Lin et al., 2008), (Wu et al., 2008), (Wu et al., 2011), (Cavazza & Serpe, 2009), (Vinodkumar & Bhasi, 2009), (Beus et al., 2010b), (Koster et al., 2011), (Brondino et al., 2012), (Yeung & Chan, 2012), (Cigularov et al., 2013), (Dahl & Olsen, 2013), (Fernández-Muñiz et al., 2014), (Ghahramani & Khalkhali, 2015), (Warszawska & Kraslawski, 2016)
2. My supervisor inspects hazards in our workplace	
3. My supervisor considers safety to be as important as production	
4. My supervisor treats us fairly in case of an injury in the workplace	
5. My supervisor punishes us for taking a risk in the workplace	
6. My supervisor takes account of our ability to identify hazards for increment/promotion	
7. We can share any safety problem regarding the workplace with our supervisor	
8. My supervisor does not behave aggressively in the workplace	
9. My supervisor does not threaten or harass us if anyone wants to join a labour union	
10. My supervisor ensures that individuals are not working under risky or hazardous conditions	
11. My supervisor talks to the management on behalf of the team regarding any safety problem	
12. My supervisor does not force us to work more than 8 hours in a day	
Safety Communication	
1. My company communicates what to do in case of a fire emergency	(Pidgeon, 1991), (Coyle et al., 1995), (Cheyne et al., 1998), (Hofmann & Stetzer, 1998), (Mearns et al., 1998), (Cox & Cheyne, 2000), (Glendon & Litherland, 2001), (O'Dea & Flin, 2001), (Vredenburgh, 2002), (Zohar, 2002a), (Mearns et al., 2003), (Lin et al., 2008), (Fernández-Muñiz
2. My company communicates to always clear up the aisles	
3. My company always informs us about changes in safe working procedures	
4. My company cautions us about any breakdown in the workplace	
5. My company always brings safety information to my attention	

6. My company always reminds us to use safety equipment or protective clothing	et al., 2007), (Wu et al., 2008), (Beus et al., 2010b), (Lu & Yang, 2011), (Brondino et al., 2012), (Bahari & Clarke, 2013), (Milijić et al., 2014), (Ghahramani & Khalkhali, 2015)
7. My company sets signs for emergency exits on every floor	
8. My company sets signs of fire hazards on every floor	
9. My company sets signs of electrical hazards on every floor	
10. My company informs us about correct and incorrect safety actions	
11. My company communicates about the possible work hazards	
12. My company sets signs for non-smoking zones	
13. My company takes account of previous accidents to communicate safety improvement measures	
14. My company listens to and acts upon safety feedback from the employees	
Safety Risk Assessment	
1. In my workplace, fire hazards are identified properly	(Cohen, 1977), (Dedobbeleer & Béland, 1991), (Coyle et al., 1995), (Mearns et al., 1998), (Morrow & Crum, 1998), (Cox & Cheyne, 2000), (Rundmo, 2000), (Cheyne et al., 2002), (Michael et al., 2005), (Seo, 2005), (Lin et al., 2008), (Vinodkumar & Bhasi, 2009), (Bjerkan, 2010), (Sinclair et al., 2010), (Cui et al., 2013), (Kwon & Kim, 2013), (Milijić et al., 2014), (Kouabenan et al., 2015)
2. The temperature in our workplace is comfortable	
3. The humidity in our workplace is appropriate	
4. I do not stand in one position for a long period of time	
5. In my workplace, the operating machines are covered and secured	
6. The lighting system in our workplace is sufficient	
7. The noise control system in our workplace is sufficient	
8. The ventilation system in our workplace is adequate	
9. In my workplace, the chances of being involved in an accident are quite low	
10. I can leave this building very quickly in case of a fire emergency	
11. The working space and floors in our workplace are sufficiently wide	
12. The stairs and pathways in our workplace are adequately spacious	
13. In my workplace, all the aisles and exit doors remain free from any obstacles	
14. In my workplace, we have a good housekeeping storage	
15. I am not afraid that someone in the factory could harm me	
Safety Training	
1. I was provided with safety training during my first day in the factory	(Roughton, 1993), (Coyle et al., 1995), (Hofmann & Stetzer, 1998), (Pfeffer & Veiga, 1999), (DeJoy et al., 2000), (Griffin & Neal, 2000), (Glendon & Litherland, 2001), (Harvey et al., 2001), (O'Dea & Flin, 2001), (Zohar, 2002a), (Huang et al., 2006), (Evans et al., 2007), (Fernández-Muñiz et al., 2007), (Luria & Yagil, 2010), (Jiang et al., 2010), (Vinodkumar & Bhasi, 2010), (Williams et al., 2010), (Lu & Yang, 2011), (Brondino et al., 2012), (Huang et al., 2012a), (Milijić et al., 2014), (Ghahramani & Khalkhali, 2015), (Liu et al., 2015), (Warszawska & Kraslawski, 2016)
2. I participate in emergency and evacuation drills every 3 months	
3. I receive related training when new procedures or equipment are introduced	
4. I have been trained to assess hazards in my workplace	
5. I have been trained to know about the basic components of fire	
6, I have been trained to report any blocked aisles and exit doors during factory operations	
7. I am aware of the location of emergency switches of the machines that I operate	
8. I have been given necessary training to avoid injury and accidents	
9. I have been trained to report any near-miss incidents	
10. I have been trained to report any locked doors at any point during factory operations	

4.7.2.4.5 Constituting Items for Safety Performance

In the last part of the questionnaire, three different dimensions, workplace security, safety participation, and safety compliance were used to measure safety performance. Workplace security was the first dimension used to measure performance, it consists of 9 items related to the number of absences from work for injuries, recent involvement in accidents, any experience of fire or electrical accidents etc. The second dimension of performance includes 8 items related to workers' safety involvement, encouragement, action against violating safety rules, etc. Finally, safety compliance includes five different items related to motivation to comply, safety negligence, following appropriate work guidelines etc. The key studies that influenced the item generation for safety performance measurement tool are outlined in the following Table 4.9.

Table 4.9: Operationalization of Safety Performance

Dimensions & Items	Previous Related Studies
Workplace Security	
1. I have not been injured in the workplace within the past 12 months	(Hofmann & Stetzer, 1996), (Hayes et al., 1998), (Probst & Brubaker, 2001), (Barling et al., 2002), (Goldenhar et al., 2003), (Probst, 2004), (Wu et al., 2008), (Jiang et al., 2010), (DeArmond et al., 2011), (Probst et al., 2013), (Cigularov et al., 2013), (Fernández-Muñiz et al., 2014), (Hon et al., 2014), (Sheehan et al., 2016), (Aryee & Hsiung, 2016)
2. I have been injured in the workplace but did not require absence from work	
3. I have not been injured in the workplace, which required absence from work not exceeding 3 consecutive days	
4. I have not been injured in the workplace, which required absence from work exceeding 3 consecutive days	
5. My clothes or loose hair do not get caught in the machine	
6. I have not tripped/slipped/fallen on the floor	
7. I have not been exposed to chemicals (e.g., dyes, enzymes, solvents, cleaning solutions, etc.) without proper ventilation	
8. I have not witnessed or experienced a fire explosion	
9. I have not witnessed or experienced on an electrical short-circuit accident	
Safety Participation	
1. I use appropriate personal protective equipment as indicated by the site health and safety plan	(Neal et al., 2000), (Neal & Griffin, 2002, 2006), (Burke et al., 2002), (Hofmann et al., 2003), (Clarke, 2006b), (Christian et al., 2009), (Cigularov et al., 2010), (Tharaldsen et al., 2010), (DeArmond et al., 2011), (Brondino et al., 2012), (Lu & Yang, 2011), (Casey & Krauss, 2013), (Griffin & Hu, 2013), (Martínez-Córcoles et al., 2013), (Fernández-Muñiz et al., 2014), (Hon et al., 2014), (Sampson et al., 2014), (Yuan et al., 2015)
2. I assist my co-workers to make sure they perform their work safely	
3. I encourage my co-workers to report any safety violations	
4. I try to change the way the job is done to make it safer	
5. I try to discuss safety problems with my supervisors	
6. I encourage others to get involved in safety issues	
7. I act to stop safety violations to protect the well-being of co-workers	
8. I attend non-mandatory safety meetings	
Safety Compliance	
1. I follow the appropriate work practices to reduce exposures to hazards	
2. I follow standard operating procedures relating to production to minimize safety risk	
3. I ensure the highest level of safety while doing my job	
4. I do not neglect safety, even when in a rush	
5. I always report injuries, accidents, or illnesses	

4.7.3 Validity and Reliability of the Questionnaire

To maximise the validity and reliability of the data, the measurement tool should include clear layout, lucid explanations, relevant questions, pre-testing, pilot-testing and methodical administration (Saunders et al., 2012). Moreover, for developing the measurement tool (questionnaire), it is essential to ensure the consistency of the tool. A valid questionnaire will assist in collecting accurate data and the reliability of that questionnaire indicates that these data are consistent. Therefore, validity and reliability are the two vital and fundamental features of the measurement tool, which are necessary to be tested beforehand (De Vaus, 2013).

The validity of a questionnaire refers to the ability to represent the reality. In other words, it refers to the ability of a research instrument to measure what it is designed to measure (Punch, 2005: 97; Kumar, 2014: 218). According to Blumberg et al. (2005), the validity of a questionnaire can be measured in different ways such as content validity and construct validity. Content validity refers to the extent to which the questionnaire provides adequate coverage of the analytical questions. Alternatively, construct validity refers to the extent to which the questionnaire measures the theoretical traits that it was designed to measure. Content validity refers to a subjective but systematic evaluation of the content (it reflects theory or a latent construct), while construct validity measures the expected performance of a measurement scale in relation to other selected variables as meaningful criteria (Malhotra & Birks, 2007: 358). In this case, Content validity was measured through a careful comparison of the definition of the research domains over the literature review, refers to a panel of experts in the field and through the pilot-testing stage. Moreover, construct validity can be measured through convergent validity and discriminant validity by running a factorial analysis (Malhotra & Birks, 2007). An in-depth discussion of the construct validity is provided in the following data analysis chapter (See p.288-289).

Reliability denotes consistency, the extent to which the data collection techniques yield consistent results (Saunders et al., 2012; Sekaran & Bougie, 2016). Reliability can be

measured through test re-test, internal consistency, or split halves method. The current study uses internal consistency to measure the reliability of the measurement instruments. One of the most common techniques to exhibit internal consistency is by calculating Cronbach's alpha (α) statistic (Creswell, 2014; Sekaran & Bougie, 2016). Cronbach alpha (α) involves correlating inter-item responses to determine whether principal items are measuring the same domain (Rattray & Jones, 2007). According to various scholars (Sarantakos, 2013; Bryman, 2012; Saunders et al., 2012; Creswell, 2014; Sekaran & Bougie, 2016), in terms of Cronbach's alpha values above 0.70 are accepted as reliable. The pilot-test results show that all the Cronbach alpha values for each variable are above .70 (See Appendix D - Table D.1 to Table D.4). Furthermore, corrected item-total correlation (above 0.30) among items have been analysed to measure how one item's score is internally consistent with composite scores from all other items that remain (De Vaus, 2013: 185).

4.8 Analysing Data

Data analysis is a process that brings meaning, structure, and order to a pile of collected information (Marshall & Rossman, 2014). It is a fundamental phase of a research to verify that the data meets the study's objectives (Saunders et al., 2012). While the process can be considered chaotic, enigmatic, and tedious, it helps to interpret and make sense out of the data and that constitutes *"an exploration for general statements among categories of data"* (Schwandt, 2007: 6). Hence, analysing the data involves the application of deductive and inductive logic into it (Mallick & Verma, 2005). The current study analyses the data through a variety of univariate and multivariate analysis techniques. The univariate analysis involves issues, such as analysing descriptive statistics, missing values, data normality, outliers, multicollinearity, homoscedasticity, and non-response bias tests (independent t-test-ANOVA). Multivariate analysis involves exploratory factor analysis (EFA), reliability, sample adequacy, confirmatory factor analysis (CFA), discriminant validity, convergent validity, and structural equation modelling (SEM). The following sections discuss the different statistical procedures that have been implemented in the current study.

4.7.1 Exploratory Factor Analysis (EFA)

Exploratory factor analysis (EFA) is the most extensively used statistical method in psychometric evaluations (Brown, 2015), prompted by the necessity of simplifying interconnected measures to identify patterns in a set of variables (Child, 2006). While it is a technique to identify the structure of underlying variables, it also summarises and reduces the dataset to a more manageable size which referring as much of the original information as possible (Field, 2009; Hair et al., 2010). The aim of summarising the data is to put the appropriate pattern of the variables under logical factors, while reduction of the data removes uncorrelated items and moderates the number of items within each variable. Thus, the current study used exploratory factor analysis through data summarization and reduction, to structure associated items into a single factor. The process was been completed for all the dimensions related to the study to produce a set of factors as a method to deal with multicollinearity and reduce the complexity of variables.

4.8.1.1 Factor Extraction

The mechanism of exploratory factor analysis fundamentally depends on the selection of the factor extraction technique. There are several techniques for factor extraction process, e.g., generalized least squares (GLS), unweighted least squares (ULS), principal component analysis (PCA), common factor analysis (CFA)/principal factor analysis (PFA)/principal axis factoring (PAF), maximum likelihood (ML), alpha factor analysis (AFA), and image factor analysis (IFA) (Tabachnick & Fidell, 2007; Field, 2009; Hair et al., 2010). A much debate over which factor extraction technique is appropriate is prevelant in the existing literature (see, Borgatta et al., 1986; Snook & Gorsuch, 1989; Gorsuch, 1990; Mulaik, 1990). For example, Fabrigar et al. (1999: 277) argue that based on the status of the data normality (normal or non-normal) maximum likelihood or principal axis factor techniques should be used, respectively. Then again, some methodologists (e.g., Gorsuch, 1990; Mulaik, 1990; Fabrigar et al., 1999; Floyd & Widaman, 1995) believe that principal component analysis is not a true technique for factor analysis and hence, recommended

strictly restricted use of components analysis for a valid factor analysis method. Alternatively, some scholars have argued that there is no difference between the principal component and principal factor analysis techniques and component analysis might be even superior (e.g., Guadagnoli & Velicer, 1988; Schonemann, 1990; Steiger, 1990; Velicer & Jackson, 1990a, b).

According to Hair et al. (2010: 100) problems with PFA have contributed to the extensive use of component analysis. For example, PCA can estimate individual scores which is not possible with PFA and further, it can generate "Heywood cases" in the process (Steiger, 1990; Velicer & Jackson, 1990b). In addition, PFA suffers from factor indeterminacy[15] and inestimable or invalid commonalities, which involves the removal of the variable from the analysis (Hair et al., 2010). Furthermore, basically both PCA and PFA can generate the same results when the number of variables exceeds 30 or the communalities exceed 0.60 (Hair et al., 2010: 103). Therefore, based on the suggestions and common practice in the literature, the current study uses the principal component method to extract the factors. However, several criteria, such as eigenvalues, parallel analysis, and variance percentage, should be considered to decide the number of factors required to represent data or when to stop the extraction process.

The extraction of PCA occurs by estimating the eigenvalues of the matrix. Eigenvalue represents the amount of variance accounted for by a factor without any loss of information and decides the number of factors to be extracted. Eigenvalues greater than 1 are considered significant, as eigenvalue lower then 1.0 explains less variability than it explains the variables itself and thus, factors with variances greater than 1 should be included (Hair et al., 2010; Pallant, 2010). Furthermore, the current study also uses a parallel analysis to determine the number of factors to extract. In this process, a set of random correlation matrices is calculated with the same number of participants and variables as the original

[15] Several different scores can be calculated from a single factor model result, which leads to difficulty in obtaining one single unique solution for the analysis (Hair et al., 2010: 102)

data. Then, eigenvalue is calculated for those variables via the Jocobi routine and compared to the eigenvalues produced by the original data. The process clearly shows which eigenvalues of the original data are larger than or equal to those of the simulated data. The principle for extracting the factors is where the eigenvalues generated by simulated data exceed the eigenvalues produced by the original data. Different scholars (e.g., Horn, 1965; Humphreys & Montanelli Jr, 1975; Zwick & Velicer, 1982; Thompson & Daniel, 1996; Fabrigar et al., 1999) explicitly recommend using Parallel Analysis for maintaining the accuracy of factor retention methods. Furthermore, eigenvalues randomly generated by Monte Carlo Parallel Analysis have been found to be accurate and that parallel analysis criteria are more powerful and crucial as a process (Lautenschlager, 1989; Velicer et al., 2000). Therefore, the current study used Monte Carlo Parallel Analysis stimulation for extracting the correct number of factors.

Finally, the percentage of variance criterion approach has been implemented in the study. It is an approach that describes the cumulative percentage of total variance explained by its succeeding factors. While in the field of science 95% of the total cumulative percentage of variances is an acceptable benchmark, in the field of social science, a solution accounts for 60% or less is satisfactory (Hair et al., 2010: 104). In this study, the cumulative percentage of variance explained by all the solutions use more than 50%.

4.8.1.2 Factor Rotation

Factor rotation is used to enable a clear understanding of the theoretically important factors drawn from the data (Hair et al., 2010). It presents the pattern of factor loading in a manner that is easier to interpret and shows which items "clump together" (Pallant, 2010: 154). Two main approaches can be implemented to rotate the factor, which results in either oblique (correlated) or orthogonal (uncorrelated) factor solution (Field, 2009; Pallant, 2010). While orthogonal rotation expects researchers to assume that the underlying dimensions are independent (uncorrelated) and provides easier interpretation of the results, the oblique approach assumes that the factors are correlated, which offers a more

complex interpretation of the results (Tabachnick & Fidell, 2007). However, even though both kinds of the rotation often come up with similar results, oblique rotation is less frequently implemented in research due to its deficient analytical procedures for performing rotations and is the subject of substantial controversies (Hair et al., 2010: 109). Hence, the orthogonal approach is widely used for factor rotation (Field, 2009) and the current study used the same to improve understanding by reducing some ambiguity that may come along with the initial analysis. Generally, three basic methods are used for orthogonal rotation; Quartimax, Equamax, and Varimax. Due to the ability to clearly separate the factors, its simple nature, and the popularity, the study adopted the varimax method.

4.8.1.3 Assessment of Data Fitness

To assess the suitability of the data, a researcher inspects the Correlation Matrix, calculate the Kaiser-Meyer-Olkin Measure of Sampling Adequacy (KMO), and Bartlett's Test of Sphericity. To attain a valid and satisfactory factor analysis, in the correlation matrix, the coefficients should be 0.30 or above, the results of Bartlett's test should be significant ($p < .05$) and the value of KMO should be greater than 0.50 (Hair et al., 2010; Pallant, 2010). Smaller values than the suggested threshold values show that factor analysis is not valid as correlations between pairs of variables cannot be explained by the other variables. Hence, the current study used the recommended values for all the above-stated measures and the results are discussed in detail in the following chapter.

4.8.1.4 Result Interpretation and Factor Labelling

The final stage of EFA involves interpreting the factor loading values and labelling those factors. To categorise the factors, it is required that the items should be in a cluster of higher loadings for the same factors. A factor pattern matrix offers the convenience of putting the high loading items together under the same factor (Pallant, 2010). However, the question to be answered is, how high the values of a loading should be, and the answer is very controversial, as scholars have not agreed on a common set of values. For example,

according to Guadagnoli & Velicer (1988) and Field (2009), irrespective of the sample size, a factor is considered as reliable when it has four or more loadings of at least 0.60. Alternatively, Stevens (2012) argues that 0.40 is adequate to be allocated under a factor. Further, Comrey & Lee (2013) and Tabachnick & Fidell (2007) propose using more strict threshold values ranging from 0.32 (poor), 0.45 (fair), 0.55 (good), 0.63 (very good) or 0.71 (excellent). However, the current study uses factor loadings with the value ≥0.60, which is a relatively strict benchmark suggesting a strong relationship between the items (Tabachnick & Fidell, 2007; Hair et al., 2010).

4.8.2 Structural Equation Modelling (SEM)

As a statistical technique, structural equation modelling (SEM) has gained substantial popularity across disciplines and progressively in the social sciences (Kaplan, 2008; Byrne, 2016). SEM is a quintessential technique that implies a confirmatory (hypothesis- testing) approach to assess multiple interconnected dependent relationships among the dimensions for developing a model (Teddlie & Tashakkori, 2009; Hair et al., 2010; Schumacker & Lomax, 2010). According to Byrne (2016), it is a powerful collection of multivariate analysis techniques that allow comprehensive and synchronised assessments of all relationships for a multidimensional and complex phenomenon. In the current study, SEM has been used due to the sophistication of its underlying theory and ability to address the key fundamental questions (Kaplan, 2008). Further, it is designed to deal with multicollinearity issues at the structural level and perform multiply related equations simultaneously (Rigdon, 1988). In addition, SEM enables the researcher to determine measurement error, modelling of interactions, nonlinearities, correlated independents, and multiple latent independents measured by multiple indicators (Raykov & Marcoulides, 2012).

In general, SEM involves two separate steps. Firstly, it validates the measurement model by assessing relationships between latent variables and the observed variables underlying each construct. Secondly, it confirms the structural model by assessing the significance of the relationship between latent variables (Kaplan, 2008). While the

validation of the measurement model is done by using CFA, confirmation of the structural model is commonly conducted by path analysis (Hoyle, 2012). However, CFA should be employed as a precursor to structural equation models that specify structural relationships (e.g., regression) among the latent variables. Thus, though CFA is not the central analysis in SEM, an acceptable measurement model should be established before estimating and interpreting the structural relationships among the latent variables (Hoyle, 2012: 363). Therefore, the following sections discuss CFA and the steps required to conduct the assessment, which has been used in the study.

4.8.2.1 Confirmatory Factor Analysis (CFA)

Confirmatory factor analysis (CFA) confirms the structure of a specific factor (Raykov & Marcoulides, 2012). While exploratory factor analysis (EFA) offers the reliability of the factors, CFA confirms those factors and loading of the indicators, which fit into the specification grounded in the theory. Unlike EFA, the nature of relationships among the indicator unique variances can be modelled in CFA (Hoyle, 2012). The fundamental objective of CFA is to measure the unidimensionality and validity of the measurements to ensure whether the theorised model reflects the associations between the variables in the observed data set (Hair et al., 2010). In other words, CFA measures the validity of the theoretical measurement model to assure whether the sample data approves the model that is appropriate for the population explored in the study (Harrington, 2009; Schumacker & Lomax, 2010). There are several steps to assess the adequacy of the confirmatory factor analysis measurement model, which are discussed in the following sections.

4.8.2.1.1 Model Estimation

One of the key purpose of SEM and CFA is to obtain estimates (e.g., factor loadings, variances, covariance, and measurement errors) for each variable and path of the theoretical model. The estimation process involves the use of a fitting function. Several fitting functions or estimation procedures are available, such as maximum likelihood (ML), weighted or generalised least squares (GLS), unweighted or ordinary least squares

(ULS/OLS), and quasi-maximum likelihood estimation (Schumacker & Lomax, 2010). However, due to the capacity of producing a standard error for each parameter and using fitting functions to estimate different goodness-of-fit indices, ML is considered the most commonly employed method in the research (Harrington, 2009). In addition, review of 15 years of SEM application in research (especially in psychological research) reveals that studies with Likert scale data are most likely to use the maximum likelihood (ML) estimation method (Byrne, 2013). Further, ML is commonly used as it *"aims to find the parameter values that make the observed data most likely (or conversely) maximise the likelihood of the parameters given the data"* (Brown, 2006: 73). Hence, the current study uses the ML estimation method for following reasons:

- Compared to the generalised least squares (GLS) estimation method, the maximum likelihood (ML) estimation method has been found to be more profound to model misspecification (larger decrease of fit indexes values for more misspecified models) (Fan et al., 1999: 74).
- The ML estimation method is unbiased, efficient, scale-invariant, and has minimum variances (Schumacker & Lomax, 2010: 84).
- The ML estimation method is more robust with observations that violate the multivariate normality assumption (non-normality) (Bagozzi, 2010: 212; Iacobucci, 2010: 95). Further, according to Lei & Lomax (2005: 16) when using the ML estimation method, non-normality conditions do not produce significant differences in the standard errors of parameter estimates.
- Generally, ML tends to perform better, is more stable, and exhibits greater precision in terms of theoretical and empirical fit compared to the generalised least squares (GLS), and weighted least squares (WLS) estimation methods (Ding et al., 1995: 141; Olsson et al., 2000: 578).
- Finally, ML is mostly recommended for virtually all uses (Hu & Bentler, 1998; Hair et al., 2010; Iacobucci, 2010; Olsson et al., 2000).

4.8.2.1.2 Model Evaluation

Once the parameter estimates are assessed for a specified model, the researcher should evaluate how suitably the data fit the model. In other words, the extent to which the theoretical model is validated by the data, should be evaluated after the model estimation

(Schumacker & Lomax, 2010). Assessing the fit of the data can be conducted at three different levels: individual construct measurement model, overall measurement model, and the structural model. In the measurement models, CFA is used to test the factor loadings and the relationships between each observed variable (Hair et al., 2010). The model evaluation also enables a researcher to assess the constructs in terms of unidimensionality, convergent validity, and discriminant validity issues (see Chapter Five). Alternatively, structural models are assessed by evaluating the paths between the latent variables, which helps to examine the sign, degree, and significance of the structural path to investigate the hypotheses (Shah & Goldstein, 2006). However, to evaluate the model, a researcher should consider some universal compilations of assessment (fit indices) for the model fit, such as absolute fit indices, incremental fit indices, or parsimony fit indices. While there is no such rule-of-thumb for using model fit indices (Crowley & Fan, 1997), different scholars recommend using combinations of fit measures from each index along with Standardized Root Mean Square Residual (SRMR) or Root Mean Square Error of Approximation (RMSEA) fit measure (e.g., Bollen & Long, 1993; Hu & Bentler, 1998; Sharma et al., 2005; Tabachnick & Fidell, 2007; Hair et al., 2010). Nevertheless, a researcher is responsible for selecting correct measures to evaluate the appropriateness by subjective standards to select a fitting model. Different fit indices have been selected to evaluate the overall model fit, which are discussed below in details.

As one of the absolute fit indices, Chi-square (*x2*) is regarded as a fundamental fit index to quantify the differences between the observed and estimated metrics (Hair et al., 2010). A significant chi-square value illustrates no difference between the two matrices, which reflects a problem with the model fit, whereas a non-significant chi-square value indicates a good model fit. Nonetheless, chi-square test might be misleading by rejecting the model when the sample size is greater than 200 (Type I error), and with small samples it may be too likely to accept poor models (Type II error) (Schumacker & Lomax, 2010; Hair et al., 2010; Byrne, 2016). Moreover, the chi-square test makes too many Type I errors when the assumption of normality is violated, particularly when distributions are kurtotic

(Jöreskog & Sörbom, 1986). Despite the problems associated with the chi-square (*x2*) test, MacCallum & Browne (1993) argue that chi-square value should be reported irrespective of its significance. Nonetheless, to solve the problem, scholars (e.g., Bentler & Bonett, 1980; Segars & Grover, 1993) suggest reporting *x*2/df ratio (normed chi-square) where sample size has less influence on the measure and recommended ratio for this statistic is 3.0 and below.

Furthermore, several other indexes are also included in the category of absolute fit indices, such as the Goodness-of-fit Index (GFI), Adjusted Goodness of Fit Index (AGFI), Root Mean Square Residual (RMR), Akaike's Information Criterion (AIC), Bayesian Information Criterion (BIC), Hoelter's CN (critical N), Expected Cross-validation Index (ECVI), Standardized Root Mean Square Residual (SRMR), and Root Mean Square Error of Approximation (RMSEA). However, other than RMSEA and SRMR, most of these indexes have the same problems as the chi-square test, as they simply measure the extent to which the observed and predicted covariance matrices differ from each other. For example, researchers (e.g., Hu & Bentler, 1998; Sharma et al., 2005; Shah & Goldstein, 2006; Hair et al., 2010; Gefen et al., 2011) have recommended that GFI and AGFI should not be used as fit measures due to their sensitivity to sample size, biases, and for detecting misspecified models. Additionally, when using AIC or BIC (predictive fit indexes) for comparing relative fit of *"alternative-but-not-nested models",* the statistics are subject to sampling error; meaning that the model accepted by the index may not represent the real model for the population (Kline, 2015: 466).

Unlike the chi-square test, RMSEA is preferred as a commonly accepted fit indicator due to its capability to avoid rejecting models with a large number of indicators and large sample sizes (Hair et al., 2010). The RMSEA fit index measures *"lack of fit in a model compared to a perfect (saturated) model"* (Tabachnick & Fidell, 2007: 717). RMSEA with a value of ≤0.06 refers to good fit of the model, whereas ≤0.08 refers to an acceptable fit of the model (Jöreskog & Bollen, 1993; MacCallum & Browne, 1993; Hu & Bentler, 1999). In

addition, Iacobucci (2010) recommends using the SRMR index, which measures the difference between the observed correlation and the predicted correlation. SRMR values range between 0 to 1; however, values ≤0.08 are generally considered a good fit (Hu & Bentler, 1998, 1999).

Absolute fit indices do not use any alternative model as a base for comparison, whereas incremental fit indices compare between estimated models and the baseline/null model (Hair et al., 2010). In addition, incremental fit indices are not sensitive to the sample size (Fan et al., 1999). Hence, these fit indices are more powerful validators of model fit with multi-item constructs. There are several incremental fit indices, including Comparative Fit Index (CFI), Tucker-Lewis Index (TLI)/Non-normed Fit Index (NNFI), Bollen's Incremental Fit Index (IFI) and Bentler-Bonett Normed Fit Index (NFI). Out of all these incremental fit indices, the comparative fit index (CFI) (Type 3 Incremental Index) is one of the most widely used indexes, which avoids the underestimation of fit even in small samples (Bentler, 1990; Hu & Bentler, 1995). CFI produces values between 0 to1 and values higher than 0.90 typically indicate to a good fit of the model (Bentler, 1992; Hair et al., 2010). Another incremental fit measure is a normed-fit index (NFI) (Type 1 Incremental Fit Index), which has values ranging from 0 to 1 and higher values (above .90) indicate better fit. However, the problem with NFI is that it is sensitive to sample size and substantially underestimates its asymptotic values at small sample size (Tanaka, 1987; Bollen, 1989; Hu & Bentler, 1995). Furthermore, NFI over-rejects models at moderate sample size and hence, it is not recommended to be used as a model fit indicator (Hoyle & Panter, 1995; Hu & Bentler, 1999). In order to take care of the problem with the NFI measure, Tucker & Lewis (1973) developed the Non-normed Fit Index (NNFI), which is also known as the Tucker-Lewis index (TLI).

The TLI considers the complexity of the model while assessing the fit for the model Tucker & Lewis (1973). This measure has been developed primarily *"to quantify the degree to which a particular exploratory factor model is an improvement over a zero factor model*

when assessed by maximum likelihood" (Hu & Bentler, 1995: 84). Various scholars (e.g., Sharma et al., 2005; Bollen, 2011) have found that TLI is the best indicator among other model fit indexes, as it measures accurately, is less affected by sample size, and is highly recommended to report for model evaluation. TLI values also range from 0 to 1 and values greater than 0.90 usually indicate good model fit (Bentler & Bonett, 1980; Sharma et al., 2005). Besides, Bollen's incremental fit index (IFI) (Type 2 Incremental Index) also measures the model by comparing its chi-square value to the null models and is relatively unaffected by the size of the sample (Bollen, 1989; Hu & Bentler, 1995). Like all other incremental indices, IFI values higher than 0.90 are typically regarded as a good model fit, while the value of the IFI index can exceed 1. However, as all these indexes are equivalent asymptotically, they can be used interchangeably (Bentler, 1990).

Additionally, along with the other two types of indices (absolute and incremental fit indices), parsimony fit indices have been developed explicitly to provide evidence about which model, among a number of competing models, has the best fit, comparative to their complexity (Hair et al., 2010). In these fit indices, simpler theoretical models are preferred over complex ones and the more complex the model, the lower the fit indices. Thus, while these parsimony fit indices are not suitable for confirming a model, they are beneficial in comparing the fit of two or more models. Parsimony fit indices include the Parsimony Comparative Fit Index (PCFI; adjust CFI), Parsimony Normal Fit Index (PNFI; adjust NFI), and Parsimony Goodness-of-Fit Index (PGFI; adjust GFI). All of the parsimony indexes adjust the CFI, NFI, and GFI by taking into account the number of degrees of freedom used to achieve a level of fit (Hair et al., 2010). While the values of the parsimony indexes range from 0 to 1, values above 0.50 refer to a good fit, which is much lower than the recommended values of normed indices (Mulaik et al., 1989: 439; Meyers et al., 2006: 559).

There are disagreements among scholars on which fit indexes to report and they argue that there is no need to report all of the fit indexes (See, Hu & Bentler, 1999; Tabachnick & Fidell, 2007; Hair et al., 2010; Byrne, 2016). For example, according to

Hoyle & Panter (1995: 168), in terms of incremental fit indexes, one each from Type 2 (TFI or IFI) and Type 3 (CFI) incremental indexes should be reported, while they recommend not to use Type 1 (NFI or Bollen's Fit Index). Alternatively, Hair et al. (2010: 672) state that along with non-significant chi-square ratio statistics, at least one fit measure from each index (absolute, incremental, and parsimonious) should be reported. In particularly, they mentioned that CFI or TLI, RMSEA, and PNFI are informative enough to evaluate model fit. In the same way, Meyers et al. (2006: 562) support that one each of absolute, incremental, and parsimonious fit measure should be reported by a researcher. Then again, while Tabachnick & Fidell (2007: 720) recommend using CFI and RMSEA fit index to report the model fit, Iacobucci (2010: 90) and MacKenzie et al. (2011: 313) suggest using CFI, RMSEA, and SRMR for indicating good model fit. Following this recommendation, to evaluate the model fit, the current study uses three categories of fit measures; absolute, incremental and parsimonious, which is shown in Table 4.10.

Table 4.10: Suggested Thresholds for Fit Indices

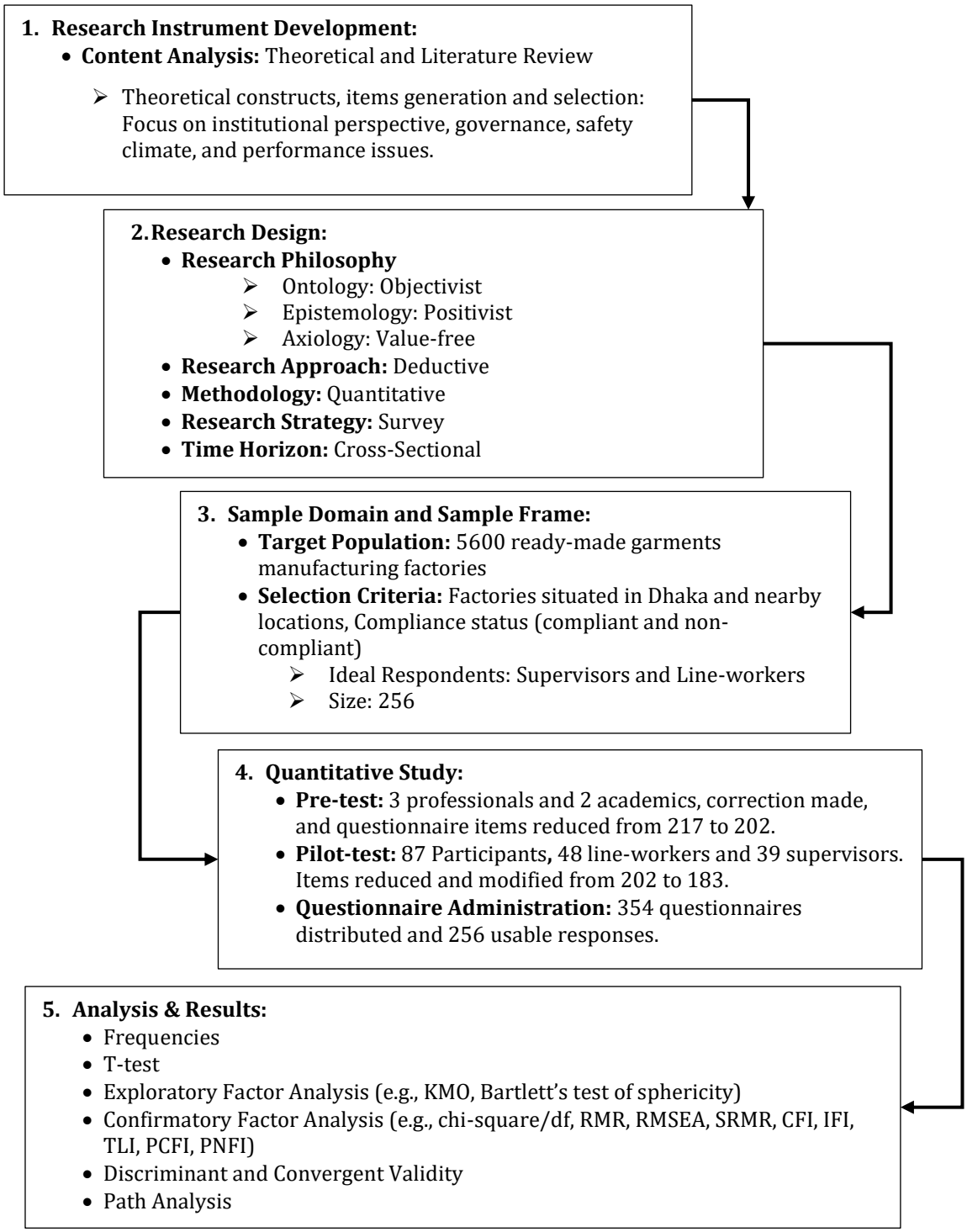
Fit Measures	Indices	Conventional CFA Model Fits	Indices used for the study	Scholars recommended the threshold values
Absolute Fit Measures	x^2/df	≤5 ; p>.05	✓	(Bentler & Bonett, 1980; Bagozzi & Yi, 1988; Hu & Bentler, 1999; Jöreskog & Sörbom, 1993; Curran et al., 2002; Ho, 2006; Hair et al., 2010; Schumacker & Lomax, 2010; Tabachnick & Fidell, 2013)
	RMR	≤.05	✓	
	SRMR	<0.08	✓	
	RMSEA	≤.08, fit well ≤.05, fit very well	✓	
	PCLOSE	>.05		
	GFI	≥.90		
	AGFI	≥.90		
Incremental Fit Measures	CFI	≥.90	✓	(Bentler, 1990; Brown, 2006; Hair et al., 2010; Schumacker & Lomax, 2010; Hoyle, 2011; Kline, 2011; Raykov & Marcoulides, 2012; Tabachnick & Fidell, 2013)
	TLI	≥.90	✓	
	IFI	≥.90	✓	
	NFI	≥.90		
Parsimony Fit Measures	PCFI	>.50	✓	(Ho, 2006; Byrne, 2010; Hair et al., 2010; Schumacker & Lomax, 2010; Raykov & Marcoulides, 2012; Tabachnick & Fidell, 2013)
	PNFI	>.50	✓	

***x²/df* =** Chi-square/degrees of freedom, **GFI**=Goodness of Fit Index; **RMR**=Root-mean-square Residual; **SRMR=**Standardized Root Mean Square Residual; **RMSEA**=Root-mean-square Error of Approximation; **CFI**=Comparative fit Index; **TLI**=Tucker–Lewis Index; **IFI**=Incremental Fit Indices; **NFI**=Normed Fit Index; **PCLOSE**= p of Close Fit or RMSEA

4.9 Summary

This chapter has comprehensively discussed the design of the research (research philosophy, approach, strategy, methodology, time horizon, sampling, data collection process, and applied statistical methods). Different perspectives on research design have been exhibited in order to grasp the assumptions underlying the research methodology. Justifications and procedures for the adopted methodology have been presented, to facilitate a cohesive and persuasive discussion, which guides the following stages of the research process. For the current study, a positivistic philosophy was deemed appropriate to discover causal relationships. Therefore, a quantitative approach was adopted to collect and analyse data. Further, this chapter has discussed in detail about the statistical techniques used in this study to analyse the data. Figure 4.4 presents a schematic methodological flowchart, the steps for the current study. The following chapter discusses the analysis of the data collected from the survey.

Figure 4.4: Schematic Methodological Flowchart & Steps



Source: Adapted from Boateng et al. (2016)

Chapter 5

Data Analysis

5.1 Introduction

The chapter mainly identifies the relationships between the proposed dimensions and their constructs. First, the sample criteria are identified through descriptive statistics. Then, the chapter shows the results of data preparation, which confirms the suitability of the data to be analysed further. Next, the chapter shows the result of factor analysis, which explores the factor structures of the constructs related to the four main dimensions. After that, the results show the confirmation of the factor structures through unidimensional confirmatory factor analysis. Next, the chapter represents the result of measurement model followed by path analysis. The path analysis illustrates the results of the relationships between constructs from four dimensions. The last part of the chapter illustrates the results of multi-group analysis, through which the chapter identifies the difference of the model between two sample groups. Finally, the chapter ends with the identification of any interaction effect in the hypotheses rejected in the path analysis.

5.2 Univariate Analysis of the Data

Univariate analysis is a method for analysing data on a single variable, where researchers observe only one aspect of a phenomenon at a time. The purpose of a univariate analysis is to describe characteristics of a sample in a summary to find patterns in the data. According to Hair et al. (2006: 41), researchers use univariate analysis as one of the initial procedures of data analysis to measure the tendency (e.g., mean, median, mode), dispersion (e.g., range, quartiles), and spread of a single variable (e.g., variance, standard deviation). For the univariate analysis of the data, the current study evaluates the issues of missing values, outliers, normality, homoscedasticity, linearity, multicollinearity, and non-response bias, which might affect the quality of the data. Determining these values allows a researcher to perform a variety of assessments to establish a logical context of the distribution and

identify the appropriateness of the data for multivariate analysis. Hence, in the following section, univariate analysis is reported followed by variouos multivariate analyses, such as Exploratory Factor Analysis (EFA), Confirmatory Factor Analysis (CFA), and Structural Equation Modelling (SEM).

5.2.1 Sample Summary

Based on the sample collection criteria discussed in the previous chapter, a total of 354 questionnaires were distributed across 128 ready-made garments (RMG) factories, which can be categorised into two different types, i.e., compliant and non-compliant factories. In total, 256 valid responses were collected, a response rate of 72.31%. Among these 166 responses (92.22%) were collected from compliant factories and 90 responses (51.72%) have been collected from non-compliant factories. Table 5.1 highlights the distribution of the survey responses.

Table 5.1: Summary of Survey Responses

	Compliant Factory	Non-compliant Factory	Total
Questionnaire Distributed Across Factories	64	64	128
Total Questionnaire Distributed	180	174	354
Received Response	166	90	256
Usable Responses	166	90	256
Response Rate	92.22%	51.72%	72.31%

Using the descriptive statistics, the following Table 5.2 shows the characteristics of the respondents. Most of the respondents were female (57.8%) and the reason behind that is that the RMG industry is the largest employer of women in the formal manufacturing sector in Bangladesh (Syeda Sharmin, 2002; Islam & Zahid, 2012). In addition, most of the respondents (59.80%) were aged 18-24 years, and 11.3% of the respondents were juvenile workers age between 14-17 years. This might be because employers do not prefer older workers, as employing young workers can reduce the wage cost and increase the production efficiency. Additionally, another reason could be that workers cannot continue to work in the factories for a long time due to the occupational hazards associated with this kind of job. Alternatively, one of the reasons that factories employ juvenile workers might be the fact that government of Bangladesh has not ratified the Minimum Age Convention

No. 138 and yet not established a uniform minimum age for admission to work (ILO, 2008). National legislation sets forth more than a few minimum age of employment such as 12 years for shops and commercial establishments [Section 22 of the Shops and Establishments Act], 14 years for factories [Section 76 of the Factories Rules], 15 years for mines [Section 26 of the Mines Act], and 18 years for road transport services [Section 3 of the Road Transport Workers Ordinance]. So it can be concluded that according to the Bangladeshi law, employing juvenile workers (14-17 years) in the RMG manufacturing factories are not prohibited. In addition, the employers, owners, or managers of the RMG factories prefer to employ minor workers at work as they can easily be exploited to work longer hours with minimum wages. However, the most important cause of minor workers employed in any sector still remains to be the economic impoverishment of the country. Parent of the poverty-ridden families consider their children better off as assistants of their professions or to be engaged in any other job as a means of supplementing the family income. In absence of living wages, adequate social protection schemes, lack of opportunities to access education and prevailing social norms, minors will continue to be at high risk of being forced to work.

Furthermore, in the sample, the largest concentration of the respondents had a primary education (23.8%) followed by junior education (20.7%), secondary education (16.8%), higher secondary education (15.6%), and madrasa education (2.00%). However, even though one-fourth of the respondents (21.1%) did not have any formal education, the overall situation regarding the education level of the workers is very encouraging compared to the statistics of a few years back. In terms of material status, 49.6% of the respondents were currently married, whereas 47.2% were unmarried followed by divorced (1.20%), separated (1.20%) or widowed (0.80%).

Table 5.2: Characteristics of Research Sample (N =256)

Demographics	Variable Item	Response	Percentage (%)
Gender	Male	95	37.1
	Female	161	62.9
Age	Juvenile (14-17 Years Old)	29	11.3
	18-24 Years Old	153	59.8

	25-34 Years Old	67	26.2
	35-44 Years Old	7	2.7
Education	No Schooling	54	21.1
	Primary School (Class 1 to 5)	61	23.8
	Junior School (Class 6 to 8)	53	20.7
	Secondary School (Class 9 to 10)	43	16.8
	Higher Secondary Level	40	15.6
	Madrasa School	5	2.00
Marital Status	Single	121	47.3
	Married	127	49.6
	Widowed	2	0.80
	Divorced	3	1.20
	Separated	3	1.20
Job Duration	1-2 Years	55	21.5
	2-3 Years	61	23.8
	3-4 Years	50	19.5
	4-5 Years	57	22.3
	More than 5 Years	33	12.9
Designation	Line Workers	151	59.0
	Supervisors	105	41.0
Work Unit	Sewing	127	49.6
	Cutting	44	17.2
	Finishing	25	9.80
	Embroidery	3	1.20
	Quality Control	27	10.5
	Storage	2	0.80
	Ironing	22	8.60
	Others	6	2.30
Number of Workers in Factory	≤ 100 Workers	9	3.50
	≥ 100 to ≤ 300	52	20.3
	≥ 300 to ≤ 500	40	15.6
	≥ 500 to ≤ 1000	43	16.8
	≥ 1000 to ≤ 2000	36	14.1
	≥ 2000	76	29.7
Type of Factory	Compliant	166	64.8
	Non-Compliant	90	35.2
Working Hours	8 hours a day	23	9.0
	9-10 hours a day	158	61.7
	11-12 hours a day	59	23.0
	13-14 hours a day	16	6.3

In the RMG industry, job duration is considered as an essential factor in wage determination, as higher payments and benefits are associated with a higher period of job duration. In the current study, the largest concentration of respondents (23.8%) had been in the job for 2 to 3 years and 22.3% of the respondents had experience of 4 to 5 years. Almost one-fourth of the respondents had been working for between 1 to 2 years (21.5%), whereas only 12.9% of the workers had been working for more than five years. Out of these respondents, 49.6% worked in the sewing unit, followed by cutting (17.2%), quality control (10.5%), finishing (9.80%), embroidery (1.20%), storage (0.80%), ironing (8.60), and other units (2.30%). Regarding designation 59% were line workers and 41% are supervisors.

Besides, 29.7% of the respondents worked in large factories, where the number of total factory workers was ≥2000. Second, most respondents (20.3%) were from small sized factories with between 100 to 300 workers and 16.8% were from medium sized factories with 500 to 1000 workers. In terms of the factory type, most of the respondents worked in compliant factories (64.8%), while 35.2% were in non-compliant factories. Most of the respondents (61.7%) worked 9 to 10 hours per day, whereas only 9% of the respondents worked the standard eight-hour work shift. Further, even though respondents had access to overtime hours, overall 29.3% of respondents worked more than 11-14 hours per day, which is a breach of national and international labour standards and can cause a serious health risk for the garment workers. The reasons behind the breach might be that, to meet the foreign buyers' demand and match the competitive international price (by reducing the cost of production) employers force the workers to work overtime. Moreover, sometimes serious and unpleasant incidents take place based on rumours and workers' unjustified demands, which leads to protests and strikes. Hence, to keep up the production deadline, labours are forced to work overtime.

5.2.2 Data Screening and Preparation

Data screening is an assessment procedure, which ensures that collected data for any study is complete and prepared, prior to any statistical analyses. It is crucial to evaluate the quality of data to guarantee that the data is functional, consistent, and valid to analyse the proposed concept. The possibility of poor data quality can arise through some problems such as missing data, outliers, normality, linearity, non-response bias, homoscedasticity, and multicollinearity. Hence, the present study attempted to assess all the above-stated problems to ensure the quality of data and accuracy of the outcomes. The following sections offer more details regarding the preparation and screening of the data.

5.2.3 Assessment of Missing Values

In general, missing values, or missing data, refer to a phenomenon when the value of data is not available for the variable in an observation. Handling missing data is crucial, as

it not only inhibits the ability of a researcher to explain the observed phenomena but also leads to an inaccurate interpretation that results in biased statistical explanation and report (McKnight et al., 2007). There are several explanations for missing data, ranging from omitted by mistake, unwillingness to answer, the sensitivity of the questions, or the respondent not having any opinion (Saunders et al., 2012: 885). However, it is important to determine the pattern of missing data rather than the amount of missing data, as non-randomly missing data are more consequential than randomly missing ones (Tabachnick & Fidell, 2013: 62). Scholars (e.g., Hattie, 1985; Gorsuch, 1990; Hair et al., 2010: 46) argue that missing data can be ignored if the missing values for an individual case or observation are under 5% - 10% or if it is randomly missing. However, due to the on-site self-administered data collection technique used in the current study, it was possible for the researcher to inspect the survey questionnaires during the collection, which helped to avoid any missing values. Furthermore, to identify missing values, the present study used both exclude cases pairwise and listwise methods separately to measure the proportion of missing values and the result in both cases was zero per cent.

5.2.4 Assessment of Outliers

Outliers in a data set can be defined as an *'observations with a unique combination of characteristics identifiable as distinctly different from other observations'* (Hair et al., 2010: 96). Generally, outliers are considered as extreme values (both upper and lower limit) on one or more variables that are essentially different in kind (Tabachnick & Fidell, 2013). These outliers can be the outcome of several different reasons or problems in the research process. For example, outliers can be the cause of errors in data collection, recording, or entry; intentional or deliberate misreporting; sampling error; incorrect assumptions about the distribution of the data; or outliers can come as legitimate cases sampled from the correct population (Hair et al., 2010; Tabachnick & Fidell, 2013). Scholars (e.g., Schwager & Margolin, 1982; Rasmussen, 1988; Zimmerman, 1994) attach importance to identifying the range of causes that may be responsible for outliers for three crucial reasons. Firstly, outliers can raise error variance and weaken the competence of statistical analyses.

Secondly, if outliers are non-randomly distributed, they can influence the normality and change the odds of forming both Type I and Type II errors. Finally, outliers can have deleterious effects or biased assumptions on the generalizability of the substantive research concern. Hence, to avoid substantial misrepresentations of parameter estimates or inflated error rates, it is crucial to assess outliers through bivariate, univariate and multivariate assessments.

To identify potential outliers in the dataset, the current study used both univariate and multivariate assessment. For univariate measures, the study used, Boxplot and 5% Trimmed Mean methods. Boxplots analyse the outliers from observations by identifying samples lying far outside the range (low or high) of the distribution, whereas, the 5% Trimmed Mean technique eliminates the upper and lower 5 per cent of research cases and recalculates the mean value to compare the differences with the original mean value. According to Pallant (2010), outliers can be retained, if the difference between the original and 5% trimmed mean values is small. The results exhibit that the new trimmed mean values and original mean values are similar, which suggests no serious problem with outliers. However, the Boxplot result identifies a few randomly distributed outliers. Out of the 14 variables used in the study, in which 9 of the variables have less than 1% outliers and 3 of the variables have less than 3% variable and only 2 variables have more than 3% outliers. Table 5.3 shows the results of the univariate analysis of outliers

Table 5.3: Identification of Univariate Outliers

Univariate Assessment				
	Boxplot	**%**	**Case Number**	**5% Trimmed Mean**
Regulative	7	2.73	29, 33, 36, 47, 54, 84, 86	Similar
Normative	1	0.39	33	Similar
Cultural Cognitive	0	0.00	None	Similar
Accountability	5	1.95	29, 166, 168, 248, 250	Similar
Anti-corruption	0	0.00	None	Similar
Rule of Law	0	0.00	None	Similar
Management Commitment	1	0.39	33	Similar
Supervisor's Safety Support	8	3.13	32, 35, 46, 53, 54, 83, 84, 85	Similar
Safety Communication	9	3.52	33, 36, 39, 43, 47, 55, 84, 85, 86	Similar
Safety Risk Assessment	7	2.73	29, 33, 37, 47, 54, 84, 86	Similar
Safety Training	2	0.78	27, 47	Similar
Workplace Safety	1	0.39	29	Similar
Safety Participation	0	0.00	None	Similar
Safety Compliance	2	0.78	32, 33	Similar

Furthermore, multivariate assessment (Mahalanobis distance method) was used to identify outliers, as the study contains more than two variables. It is crucial to measure multidimensional positions, as it measures the distance of each observation in multidimensional space and provides common measures for multidimensional centrality with significance testing of the statistical property (Hair et al., 2010: 66). In Mahalanobis D^2 assessment the ratio of (D^2/df) should be less than 2.5 in small samples (up to 80 cases) and within the range of 3 to 4 for large samples (greater than 200). Furthermore, given the nature of statistical tests, it is suggested that conservative levels of significance (e.g., .005 or .001) can be used as the threshold value for designation as an outlier. Table 5.4 reports the result of Mahalanobis D^2 assessment of the current study, which reveal a few randomly distributed outliers.

These diagnostic assessments demonstrate that no observations seem to demonstrate the characteristics of outliers that should be eliminated. Each variable has some observations that are extreme, and they should be considered. Furthermore, no observations are extreme on a sufficient number of variables to be considered unrepresentative of the population. According to Hair et al. (2006: 75), to ensure the generalizability of the sample, outliers that are randomly distributed can be kept unless they are evidently not representative of the whole population. Hence, in the current study, it is not necessary to treat the existing outliers, which are randomly distributed.

Table 5.4: Identification of Multivariate Outliers

Multivariate Assessment				
Case Number	**Mahalanobis D^2**	**D^2/df**	**df**	**Significance**
177	56.3550	4.3350	13	0.0000
29	48.0458	3.6958	13	0.0000
234	43.3020	3.3309	13	0.0000
47	42.7503	3.2885	13	0.0001
32	42.6997	3.2846	13	0.0001
120	40.6793	3.1292	13	0.0001
248	40.0471	3.0805	13	0.0001
53	39.1534	3.0118	13	0.0002
df = degrees of freedom, The D^2/df value is approximately distributed as a t-value, p>. oo1				

5.2.5 Assessment of Normality

In any multivariate analysis, normality is considered as the most fundamental assumption of the validity of all statistical tests (Hair et al., 2010: 70). Normality refers to the normal distribution of each variable and all linear combinations of the variables. It is vital to varify the normal distribution of data in multivariate analysis, as without upholding the assumption it is impossible to form valid factual conclusions about the reality (Field, 2009). However, although there is an emphasis on normality in statistical procedure and it is a "make or break" criterion for any analysis, true normality is usually a myth (Elliott & Woodward, 2007: 26). Hence, it is important to ascertain whether the data shows a serious departure from normality, which can be assessed by using normal probability plots or by significance tests, comparing the sample distribution to a normal one.

To test the normal probability plot, a rule of thumb is to conduct skewness and kurtosis tests for a data set (Hair et al., 2006: 81; Thode, 2002: 1). Skewness is a statistic that measures whether the data set or a distribution is symmetrical, or asymmetrical. In other words, skewness assesses whether the data set or distribution follows a normal bell-shaped curve and looks the same to the left and right of the centre point. Alternatively, Kurtosis considers two probability density functions and measures the "tailedness" of a random variable's probability distribution. The current study examines skewness and kurtosis by computing a z- score for each variable. According to Tabachnick & Fidell (2007: 80) and Hair et al. (2010: 73), when the values exceed ± 1.96 at the .05 probability level, ± 2.58 at the .01 probability level, and ± 3.00 at the .1 probability level, the distribution of the sample is not normal. However, if the results are non-significant, the distribution is not significantly different from a normal distribution. Table 5.5 illustrates the normality test results for variables.

Table 5.5: Univariate Normality Test Results for Variables

Variables	Mean	Skewness	S.E.	$Z_{Skewness}$	Kurtosis	S.E.	$Z_{Kurtosis}$
Regulative	1.60	2.07	.152	13.61	4.52	.303	14.90
Normative	1.55	1.60	.152	10.54	2.28	.303	7.51
Cultural Cognitive	1.87	1.25	.152	8.21	1.37	.303	4.53
Accountability	1.52	1.78	.152	11.69	2.56	.303	8.45

Anti-corruption	3.85	-0.49	.152	-3.25	-1.19	.303	-3.91
Rule of Law	1.56	1.27	.152	8.34	1.01	.303	3.33
Management Commitment	1.48	1.50	.152	9.84	1.29	.303	4.26
Supervisor's Support	1.46	2.28	.152	14.95	5.48	.303	18.06
Safety Communication	1.42	2.50	.152	16.40	6.27	.303	20.68
Safety Risk Assessment	1.59	1.69	.152	11.11	2.68	.303	8.85
Safety Training	1.56	1.68	.152	11.05	2.16	.303	7.11
Workplace Safety	1.68	1.84	.152	12.07	2.93	.303	9.67
Safety Participation	1.48	1.54	.152	10.12	1.57	.303	5.18
Safety Compliance	1.55	1.87	.152	12.30	3.79	.303	12.51

In the table, at a significance level of 0.05, the z-score values show significant issues with skewness and kurtosis of the data set. Furthermore, the Shapiro-Wilk and Kolmogorov-Smirnov tests ($p < .05$), a visual inspection of their histograms, normal Q-Q plots (see Appendix E, Figure E.1: Normal Q-Q Plot Matrix for Normality Assessment), and box plots illustrate that not all the test scores are normally distributed. However, according to the *Central Limit Theorem,*[16] increase in the sample size makes the assumption of normality less problematic, as the distribution will be normal regardless of the shape of the data. Hence, with a sample size of 256, the sampling distribution is expected to be normal, even if both skew and kurtosis are significant ($p<.05$). However, as one significant prerequisite for the application of structural equation modelling is normality of the data, the current study uses a transformation technique to accommodate the non-normal distribution. As a result, as suggested by different scholars (i.e., Tabachnick & Fidell, 2007: 86; Bowen & Guo, 2011: 63; Hoyle, 2014: 269) the current study transformed the data set by using the logarithm 10 (log 10) method to *'shrink numerical range of data to normalise it'* (Naus, 1969: 655), which makes a highly skewed distributions into a less skewed distribution. After the transformation, the distribution of the data set became close to normal, which made the pattern of the data more interpretable and helped to meet the assumptions of inferential statistics.

5.2.6 Assessment of Homoscedasticity and Linearity

An implicit assumption of any multivariate analysis is linearity of the distribution, as correlation cannot represent a nonlinear association between variables (Hair et al., 2010:

[16] Given random and independent samples of N observations each, the distribution of sample means approaches normality as the size of N increases, regardless of the shape of the population distribution

75). Hence, to assess the linearity of the distribution, the current study used residual scatterplots. Residual scatterplots analysis suggests a linear relationship between all the measured variables that are largely concentrated along the linear line. Furthermore, the study also measures the assumption that the dependent variable(s) exhibit equal variance around the regression line for all values of the predictor variables (homoscedasticity) (Hair et al., 2010: 73). In fact, when a linear relationship between two measured variables is present, the assumption of homoscedasticity is satisfied (Ho, 2006: 189). Nevertheless, to ensure that the study has no significant deviations from homoscedasticity that can affect multivariate analyses, Levene's Test for Equality of Variances was also performed, which is an alternative to the Bartlett test. Due to being less sensitive to departures from normality issue, Levene test is preferred over Bartlett test to assess homogeneity. The test assesses the null hypothesis, which assumes that the variances of the populations from which different samples are drawn are equal (called homogeneity of variance or homoscedasticity). Hence, when the result of Levene's test is non-significant ($p>.05$), it can be assumed that variables are equal, and homogeneity of variances is present. Table 5.6 shows the results of the Levene's test for homoscedasticity.

Table 5.6 demonstrates that even though there is no problem of homogeneity of variances across all the gender and work position groups, work experience has the problem of heterogeneity. However, in the Tukey and Scheffe tests, all work experience group have non-significant differences, which indicates that the variance between the work experience groups is equal and can disregard the problem of heterogeneity.

Table 5.6: Analysis of Homoscedasticity

Gender vs Variables		
	Levene Statistic	**Sig.**
Regulative	2.20	0.14
Normative	0.07	0.80
Cultural Cognitive	0.17	0.68
Accountability	0.53	0.47
Anti-corruption	1.28	0.26
Rule of Law	3.53	0.06
Management Commitment	0.11	0.74
Supervisor's Safety Support	0.06	0.81
Safety Communication	0.18	0.67
Safety Risk Assessment	0.81	0.37

Safety Training	1.15	0.29
Workplace Safety	1.16	0.28
Safety Participation	2.61	0.11
Safety Compliance	2.13	0.15
Work Position vs Variables		
	Levene Statistic	**Sig.**
Regulative	1.65	0.20
Normative	0.17	0.68
Cultural Cognitive	0.11	0.74
Accountability	0.33	0.56
Anti-corruption	1.83	0.18
Rule of Law	2.58	0.11
Management Commitment	0.01	0.93
Supervisor's Safety Support	0.12	0.73
Safety Communication	0.07	0.79
Safety Risk Assessment	0.50	0.48
Safety Training	1.13	0.29
Workplace Safety	0.71	0.40
Safety Participation	2.20	0.14
Safety Compliance	1.44	0.23
Work Experience vs Variables		
	Levene Statistic	**Sig.**
Regulative	0.75	0.56
Normative	1.68	0.16
Cultural Cognitive	1.19	0.31
Accountability	3.70	0.01
Anti-corruption	1.11	0.35
Rule of Law	1.87	0.12
Management Commitment	4.33	0.00
Supervisor's Safety Support	3.89	0.00
Safety Communication	4.37	0.00
Safety Risk Assessment	0.63	0.64
Safety Training	3.71	0.01
Workplace Safety	6.66	0.00
Safety Participation	4.21	0.00
Safety Compliance	2.62	0.04

5.2.7 Assessment of Multicollinearity

Multicollinearity is one of several challenges that researchers must encounter when using regression analysis. It refers to a situation where the predictor variables themselves have a high degree of correlation (0.90 and above) (Tabachnick & Fidell, 2007: 82). The effect of multicollinearity can be substantial, as it can undermine the statistical significance of an independent variable. Hence, the study assessed the degree of multicollinearity and determined its impact on the results by using Tolerance and Variance Inflation Factor (VIF) (Hair et al., 2010: 193). For a study to consider that the data set does not contain a multicollinearity issue, a common cut-off threshold value for VIF is 10 or even as low as 4 and tolerance is more than 0.10 (Pallant, 2010). The results obtained by running regression analysis show that the VIF values range between 1.338 to 3.987 and tolerance values range between .251 and .720. Therefore, it can be established that the independent variables have

no collinearity issues, since these tolerance and VIF values are within the accepted range of threshold values (Hair et al., 2010: 193).

5.2.8 Assessment of Non-Response Bias

Non-response bias is the bias that occurs when respondents and non-respondents differ in a meaningful way regarding their responses (Armstrong & Overton, 1977). Non-response bias may occur due to several factors, as outlined in Saunders et al. (2009: 213), which might have a delirious effect on the statistical outcome. Hence, following Armstrong and Overton's (1977) recommendations, the current study used independent sample t-test to compare the resulting means, which is the most commonly used method to assess the non-response bias problem. The outcome of the independent sample t-test in Table 5.7 illustrates that there is no significant difference at 95% confidence for any variables in relation to categorical items, which confirms that non-response bias is not present in the dataset. Hence, the possibility of non-response bias can be rejected.

Table 5.7: Independent Sample T-test for Non-response Bias

Variables	Gender	N	Mean	S.D.	F	Sig.	t	df	Sig. (2-tailed)
Regulative Perspective	Male	95	1.56	0.583	1.176	.279	-.506	254	.613
	Female	161	1.62	0.645					
Normative Perspective	Male	95	1.55	0.609	.963	.327	.552	254	.581
	Female	161	1.55	0.651					
Cultural-Cognitive Perspective	Male	95	1.79	0.743	.617	.433	-1.269	254	.206
	Female	161	1.92	0.767					
Accountability	Male	95	1.44	0.680	.708	.401	-1.674	254	.095
	Female	161	1.56	0.630					
Anti-Corruption	Male	95	3.98	1.105	1.274	.260	-1.361	254	.175
	Female	161	3.78	1.165					
Rule-of-Law	Male	95	1.45	0.667	3.017	.084	-2.039	254	.043
	Female	161	1.63	0.704					
Management Commitment	Male	95	1.42	0.608	.024	.878	-1.418	254	.157
	Female	161	1.52	0.583					
Supervisors Support	Male	95	1.49	0.671	.785	.376	.046	254	.964
	Female	161	1.45	0.532					
Safety Communication	Male	95	1.41	0.652	.000	.985	-.555	254	.580
	Female	161	1.44	0.584					
Safety Risk Assessment	Male	95	1.57	0.582	.315	.575	-.454	254	.650
	Female	161	1.61	0.581					
Safety Training	Male	95	1.60	0.851	2.616	.107	.440	254	.660
	Female	161	1.53	0.734					
Workplace Security	Male	95	1.71	0.816	.190	.663	.344	254	.731
	Female	161	1.67	0.805					
Safety Participation	Male	95	1.44	0.639	3.849	.051	-.749	254	.454
	Female	161	1.50	0.727					
Safety Compliance	Male	95	1.47	0.576	.567	.452	-1.257	254	.210
	Female	161	1.61	0.777					

5.3 Multivariate Analysis of Research Variables

To test the proposed hypotheses, the current study performed multivariate analyses in three main stages, such as EFA, CFA and SEM. The current study used EFA to analyse the structure of the interrelationships among a large number of variables with a set of common underlying factors (Pallant, 2010: 181; Hair et al., 2010: 90). In contrast, CFA was used to assess the factor structure of a set of observed variables to evaluate the hypothesised relationship between observed variables and their underlying latent constructs (Pallant, 2010: 181; Tabachnick & Fidell, 2013). Lastly, the study used SEM to assess various interconnected dependence relationships and to denote unobserved concepts in these relationships (Hair et al., 2010: 585). The following sections will explain the different phases of multivariate analysis and their results.

5.3.1 Exploratory Factor Analysis (EFA)

Exploratory Factor Analysis was performed separately for each of the variable considered in the study. This was done using principal component factor analysis (PCA) with Orthogonal (Varimax) rotation to reduce the number of variables and to find the underlying structure in the relationships between variables. The ultimate idea of conducting PCA is to extract the vital information from the dataset, to represent a new set of orthogonal variables called principal components, and determine the pattern of similar variables (Pallant, 2010: 182; Hair et al., 2010: 91). Furthermore, as a successful and most favourable analytic approach, Varimax rotation has been used to achieve a clearer separation of the factors, which are likely to be non-correlated (Hair et al., 2010: 110; Tabachnick & Fidell, 2013)

In addition, the study used two statistical measures to assess the factorability of the data set: Bartlett's test of sphericity (Bartlet, 1954), and the Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy (Kaiser, 1970; Kaiser & Rice, 1974). For accepting the factorability, the KMO index should range from 0 to 1; with 0.60 recommended as the

benchmark for a satisfactory factor analysis (Pallant, 2010: 183). In contrast, Bartlett's Test of Sphericity represents the overall significance of all correlations within a correlation matrix, which should be significant ($p < 0.05$) for the factor analysis to be considered as suitable. Furthermore, factors were extracted based on the Eigenvalue greater than one (1) rule, which represents that amount of variance accounted for by a factor (Hair et al., 2010: 89).

Finally, three more conditions were used to decide in whether to keep the variables: percentage of total variance explained, the loading of each variable and their commonalities. Percentage of total variance explains the cumulative percentage of total variance explained by its succeeding factors and for the social science field, a solution that accounts for 60% or less is satisfactory (Hair et al., 2010: 104). In this study, all the solutions account for more than 50% of the total variance. In addition, as a second criterion, factor loading was used to represent how strongly a factor explains a variable, or in other words, it represents the correlation between a specifically observed variable and a specific factor. Loadings can range from -1 to 1. Higher loadings close to -1 or 1 indicate that the factor has strong effects on a variable and conversely, loadings close to zero (0) indicate that the factor weakly affects the variable. However, according to Hair et al. (2010: 112), based on the sample size, factor loadings should be considered significant and sample size over 250 should consider $\pm$ .30 as the benchmark loading value. Given the sample size of N=256, the current study uses high $\pm$ .60 loading values to have a robust measurement of the factors, which can better account for the variables. As a third criterion, the communalities of the variable were assessed, with a recommended value of 0.50 (Hair et al., 2010: 115), which all the factors met. The following sections discuss the details of factor analysis result for the each construct.

5.3.1.1 Exploratory Factor Analysis of Institutional Perspective Construct

Based on the research hypotheses and the interrelationships within the institutional perspective construct, three different dimensions, regulative, normative, and cultural-

cognitive, were analysed with EFA. Two factors were extracted from each dimension: for the regulative dimension, these were: governmental inspection (5 items) and monitoring & sanction (6 items), for the normative dimension: industry norms (6 items) and industry values (4 items), and for the cultural-cognitive dimension: industrial standards (10 items) and industrial beliefs (4 items). The following section discusses in detail the EFA of each dimension.

5.3.1.1.1 Exploratory Factor Analysis of Regulative Perspective

Exploratory factor analysis of the regulative dimension provided a four-factor solution. The four-factor solution was extracted based on the Eigenvalue greater than one (1) rule, and the extracted factors accounted for 66.87% of the total variance. However, to determine the accuracy of factor retention methods, the study used Parallel Analysis (PA) (Monte Carlo Approach) as suggested by various scholars (e.g., Horn, 1965; Humphreys & Montanelli Jr, 1975; Zwick & Velicer, 1982; Fabrigar et al., 1999). Parallel Analysis was used, as it tries to control the primary drawback of the Eigenvalue rule: the over-approximation of matrix rank due to sampling error (Hayton et al., 2004). Even though the first EFA drew a four-factor solution, PA for the regulative dimension indicates that two factors should be retained. Besides, out of the preliminary four-factor solution, only two factors show high (Cronbach Alpha $\alpha \geq 0.70$), which also supplements the result of PA. Therefore, the current study retains a two–factor solution for the regulative dimension: governmental inspection and monitoring & sanction, representing 52.70% of the total variance.

Furthermore, the data shows suitability for factor analysis, as the EFA correlation matrix illustrates many correlations of r = 0.30 and greater (Pallant, 2010: 187). Bartlett's test of sphericity illustrates a statistically significant (sig=0.00, $p<0.05$) approximate Chi-square of 1880.081 with df of 105. Bartlett's test signifies the high level of homogeneity among the variables and the presence of non-zero correlation among the 15 items. In addition, the Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy shows a value of 0.881, which is higher than the cut-off point of 0.60 as recommended by Pallant (2010: 183).

From the above-stated results, the regulative dimension satisfies the essential requirements for factor analysis (Hair et al., 2010).

Due to the high factor loading values ($\pm$ 0.60) set as a threshold for the study, four items were excluded from the 15 items because of low factor loadings and cross-loadings. The factor loadings for accepted items within governmental inspection and monitoring & sanction range from 0.66 to 0.81 and 0.62 to 079 respectively. Furthermore, Cronbach's Alpha (α) for the two extracted factors indicates strong consistency and reliability (governmental inspection, α=0.85 and monitoring & sanction, α=0.84). According to Ho (2006: 240), α value greater than .80 represents highly reliable and internally consistent items, which is also supported by Hair et al. (2006: 137), who state that α score greater than 0.70 denotes high reliability. Besides, the reliability scores of all averaged scales of governmental inspection and monitoring & sanction are 0.89, which is also above the usual threshold value of 0.70. Moreover, the reliabilities (Cronbach's alpha) of each item ranged from 0.78 to 0.84, which surpass the benchmark of 0.60 suggested by Bagozzi & Yi (1988).

In addition, Corrected Item-Total Correlation (CITC) was utilised to assess the internal consistency of the items by revealing the degree of correlation between each item and a scale score that excludes that item. The low correlation for an item indicates that the item does not actually assess the same thing that the rest of the scale is trying to measure. In the study, CITC for the items ranges from 0.58 to 0.78 and 0.50 to 0.68 for governmental inspection and monitoring & sanction respectively, which exceed both the CITC threshold of 0.40 suggested by Nunnally & Bernstein (1994: 263) and that of 0.30 suggested by Pallant (2010: 100). Table 5.8 contains a summary of the descriptive statistics, factor analysis and reliability analysis for the regulative dimension.

Table 5.8: Statistical Summary - Descriptive Statistics, Factor Analysis and Reliability Analysis for Regulative Perspective

Factors and Variables	Descriptive Statistics		Factor Components & Loading		Reliability	
	M	S.D.	1	2	CITC	α
Governmental Inspection						**.85**
2. Government officials inspect whether the factory's building structure is strong enough to support heavy equipment	1.64	0.94	.81		.78	.78
3. Government officials inspect whether the gas lines are adequately secured in my factory	1.66	0.82	.76		.67	.81
1. Government officials inspect whether the electrical wirings are adequately secured in my factory	1.55	0.71	.72		.66	.81
8. Government officials inspect whether the firefighting equipment are installed properly (e.g., fire alarms, automatic fire sprinklers, and handheld fire extinguishers)	1.92	1.15	.67		.58	.84
15. Government officials ensure that our factory has good housekeeping storage	1.39	0.74	.66		.61	.82
Monitoring and Sanction						**.84**
4. Government officials review fire safety maintained by our company	1.55	0.68		.79	.50	.83
9. The government closes factories if they do not comply with the recommended standards and guidelines for maintaining good workplace conditions	1.68	1.16		.67	.62	.81
10. Government officials review whether my company conducts evacuation drills every 3 months	1.72	1.12		.67	.68	.80
5. Government officials review that our company's fire inspection certificates are up to date	1.66	0.99		.66	.68	.80
6. Government officials review whether the fire exits in my factory are designed properly	1.61	0.92		.62	.59	.81
14. The government punishes factory owners in the case of any disaster that happens due to negligence	1.39	0.74		.62	.63	.81
% of Cumulative variance			**44.5**	**8.18**		
KMO = .881, ***Bartlett test of sphericity*** = 1880.081 with df 105, ***significance*** = 0.000, **α = .89**						

5.3.1.1.2 Exploratory Factor Analysis of Normative Perspective

The second EFA provided a three-factor solution based on the Eigenvalue rule that accounted for 66.18% of the total variance explained. However, PA for the normative dimension indicated a two-factor solution. Besides, in the preliminary three-factor solution, only two factors showed high reliability with Cronbach Alpha $\alpha \geq 0.70$. Therefore, the current study retained the two–factor solution for the normative dimension: industry norms and industry values, representing 59.57% of the total variance. Furthermore, the correlation matrix shows many correlations of r = 0.30 or greater among matrix scores. Bartlett's test of sphericity illustrates a statistically significant value of 0.00 ($p<0.05$) approximate Chi-square of 3017.310 with df of 136. In addition, the Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy reveals a value of 0.882, which is higher than the cut-off point of 0.60.

In the rotated component matrix, out of 17 items, 7 items were excluded due to low factor loadings and cross-loadings. The factor loadings for accepted items within industry norms and industry values range from 0.62 to 0.79 and 0.68 to 0.87 respectively. Furthermore, Cronbach's Alpha for the extracted two factors indicate strong consistency and reliability (industry norms, $\alpha=0.90$ and industry values, $\alpha=0.89$). Further, the reliability score of all averaged scales of industry norms and industry values is 0.92, which is also above the usual threshold value of 0.70. Additionally, the reliabilities (Cronbach's alpha) of each item ranged from 0.78 to 0.84, which surpass the benchmark value of 0.60. Finally, the CITC among items ranges from 0.58 to 0.79 and 0.72 to 0.83 for industry norms and industry values respectively. Table 5.9 contains a summary of the descriptive statistics, factor analysis and reliability analysis for the normative dimension.

Table 5.9: Statistical Summary - Descriptive Statistics, Factor Analysis and Reliability Analysis for Normative Perspective

Factors and Variables	Descriptive Statistics		Factor Components & Loading		Reliability	
	M	S.D.	1	2	CITC	α
Industry Norms						**.90**
3. The government/BGMEA/international association visits our factory to monitor safety and health practices maintained by our company	1.82	1.12	.79		.75	.87
4. The government/BGMEA/international association requires my company to make sure that the factory is not over-crowded	1.50	0.88	.76		.58	.90
1. The government/BGMEA/international association requires my company to follow the labour standard suggested by the them	1.45	0.88	.74		.70	.88
2. The government/BGMEA/international association requires my company to implement employee health and safety practices	1.60	1.03	.68		.79	.87
11. The government/BGMEA/international association requires my company to ensure an equipped dispensary, doctor, and nursing staff for employees	1.46	0.97	.65		.75	.87
13. The government/BGMEA/international association requires that employees should not be harassed if any workers want to join a trade union	1.71	1.26	.62		.76	.87
Industry Values						**.89**
15. The government/BGMEA/international association requires worker's right to collective bargaining with an owner	1.68	1.06		.87	.83	.82
14. The government/BGMEA/international association requires my company to have an in-house canteen for every 100 workers	1.88	1.04		.76	.73	.86
8. The government/BGMEA/international association requires my company to make sure that the entrance doors are always open	1.51	0.97		.74	.75	.85
10. The government/BGMEA/international association requires my company to ensure that workers are entitled to sick leave and annual leave	1.43	0.69		.68	.72	.87
% of Cumulative variance			**50.4**	**9.20**		
KMO = .882, ***Bartlett test of sphericity*** = 3017.310 with df 136, ***significance*** = 0.000, **α = .92**						

5.3.1.1.3 Exploratory Factor Analysis of Cultural-Cognitive Perspective

The third exploratory factor analysis provided a three-factor solution based on the Eigenvalue rule that accounts for 63.75% of the total variance, which is also supported by the PA. However, while assessing the internal reliability of the extracted factors, one of the factors failed to pass the threshold value of $\alpha \geq 0.70$. Hence, the current study retains a two–factor solution for cultural-cognitive dimension: industrial standards and industrial beliefs, which accounts 54.65% of the total variance. In addition, many of the correlation values among dimension items are $r \geq 0.30$. Bartlett's test of sphericity illustrates approximate Chi square of 1767.342 with df of 91 along with a statistically significant value of 0.00 ($p<0.05$). Further, the Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy illustrates a value of 0.823, which is higher than the cut-off points of 0.60.

In the rotated component matrix, out of 14 items, none of the items was excluded for low factor loadings and cross-loadings. The factor loadings for accepted items within industrial standards and industrial beliefs range from 0.60 to 0.78 and 0.68 to 0.88 respectively. Cronbach's Alpha for the extracted two factors indicates strong consistency and reliability (Industrial standards, $\alpha=0.88$ and Industrial beliefs, $\alpha=0.83$). Further, the reliability score of all averaged scales of industrial standards and industrial beliefs is 0.88, which is also above the usual threshold value of 0.70. Additionally, reliabilities (Cronbach's alpha) of each item ranged from 0.74 to 0.88, which exceeds the benchmark value of 0.60. Finally, the CITC among items ranges from 0.52 to 0.74 and 0.55 to 0.77 for industrial standards and industrial beliefs respectively. Table 5.10 contains a summary of the descriptive statistics, factor analysis and reliability analysis for the cultural-cognitive perspective.

Table 5.10: Statistical Summary - Descriptive Statistics, Factor Analysis and Reliability Analysis for Cultural-Cognitive Perspective

Factors and Variables	Descriptive Statistics		Factor Components & Loading		Reliability	
	M	S.D.	1	2	CITC	α
Industrial Standards						**.88**
13. The government/BGMEA/international associations attach great importance to providing free medical treatment for workers who get injured in workplace incidents	2.03	1.36	.78		.74	.86
8. The government/BGMEA/international associations focus on the collective dialogue between factory owners and workers for the resolution of any conflict	1.85	1.33	.74		.67	.87
1. The government/BGMEA/international associations attach great importance to safety initiatives to improve working conditions	1.77	1.09	.73		.63	.87
3. The government/BGMEA/international associations attach great importance to raising awareness of labour rights	2.02	1.15	.70		.63	.87
5. The government/BGMEA/international associations encourage imitating the safety guidelines that most successful companies are practising	1.94	1.32	.69		.58	.87
2. The government/BGMEA/international associations attach great importance to safety training for owners/employees to minimise safety risks	1.87	1.16	.67		.61	.87
14. The government/BGMEA/international associations ensure that families of workers who are killed or permanently disabled from workplace accident get compensation from the factory owners	1.96	1.10	.64		.62	.87
12. The government/BGMEA/international association endorses that to continue in the business, factory owners should ensure labour rights	1.64	1.01	.64		.59	.87
11. The government/BGMEA/international association endorses that to continue in the business, factory owners should ensure good working conditions for the workers	1.66	1.22	.64		.55	.88
4. The government/BGMEA/international associations attach great importance to promoting different programmes to ensure employee welfare	2.03	1.36	.60		.52	.88
Industrial Beliefs						**.83**
7. The government/BGMEA/international associations attach great importance to promoting worker's right to form/join a trade union	1.98	1.36		.88	.77	.74
6. The government/BGMEA/international associations think that ensuring workers' health and safety is a moral obligation for my company	2.07	1.35		.85	.70	.77
9. The government/BGMEA/international associations focus on registering trade unions to assure labour rights	1.93	1.19		.79	.65	.80
10. The government believes that employee health and safety is equally important as production	1.67	1.04		.68	.55	.84
% of Cumulative variance			**39.5**	**15.1**		
KMO = .823, ***Bartlett test of sphericity*** = 1767.342 with df 91, ***significance*** = 0.000, **α = .88**						

5.3.1.2 Exploratory Factor Analysis of Governance Construct

Within the construct of governance, three different dimensions, accountability, anti-corruption, and rule of law, have been analysed with EFA. For the accountability dimension, the two factors were: answerability (10 items) and responsibility (4 items), for the anti-corruption dimension: ethicality (5 items) and transparency (5 items), and for the rule of law dimension: rule conformity (7 items) and rule implementation (4 items) have been extracted. The following section discusses in detail.

5.3.1.2.1 Exploratory Factor Analysis of Accountability

The first exploratory factor analysis for the governance construct (accountability) provided a three-factor solution that accounted for 66.55% of the total variance. The PA also supported retaining of a three-factor solution. Nevertheless, one of the factors did not meet the threshold value of $\alpha \geq 0.70$, for internal reliability. Hence, the study kept a two–factor solution for accountability dimension: answerability and responsibility, representing 57.92% of the total variance, that demonstrates many correlation values of r = 0.30 or greater. Bartlett's test of sphericity shows approximate Chi-square of 2703.363 with df of 120 and a statistically significant value of 0.00 ($p<0.05$). Further, the Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy shows the value of 0.883.

In the rotated component matrix, out of 16 items, 2 items were excluded due to low factor loadings and cross-loadings. The factor loadings for accepted items within answerability and responsibility range from 0.63 to 0.86 and 0.64 to 0.84 respectively. Cronbach's Alpha for answerability, $\alpha=0.92$ and responsibility, $\alpha=0.75$ indicates strong consistency and reliability. Further, the average reliability score for answerability and responsibility is 0.91, which is above the standard value of 0.70. Besides, the reliabilities of each item range from 0.62 to 0.92, which exceeds the threshold value of 0.60. Finally, the CITC among items ranges from 0.58 to 0.82 and 0.48 to 0.66 for answerability and responsibility respectively. Table 5.11 contains a summary of EFA for the accountability dimension.

Table 5.11: Statistical Summary - Descriptive Statistics, Factor Analysis and Reliability Analysis for Accountability

Factors and Variables	Descriptive Statistics		Factor Components & Loading		Reliability	
	M	S.D.	1	2	CITC	α
Answerability						**.92**
5. My company regularly arranges employer-employee dialogue about safety performance	1.75	1.22	.86		.80	.91
4. My company promotes active involvement of staff in safety meetings.	1.70	1.13	.81		.78	.91
9. My company has allocated full-time safety representatives on site	1.59	1.20	.80		.82	.91
6. My company organises awareness programmes to communicate safety and security issues	1.64	1.03	.78		.69	.91
3. My company is accountable for a regular audit of electrical wiring safety	1.59	0.83	.71		.71	.91
16. My company shows empathy on personal issues	1.60	0.99	.70		.69	.91
8. My company has established a health and safety committee	1.56	1.08	.69		.65	.92
10. My company has a resting place for employees	1.75	1.17	.69		.71	.91
1. My company is accountable to government for periodical inspection of all fire protection equipment	1.54	0.78	.67		.59	.92
2. My company is accountable to the government for regular supervision of building structural safety	1.54	0.83	.63		.58	.92
Responsibility						***.75***
11. My company provides pure drinking water facilities	1.28	0.75		.84	.66	.62
14. My company allows four months maternity leave	1.40	0.83		.73	.48	.74
12. My company has hygienic sanitary facilities	1.17	0.49		.71	.59	.68
13. My company has effective waste disposal systems	1.20	0.55		.64	.50	.71
% of Cumulative variance			**46.6**	**11.4**		
KMO = .883, ***Bartlett test of sphericity*** = 2703.363 with df 120, ***significance*** = 0.000, **α = .91**						

5.3.1.2.2 Exploratory Factor Analysis of Anti-Corruption

The second exploratory factor analysis for the governance construct (anti-corruption) provided a two-factor solution based on the Eigenvalue rule, which accounted for 72.81% of the total variance. Both the PA and the internal reliability of the extracted factors indicated that the extracted factors should be retained. Hence, the study keeps both the factors for the anti-corruption dimension: ethicality and transparency. In addition, the extracted factors demonstrate competence for factor analysis, as many of the correlation shows values of $r \geq 0.30$. Bartlett's test of sphericity indicates a statistically significant (sig=0.00, p<0.05) approximate Chi square of 2020.843 with df of 45. Further, the Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy illustrates a value of 0.870, which is higher than the cut-off point of 0.60.

In the rotated component matrix, out of 10 items, none were excluded due to low factor loadings and cross-loadings. The factor loadings for accepted items within ethicality and transparency range from 0.66 to 0.90 and 0.62 to 0.88 respectively. Cronbach's Alpha for the extracted two factors indicates strong consistency and reliability (ethicality, α=0.92 and transparency, α=0.75). Further, the reliability score of all averaged scales of ethicality and transparency is 0.92, which is above the usual threshold value of 0.70. Additionally, the reliabilities (Cronbach's alpha) of each item ranged from 0.83 to 0.92, which exceeds the benchmark value of 0.60. Finally, the CITC among items ranges from 0.67 to 0.84 and 0.60 to 0.81 for ethicality and transparency respectively. Table 5.12 contains a summary of the descriptive statistics, factor analysis and reliability analysis for the anti-corruption dimension.

Table 5.12: Statistical Summary - Descriptive Statistics, Factor Analysis and Reliability Analysis for Anti-corruption

Factors and Variables	Descriptive Statistics		Factor Components & Loading		Reliability	
	M	S.D.	1	2	CITC	α
Ethicality						**.91**
8. I think, my company does not pay money to officials/police not to take legal action against any violation	4.05	1.32	.91		.84	.88
9. I think, my company does not pay money to auditors to ignore any compliance disputes	3.88	1.52	.87		.84	.88
7. I think, my company gets inspection certificates with proper investigation and audit	4.05	1.38	.86		.82	.89
3. My company involves all workers when forming any committee	3.85	1.45	.77		.75	.90
5. My company does not conceal child labour by issuing fake certificates from factory doctors	4.30	1.35	.66		.67	.92
Transparency						**.88**
4. My company provides appointment letters and pay-slips	3.86	1.72		.88	.63	.87
6. My company gives us the right to refuse unsafe work	4.13	1.37		.73	.60	.88
2. My company does not threaten or attack us if we want to join a trade union	3.74	1.43		.72	.81	.83
1. My company does not force us to hide any safety problem with the factory	3.47	1.64		.68	.77	.84
10. I think, my company does not illegally give sub-contracts to other non-compliant factories	3.66	1.61		.62	.75	.84
% of Cumulative variance			**60.7**	**12.3**		
KMO = .870, ***Bartlett test of sphericity*** = 2020.843 with df 45, ***significance*** = 0.000, **α = .92**						

5.3.1.2.3 Exploratory Factor Analysis of Rule-of-Law

The final exploratory factor analysis for the governance construct (rule of law) offered a two-factor solution based on the Eigenvalue rule that accounts for 63.16% of the total variance. Furthermore, the PA and the internal reliability of the extracted factors indicated retention of the two-factor solution extracted in the initial process. Therefore, current study retains both the factors for the rule of law dimension: rule conformity and rule implementation. The competence of the research sample for this EFA satisfies the essential criteria ($r \geq 0.30$). Bartlett's test of sphericity reveals a statistically significant (sig=0.00, p<0.05) approximate Chi square of 1988.192 with df of 66. Further, the Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy yields a value of 0.833, which is higher than the minimum value of 0.60.

Out of 12 items, only one was excluded due to low factor loadings and cross-loadings. The factor loadings for accepted items within rule conformity and rule implementation range from 0.62 to 0.85 and 0.62 to 0.88 respectively. Cronbach Alpha for the extracted two factors indicates strong consistency and reliability (rule conformity, α=0.89 and rule implementation, α=0.82). The reliability score of all averaged scales of rule conformity and rule implementation is 0.90 ($\alpha \geq 0.70$). Additionally, reliabilities (Cronbach's alpha) of each item range from 0.75 to 0.88, which exceeds the benchmark value of 0.60. Lastly, the CITC among items ranges from 0.60 to 0.79 and 0.62 to 0.70 for rule conformity and rule implementation respectively. Table 5.13 contains a summary of the descriptive statistics, factor analysis and reliability analysis for the rule of law dimension.

Table 5.13: Statistical Summary - Descriptive Statistics, Factor Analysis and Reliability Analysis for Rule of Law

Factors and Variables	Descriptive Statistics		Factor Components & Loading		Reliability	
	M	S.D.	1	2	CITC	α
Rule Conformity						**.89**
4. My company does not force employees to sign dismissal letters without any proper reason	1.93	1.39	.85		.79	.86
5. My company does not force pregnant women to be dismissed	1.89	1.34	.82		.79	.86
7. My company pays us the minimum wage (5300 tk) for our job	1.73	1.01	.81		.66	.88
8. My company pays employees' salary every month	1.70	1.18	.68		.60	.88
12. Labour law of our country protects employee interests and rights	1.56	0.87	.64		.70	.87
6. My company applies maximum eight working hours a day	1.36	0.81	.63		.67	.88
1. My company will be penalised if any accident happens in our factory	1.54	0.92	.62		.64	.88
Rule Implementation						**.82**
3. My company will be fined if they set up factories without following appropriate building and fire safety codes	1.45	0.87		.88	.70	.75
2. My company will be punished in case of violation of labour rights	1.42	0.82		.77	.66	.78
9. My company does not force us to work more than 2 hours of overtime each day	1.37	0.97		.74	.62	.79
11. My company has a minimum age of employment	1.51	0.97		.62	.62	.80
% of Cumulative variance			**51.6**	**11.6**		
KMO = .833, ***Bartlett test of sphericity*** = 1988.192 with df 66, ***significance*** = 0.000, **α = .90**						

5.3.1.3 Exploratory Factor Analysis of Safety Climate Construct

In the construct of safety climate, five dimensions, management commitment, supervisor's safety support, safety communication, safety risk assessment, and safety training, were analysed with EFA. Three factors were extracted from management commitment dimension and two factors each have been extracted from the other dimensions of safety climate. For the management commitment dimension, management engagement (5 items), operational procedure (5 items), and structural security (3 items) were extracted. For the supervisor's safety support dimension two factors: supervisors' assistance (4 items) and supervisors' cooperation (2 items); for the safety communication dimension: safety information (7 items) and safety signs (2 items); for safety risk assessment dimension: perceived work safety (6 items) and perceived health safety (4 items); and for the safety training dimension: safety preparation (6 items) and safety practice (4 items) were extracted. The following section discusses in detail about the exploratory factor analysis of each dimension.

5.3.1.3.1 Exploratory Factor Analysis of Management Commitment

The exploratory factor analysis for management commitment yielded a four-factor solution based on the Eigenvalue rule, which represents for 68.24% of the total variance. However, the PA and the internal reliability of the extracted factors indicate that only a three-factor solution should be extracted from the EFA. Hence, the current study keeps the three-factor solution for management commitment dimension: management engagement, operational procedure, and structural security, accounting for 61.32% of the total variance. The competence of the data for this EFA satisfies the essential criteria ($r \geq 0.30$). Bartlett's test of sphericity shows approximate Chi square of 2241.332 with df of 120 and a statistically significant value of 0.00 ($p<0.05$). Further, the Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy shows the value of 0.845.

Three items, out of the 16 measured items of management commitment, were excluded due to low factor loadings and cross-loadings. The factor loadings for accepted items within management engagement, operational procedure, and structural security range from 0.63 to 0.84, 0.62 to 0.87, and 0.70 to 0.87 respectively. Cronbach's Alpha for the extracted three-factor solution illustrates strong consistency and reliability (management engagement, α=0.87, operational procedure α=0.81, and structural security, α=0.83). The reliability score of all averaged scales of management engagement, operational procedure, and structural security is 0.89. Further, reliabilities (Cronbach alpha) of each item are range from 0.72 to 0.85, which exceeds the threshold value of 0.60. Lastly, the CITC among items ranges from 0.65 to 0.73, 0.55 to 0.67, and 0.61 to 0.74 for management engagement, operational procedure, and structural security respectively. Table 5.14 contains a summary of the descriptive statistics, factor analysis and reliability analysis for the management commitment dimension.

Table 5.14: Statistical Summary - Descriptive Statistics, Factor Analysis and Reliability Analysis for Management Commitment

Factors and Variables	Descriptive Statistics		Factor Components & Loading			Reliability	
	M	S.D.	1	2	3	CITC	α
Management Engagement							**.87**
5. My company communicates how to work safely to its employees	1.46	1.06	.83			.73	.83
7. My company appreciates my ability to identify hazards in the factory	1.45	0.87	.81			.68	.85
8. My company considers employees suggestions to improve working conditions	1.42	1.01	.79			.70	.84
4. My company ensures that emergency and evacuation procedures are rehearsed every 3 months	1.64	1.14	.75			.72	.84
14. My company is committed to providing safety training to its employees	1.56	0.98	.63			.65	.85
Operational Procedure							**.81**
10. My company makes sure that the exit doors remain free from any blockage	1.56	0.96		.73		.58	.78
11. My company makes sure that the exit doors are not locked	1.43	0.94		.69		.67	.75
16. My company acts quickly to repair cracks in beams, columns, or walls	1.58	1.10		.66		.55	.79
13. My company ensures the factory's production layout is well organised	1.41	0.84		.65		.57	.78
12. My company ensures that the factory is not over-crowded	1.45	0.86		.61		.61	.77
Structural Security							**.83**
3. My company ensures that the all firefighting equipment is installed properly (e.g., fire alarms, automatic fire sprinklers, and handheld fire extinguishers)	1.47	0.94			.87	.74	.72
2. My company monitors that the building structure is strong enough to support heavy equipment	1.47	0.94			.82	.72	.74
1. My company monitors that the electrical wirings are not exposed and are adequately secured	1.42	0.91			.70	.61	.84
% of Cumulative variance			**40.5**	**12.2**	**8.59**		
KMO = .845, ***Bartlett test of sphericity*** = 2241.332 with df 120, ***significance*** = 0.000, **α = .89**							

5.3.1.3.2 Exploratory Factor Analysis of Supervisors Safety Support

The EFA for supervisor's safety support extracted a four-factor solution based on the Eigenvalue rule that accounts for 68.01% of the total variance. However, as two of the extracted factors contain only one item, the study uses a two-factor solution for this EFA, which accounts for 50.62% of total variance. Furthermore, PA also indicates retention of the two-factor solution. Therefore, the current study retains supervisors' assistance and supervisors' cooperation, as the two factors of the supervisor's safety support dimension. The competence of the research sample for this EFA satisfies the essential criteria ($r \geq 0.30$) and Bartlett's test of sphericity yields a statistically significant (sig=0.00, p<0.05) approximate Chi square of 1187.058 with df of 66. Further, the Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy shows a value of 0.811, which is higher than the minimum value of 0.60.

Out of 12 items, six were excluded due to low factor loadings and cross-loadings. Furthermore, supervisors' cooperation includes only two items. Even though scholars argue about the number of items the need to be incorporated in a factor, various scholars (e.g., Gerbing & Anderson, 1988: 187; Little et al., 2002: 241) recommend that at least two items should be present in a single factor. Therefore, given that at two items are satisfactory to characterise a single factor, the study considers supervisors' cooperation as a factor with two items. The factor loadings for supervisors' assistance range from 0.66 to 0.78 and the values for the two items of supervisors' cooperation are 0.90 and 0.75. Cronbach's Alpha for the extracted two factors indicates consistency and reliability (supervisors' assistance, α=0.79 and supervisors' cooperation, α=0.73). The reliability score of all averaged scales of supervisors' assistance and supervisors' cooperation is 0.79 ($\alpha \geq 0.70$). Additionally, reliabilities (Cronbach alpha) of each item range from 0.68 to 0.77. Last, of all, the CITC among items range from 0.54 to 0.72. Table 5.15 contains a summary of the descriptive statistics, factor analysis and reliability analysis for the supervisor's safety support dimension.

Table 5.15: Statistical Summary - Descriptive Statistics, Factor Analysis and Reliability Analysis for Supervisors Safety Support

Factors and Variables	Descriptive Statistics		Factor Components & Loading		Reliability	
	M	S.D.	1	2	CITC	α
Supervisor's Assistance						**.79**
8. My supervisor does not behave aggressively in the workplace	1.39	0.95	.78		.72	.68
9. My supervisor does not threaten or harass us if anyone wants to join a labour union	1.45	0.97	.70		.59	.75
10. My supervisor ensures that individuals are not working under risky or hazardous conditions	1.37	0.89	.68		.57	.76
4. My supervisor treats us fairly in case of an injury in the workplace	1.52	0.94	.66		.54	.77
Supervisor's Cooperation						**.73**
12. My supervisor does not force us to work more than 8 hours in a day	1.38	0.81		.90	.60	
11. My supervisor talks to the management on behalf of the team regarding any safety problem	1.56	1.05		.75	.60	
% of Cumulative variance			**39.9**	**10.7**		
KMO = .811, ***Bartlett test of sphericity*** = 1187.058 with df 66, ***significance*** = 0.000, **α = .79**						

5.3.1.3.3 Exploratory Factor Analysis of Safety Communication

For safety communication, EFA extracted a three-factor solution, based on the Eigenvalue rule, representing 62.50% of the total variance. However, PA and internal reliability of the factor indicated a two-factor solution, which accounts for 50.62% of total variance. Hence, the current study retains safety information and safety signs, as the two factors of the safety communication dimension. The correlation matrix satisfies the essential criteria for EFA and Bartlett's test of sphericity reveals a statistically significant (sig=0.00, $p<0.05$) approximate Chi-square of 1835.802 with df of 91. Further, the Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy shows a value of 0.847, which is higher than the minimum value of 0.60.

Out of 14 items, five were excluded due to low factor loadings and cross-loadings. Furthermore, given that various scholars (e.g., Gerbing & Anderson, 1988: 187; Little et al., 2002: 241) recommend at least two items as satisfactory to characterise a single factor, the study considers safety signs as a factor with two items. The factor loadings for safety information range from 0.65 to 0.78 and the values for the two items of safety signs are .89 and .88. Cronbach's Alpha for the extracted two factors indicates consistency and reliability (safety information, $\alpha=0.87$ and safety signs, $\alpha=0.88$). Further, the reliability score of all averaged scales of safety information and safety signs are 0.87 ($\alpha \geq 0.70$). Reliabilities (Cronbach alpha) of each item range from 0.84 to 0.87. Last, of all, the CITC among items range from 0.53 to 0.80. Table 5.16 contains a summary of the descriptive statistics, factor analysis and reliability analysis for the safety communication dimension.

Table 5.16: Statistical Summary - Descriptive Statistics, Factor Analysis and Reliability Analysis for Safety Communication

Factors and Variables	Descriptive Statistics		Factor Components & Loading		Reliability	
	M	S.D.	1	2	CITC	α
Safety Information						**.87**
5. My company always brings safety information to my attention	1.60	1.09	.78		.74	.84
10. My company informs us about correct and incorrect safety actions	1.41	0.84	.77		.66	.85
14. My company listens to and acts upon safety feedback from the employees	1.57	1.07	.71		.68	.85
3. My company always informs us about changes in safe working procedures	1.27	0.79	.70		.64	.85
11. My company communicates about possible work hazards	1.51	1.01	.65		.68	.84
13. My company takes account of previous accidents to communicate safety improvement measures	1.70	1.10	.65		.53	.87
7. My company sets signs for emergency exits on every floor	1.32	0.83	.65		.61	.86
Safety Signs						**.88**
9. My company sets signs of electrical hazards on every floor	1.43	0.96		.89	.80	
8. My company sets signs of fire hazards on every floor	1.42	1.05		.88	.80	
% of Cumulative variance			**43.3**	**7.93**		
KMO = .847, ***Bartlett test of sphericity*** = 1835.802 with df 91, ***significance*** = 0.000, **α = .87**						

5.3.1.3.4 Exploratory Factor Analysis of Safety Risk Assessment

EFA yielded a four-factor solution for safety risk assessment, based on the Eigenvalue rule, that accounts for 68.37% of the total variance. However, PA and internal reliability of the factors indicated a two-factor solution, which accounts for 53.85% of total variance. Hence, the current study retains perceived work safety and perceived health safety, as the two factors of the safety risk assessment dimension. The correlation matrix satisfies the essential criteria for EFA and Bartlett's test of sphericity reveals a statistically significant (sig=0.00, $p<.05$) approximate Chi-square of 2031.275 with df of 105. Further, Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy has a value of 0.868.

Out of 15 items, six were excluded due to low factor loadings and cross-loadings. The factor loadings for accepted items within perceived work safety and perceived health safety range from 0.66 to 0.84, and 0.62 to 0.80 respectively. Cronbach's Alpha for the extracted two factors indicates strong consistency and reliability (perceived work safety, $\alpha=0.87$, and perceived health safety, $\alpha=0.83$). The reliability score of all averaged scales of perceived work safety and perceived health safety are 0.89. Further, reliabilities (Cronbach alpha) of each item are range from 0.69 to 0.86, which exceeds the threshold value of 0.60. Lastly, the CITC among items ranges from 0.62 to 0.80, and 0.48 to 0.71 for perceived work safety and perceived health safety respectively. Table 5.17 contains a summary of the descriptive statistics, factor analysis and reliability analysis for the safety risk assessment dimension.

Table 5.17: Statistical Summary - Descriptive Statistics, Factor Analysis and Reliability Analysis for Safety Risk Assessment

Factors and Variables	Descriptive Statistics		Factor Components & Loading		Reliability	
	M	S.D.	1	2	CITC	α
Perceived Health Safety						**.87**
2. The temperature in our workplace is comfortable	1.65	0.83	.78		.80	.83
1. In my workplace, fire hazards are identified properly	1.58	0.73	.78		.70	.84
3. The humidity in our workplace is appropriate	1.65	0.81	.73		.69	.85
15. I am not afraid that someone in the factory could harm me	1.38	0.65	.69		.62	.86
6. The lighting system in our workplace is sufficient	1.56	0.79	.66		.62	.86
7. The noise control system in our workplace is sufficient	1.95	1.00	.64		.62	.86
Perceived Work Safety						**.79**
9. In my workplace, the chances of being involved in an accident are quite low	1.60	0.94		.80	.62	.73
10. I can leave this building very quickly in case of a fire emergency	1.71	1.13		.73	.71	.69
4. I do not stand in one position for a long period of time	1.53	0.65		.68	.48	.80
5. In my workplace, the operating machines are covered and secured	1.64	0.97		.61	.62	.73
% of Cumulative variance			**45.6**	**8.28**		
KMO = .868, ***Bartlett test of sphericity*** = 2031.275 with df 105, ***significance*** = 0.000, **α = .89**						

5.3.1.3.5 Exploratory Factor Analysis of Safety Training Assessment

EFA extracted a two-factor solution for safety training assessment, based on the Eigenvalue rule and PA, which accounts for 64.35% of the total variance. Furthermore, the internal reliability of the factors also supports the notion of retaining a two-factor solution. Hence, the current study retains safety preparation and safety practice, as the two factors of the safety training dimension. The correlation matrix satisfies the essential criteria for EFA and Bartlett's test of sphericity reveals a statistically significant (sig=0.00, $p<0.05$) approximate Chi-square of 1420.608 with df of 45. Further, the Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy shows a value of 0.837.

Out of 10 items, none were excluded due to low factor loadings and cross-loadings. The factor loadings for accepted items within safety preparation and safety practice range from 0.66 to 0.73, and 0.65 to 0.82 respectively. Cronbach's Alpha for extracted two-factor indicates strong consistency and reliability (safety preparation, $\alpha=0.88$, and safety practice, $\alpha=0.81$). The reliability score of all averaged scales of safety preparation and safety practice is 0.89. Reliabilities (Cronbach's alpha) of each item range from 0.73 to 0.89, which exceeds the threshold value of 0.60. Lastly, the CITC among items ranges from 0.44 to 0.80, and 0.58 to 0.69 for safety preparation and safety practice respectively. Table 5.18 contains a summary of the descriptive statistics, factor analysis and reliability analysis for the safety training dimension.

Table 5.18: Statistical Summary - Descriptive Statistics, Factor Analysis and Reliability Analysis for Safety Training

Factors and Variables	Descriptive Statistics		Factor Components & Loading		Reliability	
	M	S.D.	1	2	CITC	α
Safety Preparation						**.88**
6, I have been trained to report any blocked aisles and exit doors during factory operations	1.76	1.20	.79		.66	.89
5. I have been trained to know about the basic components of fire	1.55	1.16	.77		.79	.86
2. I participate in emergency and evacuation drills every 3 months	1.75	1.27	.76		.74	.87
3. I receive related training when new procedures or equipment are introduced	1.64	1.14	.73		.80	.86
4. I have been trained to assess hazards in my workplace	1.65	1.31	.73		.73	.87
7. I am aware of the location of emergency switches of the machines that I operate	1.28	0.72	.66		.44	.89
Safety Practice						**.81**
9. I have been trained to report any near-miss incidents	1.48	1.06		.82	.69	.73
10. I have been trained to report any locked doors at any point during factory operations	1.45	0.96		.80	.66	.74
1. I was provided with safety training during my first day in the factory	1.63	1.22		.79	.58	.79
8. I have been given necessary training to avoid injury and accidents	1.38	0.87		.65	.59	.78
% of Cumulative variance			**50.3**	**14.0**		
KMO = .837, ***Bartlett test of sphericity*** = 1420.608 with df 45, ***significance*** = 0.000, **α = .89**						

5.3.1.4 Exploratory Factor Analysis of Safety Performance Construct

In the construct of safety performance, three dimensions, workplace security, safety participation, and safety compliance, were analysed with EFA. For the workplace security dimension, workplace safety (4 items) and worker safety (3 items) were extracted. For the safety participation dimension a single factor: workers' engagement (5 items) and for the safety compliance dimension only one factor: workers' habit (4 items) was extracted. The following section discusses in detail the exploratory factor analysis of each dimension.

5.3.1.4.1 Exploratory Factor Analysis of Workplace Security

The exploratory factor analysis for workplace security revealed a two-factor solution based on the Eigenvalue rule and PA, which represents for 63.71% of the total variance. Furthermore, internal reliability of the factors also supports the two-factor solution for this EFA. Hence, the current study keeps two–factor solution for the workplace security dimension: workplace safety and worker safety, which also satisfies the essential criteria for the EFA ($r \geq 0.30$). Bartlett's test of sphericity shows approximate Chi square of 1192.429 with df of 36 and a statistically significant value of 0.00 ($p<0.05$). Further, the Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy shows the value of 0.846.

Two items, out of 9 measured items of workplace security were excluded due to low factor loadings and cross-loadings. The factor loadings for accepted items within workplace safety and worker safety range from 0.71 to 0.86 and 0.74 to 0.83 respectively. Cronbach's Alpha for the extracted two factors indicates strong consistency and reliability (workplace safety, $\alpha=0.87$ and worker safety, $\alpha=0.81$). The reliability score of all averaged scales of workplace safety and worker safety is 0.87. Additionally, reliabilities (Cronbach alpha) of each item range from 0.60 to 0.88, which exceeds the threshold value of 0.60. Lastly, the CITC among items ranges from 0.65 to 0.82 and 0.60 to 0.77 for workplace safety and worker safety respectively. Table 5.19 contains a summary of the descriptive statistics, factor analysis and reliability analysis for the workplace security dimension.

Table 5.19: Statistical Summary - Descriptive Statistics, Factor Analysis and Reliability Analysis for Workplace Security

Factors and Variables	Descriptive Statistics		Factor Components & Loading		Reliability	
	M	S.D.	1	2	CITC	α
Workplace Safety						**.88**
9. I have not witnessed or experienced an electrical short-circuit accident	1.60	1.26	.86		.79	.83
4. I have not been injured in the workplace, which required absence from work exceeding 3 consecutive days	1.68	1.14	.84		.82	.82
8. I have not witnessed or experienced fire explosion	1.57	1.11	.81		.65	.88
5. My clothes or loose hair do not get caught in the machine	1.75	1.22	.71		.72	.86
Worker Safety						**.75**
2. I have been injured in the workplace but did not require absence from work	1.59	0.83		.83	.62	.61
1. I have not been injured in the workplace within the past 12 months	1.70	1.01		.74	.49	.77
3. I have not been injured in the workplace, which required absence from work not exceeding 3 consecutive days	1.60	0.87		.74	.63	.60
% of Cumulative variance			**51.1**	**12.6**		
KMO = .846, ***Bartlett test of sphericity*** = 1192.429 with df 36, ***significance*** = 0.000, **α = .87**						

5.3.1.4.2 Exploratory Factor Analysis of Safety Participation

The EFA for safety participation extracted a one-factor solution, which accounts for 50.24% of the total variance. Furthermore, PA also indicates retention of the one-factor solution. Therefore, the current study retains workers' engagement as a factor of safety participation dimension. Bartlett's test of sphericity reveals a statistically significant (sig=0.00, $p<0.05$) approximate Chi-square of 747.998 with df of 28. Further, the Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy shows a value of 0.909, which is higher than the minimum value of 0.60.

Out of eight items, three were excluded due to low factor loadings. The factor loadings for workers' engagement range from 0.75 to 0.82. Cronbach's Alpha for extracted factor of workers' engagement, $\alpha=.85$, indicates consistency and reliability. Additionally, reliabilities (Cronbach alpha) of each item range from 0.80 to 0.85. Last, of all, the CITC among items ranges from 0.63 to 0.73. Table 5.20 contains a summary of the descriptive statistics, factor analysis and reliability analysis for the safety participation dimension.

Table 5.20: Statistical Summary - Descriptive Statistics, Factor Analysis and Reliability Analysis for Safety Participation

Factors and Variables	Descriptive Statistics		Factor Components & Loading	Reliability	
	M	**S.D.**	**1**	**CITC**	**α**
Workers Engagement					**.85**
6. I encourage others to get involved in safety issues	1.38	0.85	.82	.73	.80
3. I encourage my co-workers to report any safety violations	1.33	0.82	.80	.70	.81
7. I take action to stop safety violations in order to protect the well-being of co-workers	1.56	1.18	.80	.70	.81
5. I try to discuss safety problems with my supervisors	1.38	0.83	.79	.68	.82
8. I attend non-mandatory safety meetings	2.04	1.70	.75	.63	.85
% of Cumulative variance			**50.2**		
KMO = .909, ***Bartlett test of sphericity*** = 747.998 with df 28, ***significance*** = 0.000, **α = .85**					

5.3.1.4.3 Exploratory Factor Analysis of Safety Compliance

The EFA for safety compliance extracted a one-factor solution, which accounts for 61.04% of the total variance. Furthermore, PA also indicated retention of the one-factor solution. Therefore, the current study retains workers habit as a factor of safety compliance dimension. Bartlett's test of sphericity revels a statistically significant (sig=0.00, p<.05) approximate Chi-square of 507.934 with df of 10. Further, the Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy yields a value of 0.840, which is higher than the minimum value of 0.60.

Out of five items, one excluded due to a low factor loading. The factor loadings for workers' habit range from 0.67 to 0.86. Cronbach's Alpha for extracted factor workers' habits is α=.85, which indicates consistency and reliability. Additionally, reliabilities (Cronbach's alpha) of each item range from 0.81 to 0.79. Last, of all, the CITC among items range from 0.60 to 0.76. Table 5.21 contains a summary of the descriptive statistics, factor analysis and reliability analysis for the safety compliance dimension.

Table 5.21: Statistical Summary - Descriptive Statistic, Factor Analysis and Reliability Analysis for Safety Compliance

Factors and Variables	Descriptive Statistics		Factor Components & Loading	Reliability	
	M	**S.D.**	**1**	**CITC**	**α**
Workers Habit					**.85**
2. I follow standard operating procedures relating to production to minimize safety risk	1.57	1.00	.86	.76	.79
1. I follow the appropriate work practices to reduce exposures to hazards	1.43	0.86	.84	.70	.81
3. I ensure the highest level of safety while doing my job	1.76	1.09	.84	.73	.80
4. I do not neglect safety, even when in a rush	1.46	0.84	.67	.60	.85
% of Cumulative variance			61.0		
KMO = .840, ***Bartlett test of sphericity*** = 507.934 with df 10, ***significance*** = 0.000, **α = .85**					

5.3.2 Structural Equation Modelling (SEM)

Structural Equation Modelling (SEM) is a technique, which estimates the way sets of variables define constructs and how these constructs are associated with multiple and interrelated relationships (Hair et al., 2010: 584; Kline, 2011: 7). SEM uses a scientific procedure to analyse theoretical models that develop and change our knowledge regarding complex relationships among constructs (Schumacker & Lomax, 2010: 2). The dynamic advantages of utilising SEM are its capability to assess the validity and reliability (goodness of fit) of measurement models and ability to take measurement error into account when analysing the relationships among variables (Schumacker & Lomax, 2010: 7; Hair et al., 2010: 585-586). Structural equation modelling can be used as a means of estimating different multivariate models, such as regression, principal components, canonical correlation and even MANOVA (Hair et al., 2010: 584). Basic structural equation modelling includes confirmatory factor analysis (CFA), regression, and path models. While CFA is utilised to explore the unidimensionality of research constructs by assessing the measurement model, path models are implemented to assess the association between the proposed variables. In the current study, the structural equation modelling was performed with the help of IBM SPSS AMOS version 24 software.

The current study has 173 indicators signifying fourteen different dimensions. Performing SEM with these indicators would need a sample of more than one thousand cases, which is a staggering amount of task for a researcher. Hence, as suggested by various scholars (e.g., Groot & García-Valderrama, 2006: 1368; Ashton et al., 2009: 86; Cadogan & Lee, 2013), composite scores were used. Independent factor scores were cautiously merged into a single variable as recommended by Farris et al. (1992). With fourteen different parameters, the composite score requires the study to have at least one hundred and forty cases with a ratio of 10:1 for each case by parameter numbers. Furthermore, various scholars (Fabrigar et al., 2010: 223; Kline, 2011: 261) state that an adequate sample size for performing SEM is $N \geq 200$. This study met these basic requirements, and so unidimensional CFA and path analysis were performed. These multivariate analyses were

run by using the maximum likelihood method, a very common technique in AMOS (Hair et al., 2010: 605; Kline, 2011: 12). The following section discusses the result of CFA models in details.

5.3.2.1 Confirmatory Factor Analysis (CFA)

Once the Exploratory Factor Analysis (EFA) is complete, the next phase is to define the factor structure of the dataset to perform Confirmatory Factor Analysis (CFA). It enables scholars to observe how well the theoretically specified factors correspond to the reality (Hair et al., 2010: 693). Various scholars (Jöreskog, 1978; Bentler, 1983; Browne, 1984; Anderson & Gerbing, 1988) have recommended CFA as a meticulous process to analyse the validity and unidimensionality of measurements and modify the theoretical models. To assess the adequacy of the measurement models in CFA, scholars utilise a range of fit indices, which were discussed in detail in the previous chapter. In line with the previous discussion, the current study utilised a single index from each measure category, Chi-square/df, RMR, RMSEA and SRMR for absolute fit measures, CFI, TLI, and IFI for incremental fit measures, and PCFI, and PNFI for parsimony fit measures. This is be sufficient to assess the good fit of a theoretical model and overcomes the limitations of each index.

For optimal fitting of the selected model, Chi-square test (x^2/df) value less than 5, with a non-significant difference was utilised (Bentler & Bonett, 1980; Hu & Bentler, 1999; Jöreskog & Sörbom, 1993; Curran et al., 2002; Hair et al., 2010). In addition, RMR less than 0.05 (Bagozzi & Yi, 1988; Hair et al., 2010), RMSEA less than 0.08 with a non-significant pclose value (p>.05) (Ho, 2006; Hair et al., 2010; Schumacker & Lomax, 2010), and SRMR less than 0.08 are considered as indicating a good model fit (Hu & Bentler, 1999; Hair et al., 2010). For incremental fit measures, ideal fitting values for CFI, TLI, and IFI should be greater than 0.90 (Bentler, 1990; Hair et al., 2010; Tabachnick & Fidell, 2013; Brown, 2006; Schumacker & Lomax, 2010; Kline, 2011). Lastly, for parsimony fit measures, PCFI

and PNFI greater than 0.50 were used as benchmarks for good model fit (Byrne, 2010; Hair et al., 2010; Tabachnick & Fidell, 2013).

Based on the recommendations of various scholars (e.g., Anderson & Gerbing, 1984; MacCallum & Hong, 1997; Hu & Bentler, 1998, 1999; Sharma et al., 2005; Hair et al., 2010; Kline, 2011), the current study did not use the GFI, AGFI, and NFI indices due to their several limitations. For example, simulation studies show that GFI and AGFI do not perform well with latent variable models and with large sample size, as they accept a model that should be rejected (Type I errors) (Hu & Bentler, 1998, 1999; Sharma et al., 2005; Kline, 2011). In addition, as GFI and AGFI are both sensitive to sample size, with a small sample size the value of GFI and AGFI decreases when the complexity of the model increases (Anderson & Gerbing, 1984; MacCallum & Hong, 1997; Sharma et al., 2005; Brown, 2006). Similarly, NFI is highly affected by the sample size (Bearden et al., 1982; Bentler, 1990) and hence, acts inconsistently across estimation methods when the sample size is small. Furthermore, complex models will inevitably have higher NFI values and artificially inflate the estimate of the model fit (Hair et al., 2010). Hence, GFI, AGFI, and NFI are no longer suggested as satisfactory means to assess model fit (Bentler, 1990; Hair et al., 2010; Hoyle, 2011) and were not used in the current study for model fit measurement. However, as suggested by Bentler & Bonett (1980), to overcome the limitations of NFI, the current study uses the Tucker-Lewis Index (TLI), which is unaffected by sample size and incorporates a correction for model complexity.

Furthermore, to confirm the adequacy of CFA for the measurement model, it is necessary to include convergent validity and discriminant validity (Akamavi et al., 2015; Hair et al., 2010). Ensuring validity is a vital concern, as it determines whether the level of measurement replicates the features of the investigated phenomenon (Malhotra & Birks, 2007). Hence, as recommended by Fornell & Larcker (1981: 46) and Hair et al. (2006: 779), four different principles were considered in order to assess convergent validity. First, standardised loading estimates (FL) greater than 0.50 were identifies. Then the value of

construct reliability (CR) was estimated, which should be ≥ 0.70. Next, it was estimated whether the value of average variance extracted (AVE) exceeded the threshold value of 0.50. Finally, the estimated standardised coefficient values were measured, which should be twice the standard errors.

Discriminant validity assesses whether variables correlate highly with variables outside the parent factor. It is a condition where high correlation is demonstrated by theoretically distinct concepts (Brown, 2006: 3). Discriminant validity can be assessed in different ways, such as through Multitrait-Multimethod Matrix evaluation process (Campbell & Fiske, 1959), or by paired construct analysis as suggested by Jöreskog (1971), or a technique recommended by Fornell & Larcker (1981). For a rigorous evaluation of validity, the study uses four different conditions for assessing discriminant validity. Firstly, the study uses the square root of AVE and correlation matrix technique suggested by Fornell & Larcker (1981: 45-46) and Hair et al. (2006: 778). To satisfy the requirement of discriminant validity, square roots of AVE must be higher than any correlation between any combinations between any pair of constructs in the model. Secondly, the correlation between the individual factors was analysed to assess the discriminant validity. According to Yukl et al. (2008: 613), a high correlation between two factors can reveal the participants' inability to discriminate between the factors and they suggest that the correlation between factors should not exceed 0.70. Thirdly, discriminant validity is established, if AVE is greater than maximum-shared squared variance (MSV). Finally, a Max(H) (maximal reliability) value of 0.70 was used to measure the discriminant validity, as suggested by Hancock & Mueller (2001: 207-208). The study uses the maximum likelihood method to assess coefficients in a first-order CFA model. The following sections will provide details of CFA regarding the structural and measurement models of the study.

5.3.2.1.1 Confirmatory Factor Analysis for Institutional Perspective

To measure the factor structure of the institutional perspective, CFA was used to evaluate the unidimensionality of the construct. Figure 5.1 and Table 5.22 shows the

summary of model fit indices for institutional perspective construct. In the table, it is evident that the individual model has an overall good model fit. With respect to the threshold values, the results show that the absolute fit measures are $x^2/df=1.343$, $p>0.05$; RMR=0.002, SRMR=0.039, and RMSEA=0.037 with a PCLOSE of 0.736, which satisfy the requirements. In addition, incremental fit measures also illustrate good model fit by surpassing the cut-off value of 0.90, where CFI=0.992, TLI=0.988, and IFI=0.992. Lastly, parsimony fit measures also validate the goodness of fit of the model, because PNFI= 0.661 and PCFI= 0.646 are higher than the cut-off value of 0.50. Furthermore, even though the study is not using the GFI, AGFI and NFI values to measure the model fit, the results in the table show a good model fit, as GFI=0.972, AGFI=0.948, and NFI=0.969 exceeds the cut-off value of 0.90. Hence, the results demonstrated in Table 5.22 confirm that the individual measurement model for the institution-based view has a good model fit.

Figure 5.1: Unidimensional CFA for Institutional Perspective

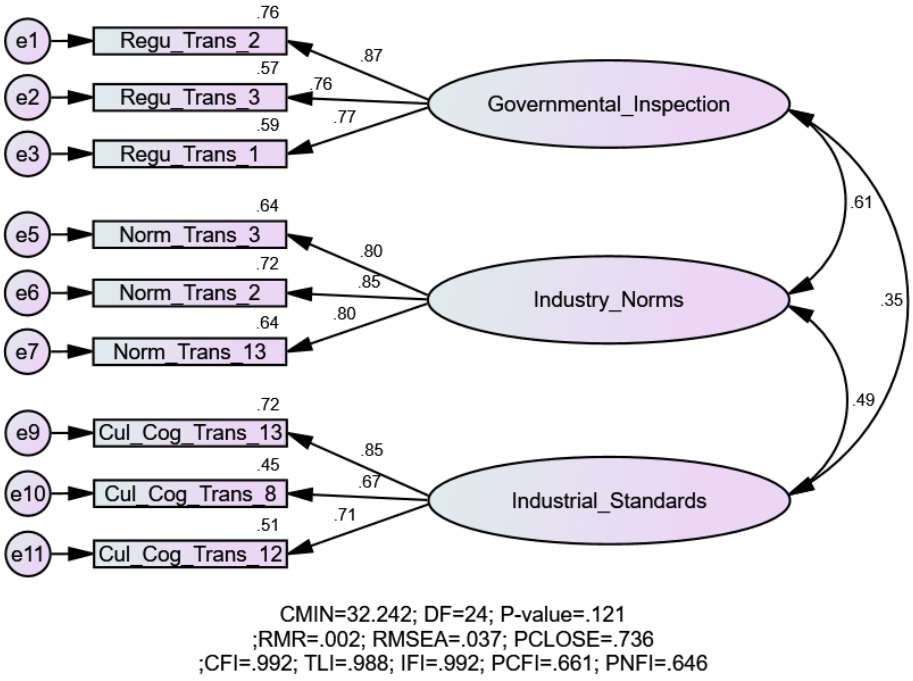


Table 5.22: Summary of Model Fit Indices for Institutional Perspective

Fit Index	Indices	Obtained Fit Indices	Suggested Fit Indices	Model Fit
Absolute Fit Indices	x^2/df	1.343; p=.121	≤5; p>.05	Excellent
	RMR	0.002	≤.05	Excellent
	SRMR	0.039	<0.08	Excellent
	RMSEA	0.037	≤.08, fit well ≤.05, fit very well	Excellent
	PCLOSE	0.736	>.05	
	GFI	0.972	≥.90	Excellent
	AGFI	0.948	≥.90	Excellent
Incremental Fit Indices	CFI	0.992	≥.90	Excellent
	TLI	0.988	≥.90	Excellent
	IFI	0.992	≥.90	Excellent
	NFI	0.969	≥.90	Excellent
Parsimony Fit Indices	PCFI	0.646	>.50	Excellent
	PNFI	0.661	>.50	Excellent

GFI=Goodness of Fit Index; **RMR**=Root-mean-square Residual; **SRMR=**Standardized Root Mean Square Residual; **RMSEA**=Root-mean-square Error of Approximation; **CFI**=Comparative fit Index; **TLI**=Tucker–Lewis Index; **IFI**=Incremental Fit Indices; **NFI**=Normed Fit Index; **PCLOSE**= p of Close Fit or RMSEA

5.3.2.1.1.1 Convergent Validity for Institutional Perspective Construct

As discussed previously, convergent validity was assessed through four different criteria. Firstly, standardised factor loading estimates (FL) should be more than .50. Secondly, construct reliability (CR) must be more than 0.70. Next, average variance extracted (AVE) needs to exceed the threshold value of 0.50 and finally, coefficients must be at least two times greater than the standard error. Table 5.23 demonstrates the convergent validity results of the three factors that constitute the institutional perspective construct.

Table 5.23: Convergent Validity Assessment for Institutional Perspective

	AVE	CR	FL	Est.	S.E.	C.R.***	R^2	Err.	Est.	S.E.	C.R.***
Regu_1--GI	.640	.841	.765	1			.586	e3	.013	.002	8.464
Regu_3--GI			.757	1.074	.091	11.752	.573	e2	.016	.002	8.633
Regu_2--GI			.872	1.278	.100	12.793	.761	e1	.009	.002	5.292
Norm_13--IN	.669	.858	.803	1			.645	e7	.020	.002	8.075
Norm_2--IN			.851	0.932	.067	13.933	.724	e6	.012	.002	6.671
Norm_3--IN			.799	0.933	.071	13.217	.638	e5	.018	.002	8.176
Cul_Cog_12--IS	.560	.791	.712	1			.506	e11	.022	.003	8.301
Cul_Cog_8--IS			.673	1.101	.118	9.294	.452	e10	.033	.004	8.986
Cul_Cog_13--IS			.848	1.413	.142	9.984	.720	e9	.018	.004	4.647

GI=Governmental Inspection; **IN**=Industry Norms; **IS**=Industrial standards, **AVE**=Average Variance Extracted; **CR**= Construct Reliability; **FL**= Factor Loading Estimates; **S.E.**= Standard Error; **C.R.**= Critical Ratio; $\mathbf{R^2}$ = Squared Multiple Correlations; **Note:** All the C.R. (critical ratio) values in the table are significant at P<0.001 level.

Table 5.23 demonstrates that the model does not have any negative variance related issues, as error variances appear with positive values. Standardised factor loading estimates (FL) for governmental inspection, Industry norms, and industrial standards are statistically significant at p<0.001 and range from 0.765 to 0.872, 0.803 to 0.851, and 0.673 to 0.848

respectively. All the standardised loading estimate values exceed the minimum criterion of 0.50 and satisfy the first condition of convergent validity. Secondly, construct reliability for governmental inspection (CR=0.841), Industry norms (CR=0.858), and industrial standards (CR=0.791) exceeds the cut-off value of 0.70, which satisfies the second condition. Additionally, AVE for governmental inspection (AVE=0.640), Industry norms (AVE=0.669), and industrial standards (AVE=0.560) surpass the cut-off value of 0.50, which confirms the third requirement of convergent validity. Finally, the fourth requirement of convergent validity is satisfied by identifying that all the estimated pattern coefficients exceed more than nine times the standard errors of the individual model (Governmental inspection= 1.074 and 0.091; 1.278 and 0.100, Industry norms= 0.932 and 0.067; 0.933 and 0.071, and Industrial standards= 1.101 and .118; 1.413 and .0142). A few items show a coefficient weight of 1.00, which has been fixed to determine the individual model. Hence, given that all four of the conditions of Fornell & Larcker (1981: 46) and Hair et al. (2006: 779), and the two criteria by Anderson & Gerbing (1988: 416) are satisfied, it can be determined that the individual model for the institutional perspective construct shows convergent validity.

5.3.2.1.1.2 Discriminant Validity for Institutional Perspective Construct

Based on the four conditions discussed earlier, discriminant validity was measured. First, square roots of AVE were compared with the correlation matrix, where the square root of AVE must be higher than the correlation between any combination. Secondly, the correlation between the individual factors must be below 0.70. Thirdly, AVE needs to be greater than MSV. Finally, Max(H) value should exceed the cut-off value of 0.70. Table 5.24 demonstrates the discriminant validity results of the three factors that constitute the institutional perspective construct.

Table 5.24: Discriminant Validity Assessment for Institutional Perspective

	CR	AVE	MSV	MaxR(H)	GI	IN	IS
Governmental Inspection	.841	.640	.372	.943	**.800**		
Industry Norms	.858	.669	.372	.914	.610	**.818**	
Industrial Standards	.791	.560	.238	.815	.351	.488	**.748**

GI=Governmental Inspection, **IN**= Industry Norms, **IS**= Industrial Standards, CR=Construct Reliability, **AVE**=Average Variance Extracted; CR= Construct Reliability; **MSV**= Maximum Shared Squared Variance; **MaxR(H)**= Maximum Reliability.

Table 5.24 demonstrates that the square root of AVE (highlighted bold on the diagonal) for governmental inspection (0.800), industry norms (0.818), and industrial standards (0.818) are higher than all correlation of all combinations between any pair of those constructs. For example, the square root of AVE extracted from governmental inspection (0.800) and industry standard (0.818) are higher than the correlation between them .610, confirming discriminant validity. Secondly, none of the correlation coefficients (GI-IS=0.610; GI-IR=0.351; IS-IR=0.488) exceeds the threshold value of 0.70 (Yukl et al., 2008: 613). Thirdly, all maximum-shared squared variance (MSV) for the factors are smaller than the AVE (GI: MSV=0.372 < AVE=0.640; IN: MSV=0.372 < AVE=0.669; IS: MSV=0.372 < AVE=0.560). Lastly, all the MaxR(H) values are higher than the cut-off value of 0.70, which also confirms the discriminant validity of the individual model. Hence, as documented in Table 5.24, all the four requirements of discriminant validity are met and confirming the discriminant validity of the institutional perspective construct.

5.3.2.1.2 Confirmatory Factor Analysis for Governance Construct

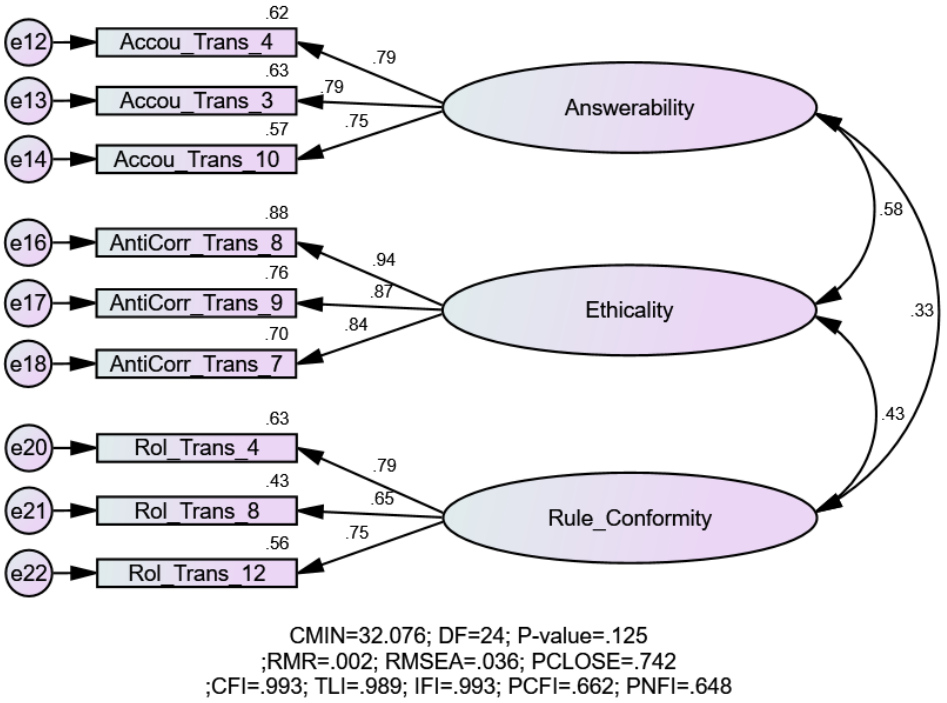
Similar to the factor structure of the institutional perspective construct, the current study performed a CFA for the second construct of the study. Figure 5.2 and Table 5.25 show the summary of model fit indices for the governance construct. In the table, it is evident that the individual model for the governance construct has an overall good model fit. With respect to the threshold values, the results show that the absolute fit measures are $x^2/df=1.336$, $p>0.05$; RMR=0.002, SRMR=0.049, and RMSEA=0.036 with a PCLOSE of 0.742, representing good model fit. In addition, incremental fit measures also illustrate good model fit by exceeding the cut-off value of 0.90, where CFI=0.993, TLI=0.989, and IFI=0.993. Lastly, parsimony fit measures also validate the goodness of fit of the model, because PNFI= 0.662 and PCFI= 0.648 exceed the minimum value of 0.50. Furthermore, GFI=0.974, AGFI=0.952, and NFI=0.973 exceed the cut-off value of 0.90. Hence, all the values in the Table 5.25 illustrate that the individual model for the governance construct is a good fit.

Table 5.25: Summary of Model Fit Indices for Governance

Fit Index	Indices	Obtained Fit Indices	Suggested Fit Indices	Model Fit
Absolute Fit Indices	x^2/df	1.336; p=.125	≤5; p>.05	Excellent
	RMR	0.002	≤.05	Excellent
	SRMR	0.049	<0.08	Excellent
	RMSEA	0.036	≤.08, fit well ≤.05, fit very well	Excellent
	PCLOSE	0.742	>.05	
	GFI	0.974	≥.90	Excellent
	AGFI	0.952	≥.90	Excellent
Incremental Fit Indices	CFI	0.993	≥.90	Excellent
	TLI	0.989	≥.90	Excellent
	IFI	0.993	≥.90	Excellent
	NFI	0.973	≥.90	Excellent
Parsimony Fit Indices	PCFI	0.648	>.50	Excellent
	PNFI	0.662	>.50	Excellent

GFI=Goodness of Fit Index; **RMR**=Root-mean-square Residual; **SRMR=**Standardized Root Mean Square Residual; **RMSEA**=Root-mean-square Error of Approximation; **CFI**=Comparative fit Index; **TLI**=Tucker–Lewis Index; **IFI**=Incremental Fit Indices; **NFI**=Normed Fit Index; **PCLOSE**= p of Close Fit or RMSEA

Figure 5.2: Unidimensional CFA for Governance



5.3.2.1.2.1 Convergent Validity for Governance Construct

The following section presents the convergent validity assessment of the factors that constitute the governance construct. Table 5.26 illustrates the average variance extracted AVE, CR, FL, SE, and associated error for the answerability, ethicality and rule conformity factors and their related items.

Table 5.26: Convergent Validity Assessment for Governance

	AVE	CR	FL	Est.	S.E.	C.R.***	R^2	Err.	Est.	S.E.	C.R.***
Accou_10--ANS	.606	.822	.754	1			.569	e14	.023	.003	8.180
Accou_3--ANS			.795	0.894	.079	11.335	.631	e13	.014	.002	7.218
Accou_4--ANS			.786	1.017	.090	11.266	.617	e12	.019	.003	7.450
AntiCorr_7--ET	.780	.914	.837	1			.700	e18	.022	.002	8.976
AntiCorr_9--ET			.873	1.100	.063	17.443	.762	e17	.019	.002	7.897
AntiCorr_8--ET			.936	1.087	.058	18.856	.876	e16	.009	.002	4.662
Rol_12--RC	.539	.777	.751	1			.564	e22	.017	.002	7.057
Rol_8--RC			.653	1.001	.112	8.901	.426	e21	.030	.003	9.016
Rol_4--RC			.792	1.427	.149	9.582	.627	e20	.027	.005	5.968

ANS=Answerability; **ET**=Ethicality; **RC**= Rule Conformity; **AVE**=Average Variance Extracted; **CR**= Construct Reliability; **FL**= Standardized Loading Estimates; **S.E.**= Standard Error**; C.R**.= Critical Ratio; $\mathbf{R^2}$ = Squared Multiple Correlations; **Note:** All the C.R. (critical ratio) values in the table are significant at P<0.001 level.

Table 5.26 shows that the model has all positive error variances, which represents no negative variance related issues. Given that the standardised factor loading estimates (FL) for answerability (ANS), ethicality (ET) and rule conformity (RC) are statistically significant at p<0.001 and range between 0.653 to 0.936, they satisfy the first condition of convergent validity. Secondly, all CR estimates exceed the cut-off value of 0.70 (answerability, CR=0.822; ethicality, CR=0.914; and rule conformity, CR=0.777), which confirms the second condition of convergent validity. Thirdly, AVE estimates exceed the threshold value of 0.50 (answerability, AVE=0.606; ethicality, AVE=0.780; and rule conformity, AVE=0.539). Lastly, the fourth requirement for convergent validity is satisfied by identifying that all the estimated pattern coefficients are at least eight times higher than the standard errors of the individual model. Therefore, satisfying all four of the conditions, the individual model of the governance construct achieves convergent validity.

5.3.2.1.2.2 Discriminant Validity for Governance Construct

Table 5.27 demonstrates the discriminant validity analysis of the governance construct. The table shows that the square root of the AVE for answerability, ethicality, and rule conformity is higher than all correlations among all combinations of pairs of those factors. For example, the square roots of AVE extracted from answerability (0.779) and ethicality (0.883) are higher than the correlation between them 0.575, confirming discriminant validity. In addition, the square roots of AVE extracted from ethicality and rule conformity are 0.883 and0 0.734 respectively, which are higher than the correlation

between them 0.431, representing discriminant validity. Moreover, none of the correlation coefficients (ANS-ET=0.575; ANS-RC=0.334; ET-RC=0.431) exceeds the threshold value of 0.70. In addition, all maximum-shared squared variance for the factors is smaller than the AVE (ANS: MSV=0.331 < AVE=0.606; ET: MSV=0.331 < AVE=0.780; and RC: MSV=0.186 < AVE=0.539). Furthermore, all the MaxR(H) values (answerability=0.955; ethicality=0.942; and rule conformity=0.788) are higher than the cut-off value of 0.70, which also confirms the discriminant validity of the individual model. Hence, as illustrated in Table 5.27, the requirements for discriminant validity are met and confirm the discriminant validity of the governance construct.

Table 5.27: Discriminant Validity Assessment for Governance

	CR	AVE	MSV	MaxR(H)	ANS	ET	RC
Answerability	.822	.606	.331	.955	**.779**		
Ethicality	.914	.780	.331	.942	.575	**.883**	
Rule Conformity	.777	.539	.186	.788	.334	.431	**.734**

ANS=Answerability; **ET**=Ethicality; **RC**= Rule Conformity; **CR**=Construct Reliability; **AVE**=Average Variance Extracted; **CR**= Construct Reliability; **MSV**= Maximum Shared Squared Variance; **MaxR(H)**= Maximum Reliability.

5.3.2.1.3 Confirmatory Factor Analysis for Safety Climate Construct

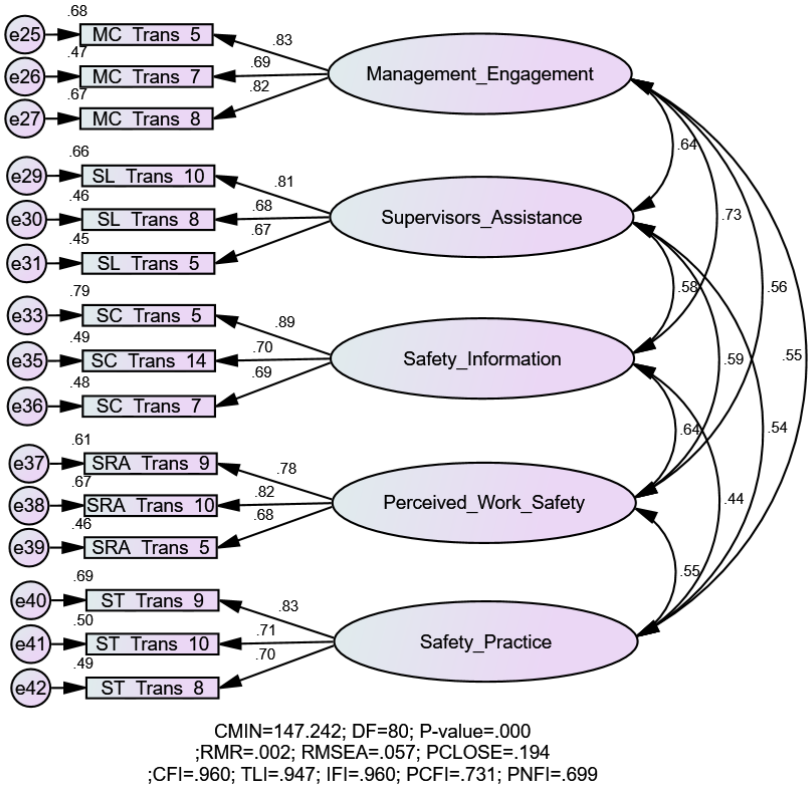
Similar to the individual models of the previous two constructs, the study performed a CFA for the third construct of the study. With respect to the reference values, the analysis shows that the absolute fit measures are x^2/df=1.448, p=.006 (p>0.05); RMR=0.002, SRMR=0.044, and RMSEA=0.042 with a PCLOSE of 0.777, which illustrates good model fit. In addition, incremental fit measures also illustrate a good model fit by exceeding the cut-off value of 0.90, where CFI=0.979, TLI=0.972, and IFI=0.980. Lastly, parsimony fit measures also validate the goodness of fit of the model because PNFI=0.687 and PCFI=0.718 are higher than the minimum threshold value of 0.50. Furthermore, GFI=0.945, AGFI=0.915, and NFI=0.937 exceed the cut-off value of 0.90. Hence, all the values obtained indicate that the model is a good fit. Table 5.28 shows the summary of model fit indices for the safety climate construct.

Table 5.28: Summary of Model Fit Indices for Safety Climate

Fit Index	Indices	Obtained Fit Indices	Suggested Fit Indices	Model Fit
Absolute Fit Indices	x^2/df	1.841 p=.000	≤5; p>.05	Excellent
	RMR	0.002	≤.05	Excellent
	SRMR	0.049	<0.08	Excellent
	RMSEA	0.057	≤.08, fit well ≤.05, fit very well	Excellent
	PCLOSE	0.194	>.05	
	GFI	0.928	≥.90	Excellent
	AGFI	0.892	≥.90	Acceptable
Incremental Fit Indices	CFI	0.960	≥.90	Excellent
	TLI	0.947	≥.90	Excellent
	IFI	0.960	≥.90	Excellent
	NFI	0.917	≥.90	Excellent
Parsimony Fit Indices	PCFI	0.731	>.50	Excellent
	PNFI	0.699	>.50	Excellent

GFI=Goodness of Fit Index; **RMR**=Root-mean-square Residual; **SRMR=**Standardized Root Mean Square Residual; **RMSEA**=Root-mean-square Error of Approximation; **CFI**=Comparative fit Index; **TLI**=Tucker–Lewis Index; **IFI**=Incremental Fit Indices; **NFI**=Normed Fit Index; **PCLOSE**= p of Close Fit or RMSEA

Figure 5.3: Unidimensional CFA for Safety Climate Construct



5.3.2.1.3.1 Convergent Validity for Safety Climate Construct

The safety climate construct presented five factors: management engagement, supervisors' assistance, safety information, perceived work safety, and safety practice. The following section assesses the convergent validity of the factors that constitute the safety climate construct. Table 5.29 presents the values of AVE, CR, FL, SE, and associated error for the safety climate factors and related items.

Table 5.29: Convergent Validity Assessment for Safety Climate

	AVE	CR	FL	Est.	S.E.	C.R.***	R^2	Err.	Est.	S.E.	C.R.***
MC_8--ME	.610	.823	.821	1			.674	e27	.012	.002	7.396
MC_7--ME			.686	.803	.072	11.161	.471	e26	.019	.002	9.675
MC_5--ME			.827	1.067	.078	13.606	.684	e25	.014	.002	7.210
SS_5--SA	.523	.765	.673	1			.453	e31	.025	.003	9.066
SS_8--SA			.677	0.886	.100	8.872	.458	e30	.019	.002	9.016
SS_10--SA			.810	1.019	.104	9.770	.656	e29	.011	.002	6.203
SC_7--SI	.587	.808	.689	1			.475	e36	.015	.002	9.639
SC_14--SI			.702	1.252	.125	9.983	.492	e35	.022	.002	9.505
SC_5--SI			.891	1.622	.140	11.563	.793	e33	.010	.002	4.670
SRA_5--PWS	.581	.805	.679	1			.461	e39	.024	.003	9.417
SRA_10--PWS			.821	1.302	.123	10.571	.674	e38	.017	.002	6.669
SRA_9--PWS			.780	1.14	.111	10.303	.609	e37	.017	.002	7.754
ST_8--SP	.563	.793	.703	1			.495	e42	.016	.002	8.783
ST_10--SP			.709	1.096	0.113	9.682	.502	e41	.019	.002	8.695
ST_9--SP			.831	1.364	0.131	10.445	.691	e40	.013	.002	5.732

ME=Management Engagement, **SA**=Supervisors Assistance, **SI**=Safety Information, **PWS**=Perceived Work Safety, **SP**=Safety Practice, **AVE**=Average Variance Extracted; **CR**= Construct Reliability; **FL**= Factor Loading Estimates; **S.E.**= Standard Error; **C.R.**= Critical Ratio; $\mathbf{R^2}$ = Squared Multiple Correlations;
Note: All the C.R. (critical ratio) values in the table are significant at P<0.001 level.

Table 5.29 confirms that all four conditions of convergent validity are satisfied. Firstly, standardised factor loading estimates (FL) for all the factors are statistically significant at p<0.001 and range from 0.677 to 0.891, exceeding the cut-off value 0.50 and satisfying the first condition of convergent validity. Secondly, all construct reliability estimates (management engagement, CR=0.823; supervisors' assistance, CR=0.765; safety information, CR=0.808; perceived work safety, CR=0.805; and safety practice, CR=0.793) exceed the cut-off value of 0.70, confirming the second condition of convergent validity. Thirdly, AVE estimates are above the minimum value of 0.50 (management engagement, AVE=0.612; supervisors' assistance, AVE=0.526; Safety Information, AVE=0.579; perceived work safety, AVE=0.577; and safety practice, AVE=0.558). Lastly, the fourth requirement for convergent validity is satisfied by identifying that all the estimated pattern coefficients exceed more than eight times than the standard errors of the individual model. Therefore, fulfilling all four requirements, the individual model of the safety climate construct achieves convergent validity.

5.3.2.1.3.2 Discriminant Validity for Safety Climate Construct

Table 5.30 demonstrates the result of discriminant validity analysis for the safety climate construct. Firstly, the table indicates that the square root of the AVE for all the factors are higher than all correlation among all the combinations and between any pair of

those factors. For example, the square roots of AVE extracted from management engagement (0.781) and supervisors' assistance (0.723) are higher than the correlation between them, 0.560. Furthermore, the square roots of AVE for safety information (0.766) and perceived work safety (0.762) are higher than the correlation between them, .554. In addition, the square roots of AVE extracted from management engagement and safety practice are 0.781 and 0.750 respectively, which are higher than the correlation between them, 0.544. All the relationships in the table represent higher square root of the AVE than the correlation among all combinations, thus confirming the discriminant validity of the safety climate construct.

Secondly, none of the correlation coefficients exceeds the threshold value of 0.70. Thirdly, the maximum-shared squared variance for all factors is smaller than the average variance extracted (ME: MSV=0.526 < AVE=0.610; SA: MSV=0.409 < AVE=0.523; SI: MSV=0.526 < AVE=0.587; PWR: MSV=0.410 < AVE=0.581; and SP: MSV=0.307 < AVE=0.563). Lastly, all the MaxR(H) values (management engagement=0.837; supervisors' assistance=0.782; safety information=0.851; perceived work safety=0.817; and safety practice=0.809) are higher than the cut-off value of 0.70, representing the discriminant validity of the individual model. Hence, as illustrated in Table 5.30, all the requirements for discriminant validity are met and confirm the discriminant validity of the safety climate construct.

Table 5.30: Discriminant Validity Assessment for Safety Climate

	CR	AVE	MSV	MaxR(H)	ME	SA	SD	PWS	SP
Management Engagement	.823	.610	.526	.837	**.781**				
Supervisors Assistance	.765	.523	.409	.782	.560	**.723**			
Safety Information	.808	.587	.526	.851	.640	.583	**.766**		
Perceived Work Safety	.805	.581	.410	.817	.641	.585	.554	**.762**	
Safety Practice	.793	.563	.307	.809	.544	.553	.725	.443	**.750**

ME=Management Engagement, **SA**=Supervisors Assistance, **SI**=Safety Information, **PWS**=Perceived Work Safety, **SP**=Safety Practice, **AVE**=Average Variance Extracted; **CR**= Construct Reliability; **MSV**= Maximum Shared Squared Variance; **MaxR(H)**= Maximum Reliability.

5.3.2.1.4 Confirmatory Factor Analysis for Safety Performance Construct

The study performs a CFA for the final construct of the study. With respect to the reference values, the analysis shows that the absolute fit measures are $x^2/df=2.219$, p=.001 (p>0.05); RMR=0.002, SRMR=0.054, and RMSEA=0.069 with a PCLOSE of 0.107, which shows good model fit. Figure 5.4 and Table 5.31 show the summary of model fit indices for the safety performance construct. In addition, incremental fit measures also illustrate good model fit by exceeding the cut-off value of 0.90, where CFI=0.973, TLI=0.956, and IFI=0.973. Lastly, parsimony fit measures also validate the goodness of fit of the model because PNFI= 0.682 and PCFI= 0.595 are higher than the minimum value of 0.50. Furthermore, GFI=0.958, AGFI=0.914, and NFI=0.952 exceed the cut-off value of 0.90. Hence, all the values obtained indicate that the model is a good fit.

Figure 5.4: Unidimensional CFA for Safety Performance Construct

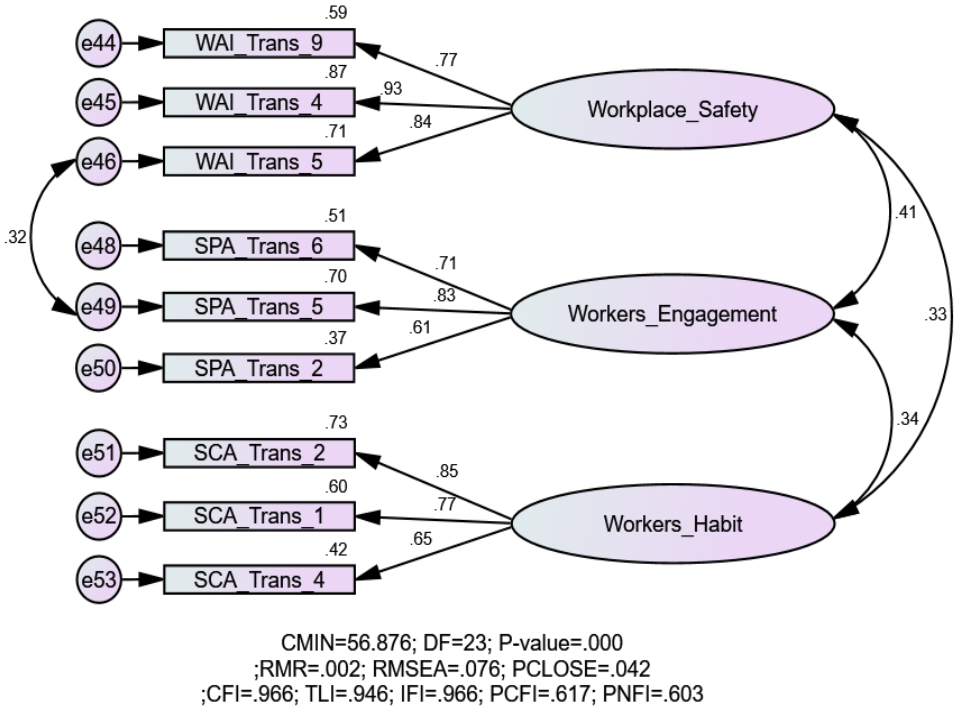


Table 5.31: Summary of Model Fit Indices for Safety Performance

Fit Index	Indices	Obtained Fit Indices	Suggested Fit Indices	Model Fit
Absolute Fit Indices	x^2/df	2.219 p=.001	≤5; p>.05	Excellent
	RMR	0.002	≤.05	Excellent
	SRMR	0.054	<0.08	Excellent
	RMSEA	0.069	≤.08, fit well ≤.05, fit very well	Excellent
	PCLOSE	0.107	>.05	
	GFI	0.958	≥.90	Excellent
	AGFI	0.914	≥.90	Excellent
Incremental Fit Indices	CFI	0.973	≥.90	Excellent
	TLI	0.956	≥.90	Excellent
	IFI	0.973	≥.90	Excellent
	NFI	0.952	≥.90	Excellent
Parsimony Fit Indices	PCFI	0.595	>.50	Excellent
	PNFI	0.582	>.50	Excellent

GFI=Goodness of Fit Index; **RMR**=Root-mean-square Residual; **SRMR=**Standardized Root Mean Square Residual; **RMSEA**=Root-mean-square Error of Approximation; **CFI**=Comparative fit Index; **TLI**=Tucker–Lewis Index; **IFI=**Incremental Fit Indices; **NFI**=Normed Fit Index; **PCLOSE**= p of Close Fit or RMSEA

5.3.2.1.4.1 Convergent Validity for Safety Performance Construct

The safety performance construct has three factors: workplace safety (WS), workers' engagement (WE), and workers habit (WH). The following section illustrates satisfactory convergent validity among the factors representing safety performance. Table 5.32 shows that error variances have no problem with negative variance related issues. Standardised factor loading estimates (FL) for workplace safety, workers' engagement, and workers habit are statistically significant at p<0.001 and range from 0.605 to 0.931, satisfying the first condition of convergent validity. Secondly, by exceeding the cut-off value of 0.70 for construct reliability (workplace safety, CR=0.886; workers' engagement, CR=0.765; and workers habit, CR=0.808) all the factors satisfy the second condition of convergent validity. Thirdly, AVE estimates exceed the threshold value of 0.50, fulfilling the third requirement (workplace safety, AVE=0.723; workers engagement, AVE=0.524; and workers' habit, AVE=0.587). Lastly, the fourth requirement for convergent validity is satisfied by identifying that all the estimated pattern coefficients exceed more than eight times than the standard errors of the individual model. Therefore, it can be concluded that the individual model of the safety performance construct attains convergent validity.

Table 5.32: Convergent Validity Assessment for Safety Performance

	AVE	CR	FL	Est.	S.E.	C.R.***	R^2	Err.	Est.	S.E.	C.R.***
WAI_5--WS	.723	.886	.845	1			.713	e46	.015	.002	7.586
WAI_4-- WS			.931	1.073	.063	17.156	.866	e45	.007	.002	3.728
WAI_9-- WS			.767	0.916	.064	14.325	.589	e44	.022	.002	9.480
SPA_2--WE	.524	.765	.605	1			.366	e50	.024	.003	9.561
SPA_5--WE			.835	1.242	.149	8.355	.697	e49	.009	.002	4.539
SPA_6--WE			.714	1.091	.131	8.326	.510	e48	.016	.002	7.755
SCA_4--WH	.587	.808	.652	1			.424	e53	.020	.002	9.490
SCA_1--WH			.767	1.148	.118	9.772	.589	e52	.014	.002	7.222
SCA_2--WH			.864	1.437	.147	9.764	.746	e51	.011	.002	4.287

WS=Workplace Safety; **WE**=Workers Engagement; **WH**=Workers Habit; **AVE**=Average Variance Extracted; **CR**= Construct Reliability; **FL**= Factor Loading Estimates; **S.E.**= Standard Error; **C.R.**= Critical Ratio; $\mathbf{R^2}$ = Squared Multiple Correlations, **Note:** All the C.R. (critical ratio) values in the table are significant at P<0.001 level.

5.3.2.1.4.2 Discriminant Validity for Safety Performance Construct

Table 5.33 shows that discriminant validity is supported for all the factors of safety performance. In the table, the square roots of AVE are highlighted in bold (on the diagonal), higher than all the correlation among all combinations (off-diagonal elements) and between any pair of those factors. For Example, the square roots of AVE extracted from workplace safety (0.850) and workers' engagement (0.724) is higher than the correlation between them .416. Furthermore, the square roots of AVE for workers' engagement (0.724) and workers' habit (0.766) are higher than the correlation between them 0.337, which illustrates the discriminant validity of the safety performance construct. Next, none of the correlation coefficients exceeds the threshold value of 0.70 (WS-WE=0.416, WS-WH=0.318, WE-WH=0.337). In addition, all the maximum-shared squared variance for factors is smaller than the average variance extracted (WS, MSV=0.173 < AVE=0.723; WE, MSV=0.173 < AVE=0.524; WH, MSV=0.114 < AVE=0.587). Lastly, all the MaxR(H) values (workplace safety=0.95; workers' engagement=0.80; and workers habit=0.84) are higher than the cut-off value of 0.70, representing the discriminant validity of the individual model. Hence, in Table 5.33 the results demonstrate that all the requirements are met to confirm the discriminant validity of the safety performance construct.

Table 5.33: Discriminant Validity Assessment for Safety Performance

	CR	AVE	MSV	MaxR (H)	WS	WE	WH
Workplace Safety	.886	.723	.173	.951	**.850**		
Workers Engagement	.765	.524	.173	.900	.416	**.724**	
Workers Habit	.808	.587	.114	.836	.318	.337	**.766**
WS=Workplace Safety, **WE**=Workers Engagement, **WH**=Workers Habit, **AVE**=Average Variance Extracted; **CR**= Construct Reliability; **MSV**= Maximum Shared Squared Variance; **MaxR(H**)= Maximum Reliability.							

5.3.2.1.5 Confirmatory Factor Analysis for Measurement Model

To assess the measurement model, the current study follows the guideline suggested by Hair et al. (2010). Figure 5.5 illustrates the result of the model. As discussed earlier (section 7.3.2.1), the study uses nine different indices across three different groups of goodness-of-fit measures. Table 5.34 shows the goodness fit summary of the measurement model.

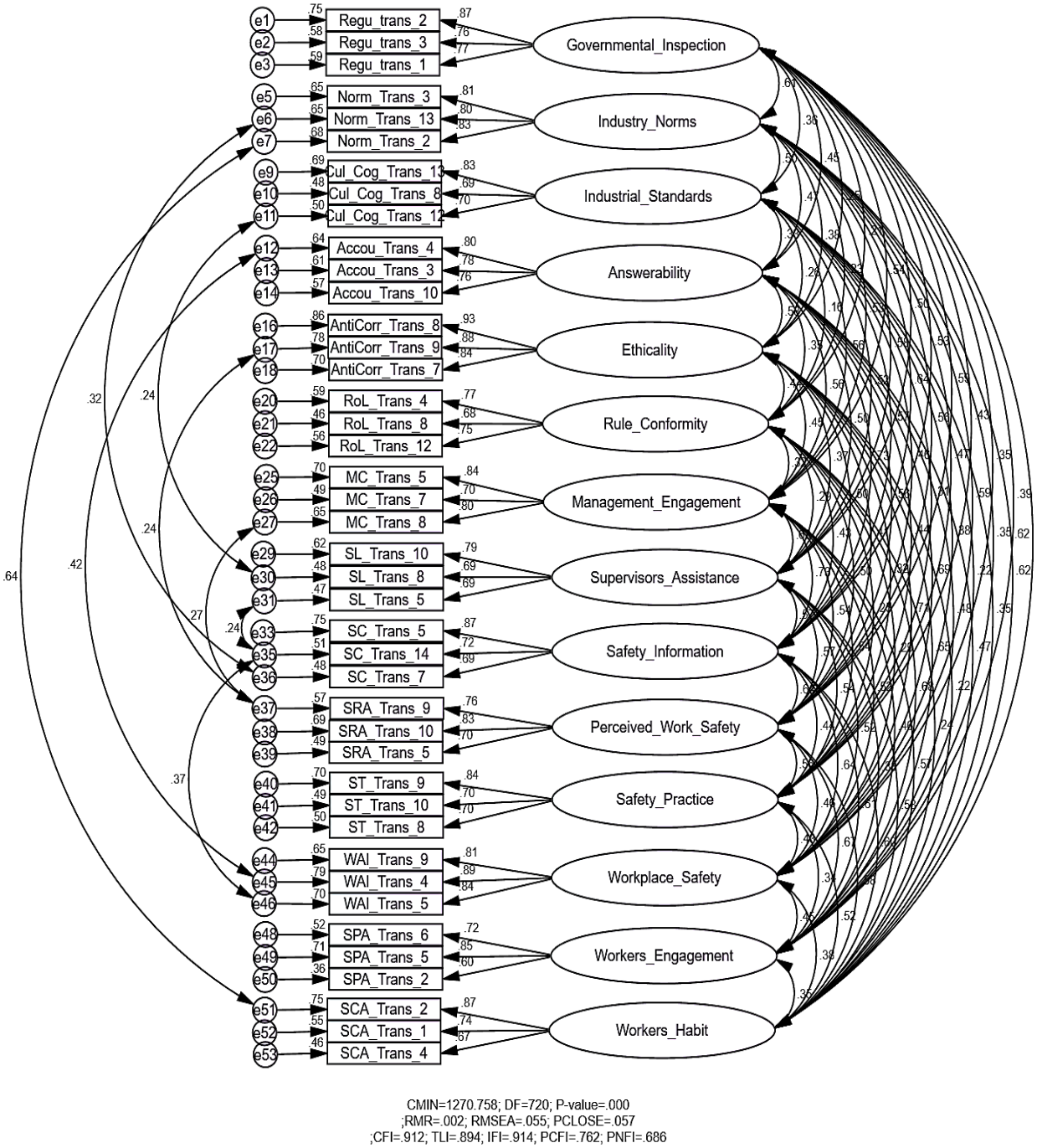
Table 5.34: Summary of Model Fit Indices for Measurement Model

Fit Index	Indices	Obtained Fit Indices	Suggested Fit Indices	Model Fit
Absolute Fit Indices	x^2/df	1.765 p=.000	≤5; p>.05	Excellent
	RMR	0.002	≤.05	Excellent
	SRMR	0.052	<0.08	Excellent
	RMSEA	0.055	≤.08, fit well ≤.05, fit very well	Excellent
	PCLOSE	0.057	>.05	Excellent
	GFI	0.813	≥.90	Acceptable
	AGFI	0.765	≥.90	Poor
Incremental Fit Indices	CFI	0.912	≥.90	Excellent
	TLI	0.894	≥.90	Acceptable
	IFI	0.914	≥.90	Excellent
	NFI	0.821	≥.90	Acceptable
Parsimony Fit Indices	PCFI	0.762	>.50	Excellent
	PNFI	0.686	>.50	Excellent
GFI=Goodness of Fit Index; **RMR**=Root-mean-square Residual; **SRMR=**Standardized Root Mean Square Residual; **RMSEA**=Root-mean-square Error of Approximation; **CFI**=Comparative fit Index; **TLI**=Tucker–Lewis Index; **IFI**=Incremental Fit Indices; **NFI**=Normed Fit Index; **PCLOSE**= p of Close Fit or RMSEA				

The results in the table satisfy the requirements of a good fit model. With respect to the threshold values, the results show that the absolute fit measures are $x^2/df=1.765$, $p<0.05$; RMR=0.002, SRMR=0.052 and RMSEA=0.055 with a PCLOSE of .057, all of satisfy the requirements. In addition, incremental fit measures also illustrate good model fit, where CFI=0.912, TLI=0.894, and IFI=0.914. Lastly, parsimony fit measures also validate the goodness of fit for the model because PNFI= 0.686 and PCFI= 0.762 are higher than the cut-off value of 0.50. However, as mentioned earlier, the study does not employ three indices (GFI=0.813, AGFI=0.765, and NFI=0.821) to show acceptable or poor fit of the model due to

their associated limitations to measuring fitness (e.g., sensitivity to sample size, model complexity and artificial inflation of the estimates) (Hair et al., 2010: 667-669). Hence, from the results illustrated in Table 5.34, it can be concluded that the measurement model is a good fit to the data.

Figure 5.5: Unidimensional CFA for Measurement Model



CMIN=1270.758; DF=720; P-value=.000
;RMR=.002; RMSEA=.055; PCLOSE=.057
;CFI=.912; TLI=.894; IFI=.914; PCFI=.762; PNFI=.686

5.3.2.1.5.1 Convergent Validity for Measurement Model

Table 5.35 shows that error variances have no problem with negative variance related issues. In addition, the table confirms that all conditions of convergent validity have met. Firstly, standardised factor loading estimates (FL) for all the factors are statistically significant at $p<0.001$ and range from 0.601 to 0.930, which achieves the cut-off value 0.50 and satisfies the first condition of convergent validity. Secondly, all construct reliability estimates exceed the cut-off value of 0.70, confirming the second condition of convergent validity. Thirdly, AVE estimates are above the minimum value of 0.50 and achieve the third requirement. Lastly, the final requirement for convergent validity is satisfied by identifying that all the estimated pattern coefficients exceed more than nine times than the standard errors of the measurement model. Therefore, Table 5.35 shows that the measurement model satisfies all the requirements and achieves convergent validity.

Table 5.35: Convergent Validity Assessment for Measurement Model

	AVE	CR	FL	Est.	S.E.	C.R. ***	R^2	Err.	Est.	S.E.	C.R. ***
Regu_1--GI	.554	.787	.767	1			.581	e3	.013	.001	8.724
Regu_3--GI			.762	1.079	.090	11.978	.600	e2	.015	.002	8.815
Regu_2--GI			.867	1.268	.096	13.274	.744	e1	.010	.002	5.982
Norm_2--IN	.660	.854	.826	1			.677	e7	.014	.002	7.857
Norm_13--IN			.804	1.103	.077	14.269	.637	e6	.019	.002	8.451
Norm_3--IN			.808	1.050	.074	14.258	.664	e5	.017	.002	8.396
Cul_Cog_12--IR	.640	.842	.704	1			.478	e11	.022	.003	8.794
Cul_Cog_8--IR			.693	1.152	.120	9.573	.489	e10	.031	.004	8.959
Cul_Cog_13--IR			.828	1.400	.133	10.552	.679	e9	.020	.003	5.912
Accou_10--ANS	.606	.822	.756	1			.554	e14	.023	.003	8.777
Accou_3--ANS			.781	.8770	.074	11.896	.627	e13	.015	.002	8.320
Accou_4--ANS			.797	1.034	.085	12.173	.627	e12	.019	.002	7.978
AntiCorr_7--ET	.780	.914	.836	1			.698	e18	.022	.002	9.267
AntiCorr_9--ET			.880	1.106	.062	17.853	.776	e17	.018	.002	8.088
AntiCorr_8--ET			.930	1.081	.056	19.197	.864	e16	.009	.002	5.738
Rol_12--RC	.538	.777	.747	1			.563	e22	.018	.002	7.744
Rol_8--RC			.679	1.047	.111	9.442	.468	e21	.028	.003	8.934
Rol_4--RC			.771	1.398	.136	10.263	.593	e20	.029	.004	7.176
MC_8--ME	.612	.825	.804	1			.656	e27	.013	.002	8.018
MC_7--ME			.698	.8380	.074	11.367	.487	e26	.018	.002	9.671
MC_5--ME			.838	1.107	.080	13.799	.683	e25	.013	.002	7.152
SS_5--SA	.525	.768	.686	1			.461	e31	.024	.003	9.041
SS_8--SA			.694	.8920	.095	9.35	.488	e30	.019	.002	8.963
SS_10--SA			.790	.9750	.096	10.111	.635	e29	.012	.002	7.081
SC_14--SI	.580	.804	.716	1			.537	e35	.021	.002	9.787
SC_7--SI			.692	0.792	.075	10.604	.449	e36	.015	.002	9.960
SC_5--SI			.866	1.249	.097	12.942	.739	e33	.011	.002	6.630
SRA_5--PWS	.584	.807	.699	1			.488	e39	.022	.002	9.584
SRA_10-- PWS			.830	1.279	.111	11.542	.682	e38	.016	.002	7.212
SRA_9-- PWS			.758	1.071	.099	10.837	.580	e37	.018	.002	8.795
ST_8--SP	.563	.793	.704	1			.491	e42	.016	.002	8.861
ST_10--SP			.698	1.078	.112	9.654	.499	e41	.019	.002	8.946

ST_9--SP			.839	1.375	.129	10.632	.686	e40	.013	.002	5.627
WAI_5--WS	.713	.882	.836	1			.717	e46	.016	.002	8.537
WAI_4-- WS			.886	1.045	.060	17.384	.785	e45	.011	.002	6.946
WAI_9-- WS			.809	.9950	.065	15.267	.643	e44	.019	.002	9.113
SPA_2--WE	.532	.770	.601	1			.361	e50	.024	.002	10.259
SPA_5--WE			.845	1.281	.133	9.649	.707	e49	.009	.001	6.378
SPA_6--WE			.722	1.11	.125	8.859	.517	e48	.016	.002	9.244
SCA_1--WH	.585	.807	.741	1			.536	e52	.015	.002	9.086
SCA_4—WH			.866	1.311	.104	12.568	.471	e53	.019	.002	9.856
SCA_2--WH			.675	.9230	.090	10.306	.742	e51	.011	.002	5.629

GI=Governmental Inspection; **IN**=Industry Norms; **IS**=Industrial Standards; **ANS**=Answerability; **ET**=Ethicality; **RC**= Rule Conformity; **ME**=Management Engagement; **SA**=Supervisors Assistance; **SI**=Safety Information; **PWS**=Perceived Work Safety; **SP**=Safety Practice; **WS**=Workplace Safety; **WE**=Workers Engagement; **WH**=Workers Habit; **AVE**=Average Variance Extracted; **CR**= Construct Reliability; **FL**= Factor Loading Estimates; **S.E.**= Standard Error; **C.R.**= Critical Ratio; $\mathbf{R^2}$ = Squared Multiple Correlations; **Note:** All the C.R. (critical ratio) values in the table are significant at P<0.001 level

5.3.2.1.5.2 Discriminant Validity for Measurement Model

Table 5.36 shows that discriminant validity is supported by all the factors of measurement model. In the table, the square roots of AVE are higher than all correlations among all the combinations and between any pair of those factors. Secondly, none of the correlation coefficients exceeds the threshold value of 0.70, which satisfies the second condition of discriminant validity. Thirdly, all the maximum-shared squared variance (MSV) for each factor is smaller than the average variance extracted (AVE). Lastly, all the MaxR(H) values are higher than the cut-off value of 0.70, representing the discriminant validity of the measurement model. Hence, the results demonstrate that all the requirements have been met to confirm the discriminant validity of the measurement model.

Table 5.36: Discriminant Validity Assessment for Measurement Model

	CR	AVE	MSV	MaxR (H)	GI	IN	IS	ANS	ET	RC	MC	SA	SI	PWS	SP	WS	WE	WH
Governmental Inspection (GI)	.787	.554	.328	.804	**.800**													
Industrial Norms (IN)	.854	.660	.406	.854	.608 ***	**.813**												
Industrial Standards (IS)	.842	.640	.389	.854	.362 ***	.501 ***	**.744**											
Answerability (ANS)	.822	.606	.533	.823	.452 ***	.470 ***	.326 ***	**.778**										
Ethicality (ET)	.914	.780	.503	.924	.255 ***	.382 ***	.256 ***	.576 ***	**.883**									
Rule Conformity (RC)	.777	.538	.462	.782	.210 **	.231 **	.160 *	.347 ***	.439 ***	**.733**								
Management Engagement (ME)	.825	.612	.537	.837	.536 ***	.530 ***	.556 ***	.560 ***	.451 ***	.316 ***	**.782**							
Supervisors Assistance (SA)	.768	.525	.393	.777	.502 ***	.580 ***	.525 ***	.498 ***	.366 ***	.289 ***	.627 ***	**.725**						
Safety Information (SI)	.804	.580	.537	.833	.532 ***	.637 ***	.573 ***	.730 ***	.502 ***	.429 ***	.633 ***	.571 ***	**.762**					
Perceived Work Safety (PWS)	.807	.584	.446	.819	.592 ***	.563 ***	.461 ***	.560 ***	.407 ***	.497 ***	.535 ***	.566 ***	.635 ***	**.764**				
Safety Practice (SP)	.793	.563	.310	.812	.431 ***	.467 ***	.313 ***	.437 ***	.321 ***	.246 **	.542 ***	.543 ***	.444 ***	.556 ***	**.750**			
Workplace Safety (WS)	.882	.713	.503	.887	.352 ***	.595 ***	.382 ***	.689 ***	.709 ***	.294 ***	.521 ***	.523 ***	.637 ***	.465 ***	.428 ***	**.844**		
Workers Engagement (WE)	.770	.532	.462	.806	.394 ***	.355 ***	.221 **	.475 ***	.652 ***	.680 ***	.465 ***	.376 ***	.615 ***	.668 ***	.338 ***	.447 ***	**.730**	
Workers Habit (WH)	.807	.585	.389	.835	.624 ***	.619 ***	.353 ***	.466 ***	.219 **	.242 **	.572 ***	.579 ***	.599 ***	.575 ***	.521 ***	.379 ***	.349 ***	**.765**

AVE=Average Variance Extracted; **CR**= Construct Reliability; **MSV**= Maximum Shared Squared Variance; **MaxR(H)**= Maximum Reliability
Significance of Correlation: * $p < 0.050$; ** $p < 0.010$; *** $p < 0.001$

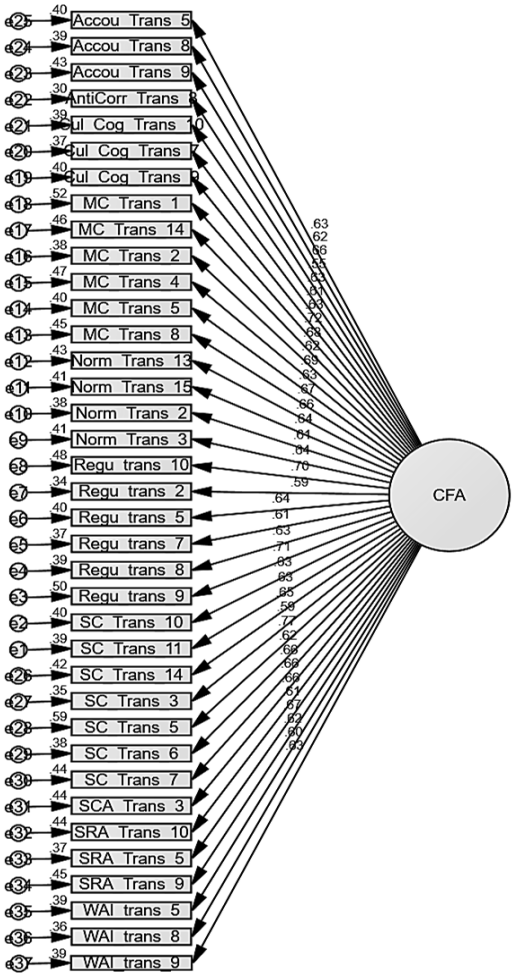
5.3.2.2 Assessing Common Method Variance (CMV) Bias

Common method variance refers to the variance that is attributed to the measurement method rather than the constructs of interest, which might develop systematic measurement error to alter the estimates of the relationships between constructs (Podsakoff et al., 2003). It generates a fabricated internal consistency, that is, a seeming relationship among variables caused by their common source (Chang et al., 2010). Usually, CMV may be a concern in studies where self-reported data are collected through the same questionnaire and a cross-sectional research design has been used in an investigation (Lindell & Whitney, 2001). Various reasons, such as knowledge deficiency, social desirability, or consistency motif, can be the reasons for common method variance (Podsakoff et al., 2003; Burton-Jones, 2009; Antonakis et al., 2010). Hence, various ex-ante and ex-post approaches have been recommended by different scholars (e.g., Podsakoff et al., 2003; Malhotra et al., 2006; Chang et al., 2010) to evade or correct CMV. In an ex-ante approach, researchers should use different sources of information to construct dependent and independent variables during the research design stage. Additionally, various methodical preparations in developing and handling the questionnaire, from ensuring the anonymity and confidentiality of the questionnaire to utilising different scales, can reduce the possibility of common method variance.

In contrast, ex-post approaches refer to different statistical procedures that need to be implemented after the research has been conducted. For example, Harman's one-factor test, common latent factor test, marker variable test, etc., are recommended to assess and control the presence of common method effect (See, Lindell & Whitney, 2001; Podsakoff et al., 2003; Malhotra et al., 2006; Chang et al., 2010). The current study uses Harman's one-factor test to assess the problem of common method bias. The principal axis factoring extraction method was used, where all used dependent and independent items were constrained to a single factor in EFA to detect whether a single factor accounts for most of the covariance among

the variables. Based on the unrotated factor solution, the EFA illustrates that the presence of 38 factors together accounted for 81.12% of the total variance, with 25.98% of maximum variance explained by a single factor. Hence, this demonstrates that the data is not affected by the common method bias, as the variance explained by a single factor is less than 50% (Doty & Glick, 1998; Podsakoff et al., 2012). Figure 5.6 illustrates the one factor CFA model.

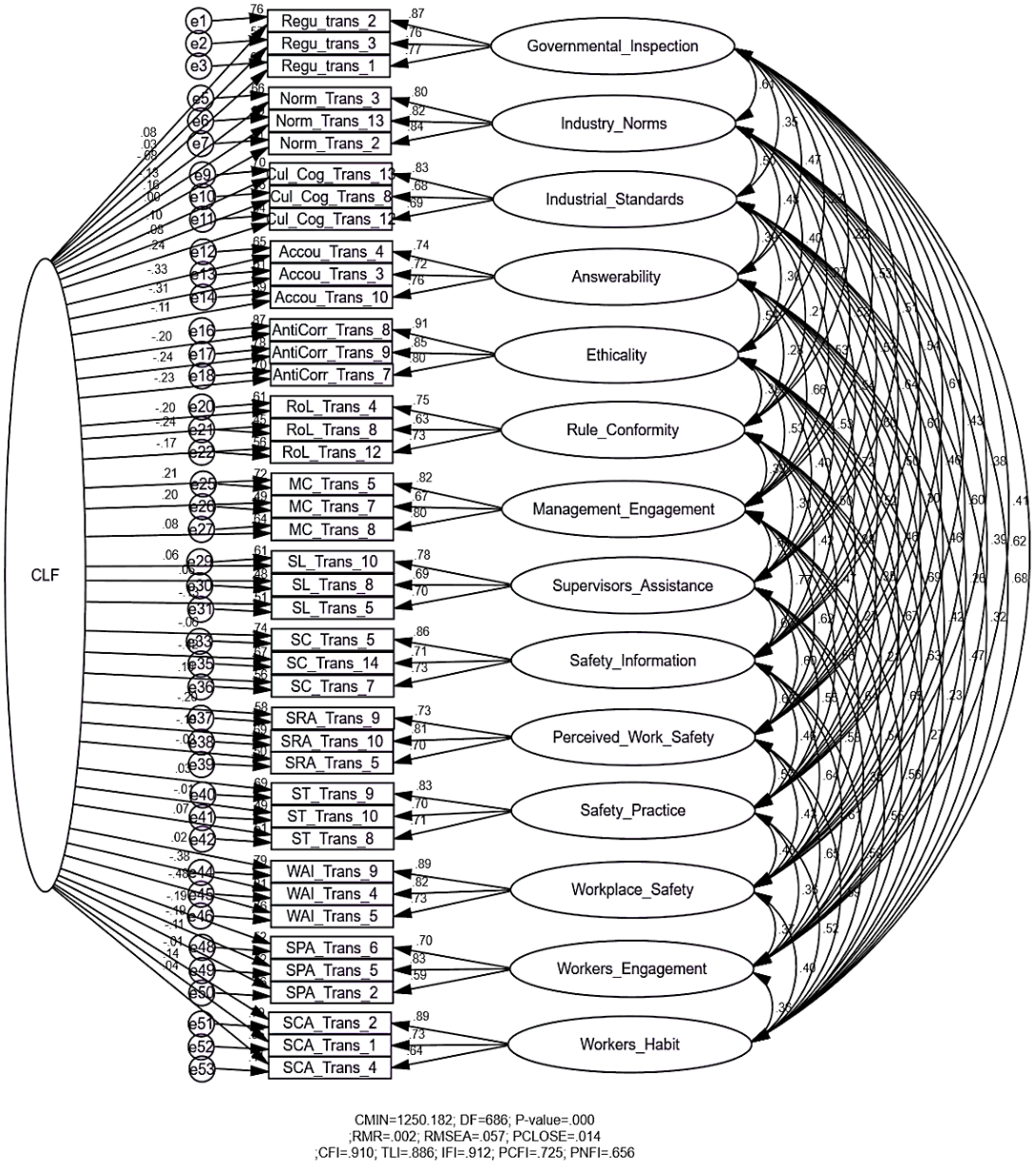
Figure 5.6: CFA One Factor Model (CMV Assessment)



Furthermore, to support the results of the Harman one-factor test and for more robust results, the "unmeasured latent method factor" (ULMF) was used to assess the risk of CMV, as suggested by Podsakoff et al. (2003); Richardson et al. (2009) and Bagozzi (2011). If common method variance is largely responsible for the relationship among the variables, the one-factor model fit should be better than the second model where items are loaded according to their

theoretical constructs (Podsakoff et al., 2003; Chang et al., 2010). The result shows that the unmeasured latent method factor model is a better fit than the one-factor model and there are no significant differences between the theoretical measurement model and the ULMF model. Hence, the main assumption is that *"the amount and extent of method variance do not pose a threat to the validity of tests of hypotheses"* (Bagozzi, 2011: 277).

Figure 5.7: Unmeasured Latent Method Factor (CMV Assessment)



CMIN=1250.182; DF=686; P-value=.000
;RMR=.002; RMSEA=.057; PCLOSE=.014
;CFI=.910; TLI=.886; IFI=.912; PCFI=.725; PNFI=.656

The results from Figure 5.7 show that the ULMF model fitted the data well. The variances and loadings were positive and none of the loadings exceeded 1.0. Furthermore, as suggested by Cheung & Rensvold (2002) and Malhotra et al. (2013), the chi-square difference test and difference in CFI were used to compare both models. The Chi-square difference test = 1270.758 -1250.182 = 20.576 (Δdf = 720-686 = 34) was found to be insignificant at p-value = 0.05 (p=0.966). Moreover, the difference between CFI, was ≥ 0.01 (ΔCFI = .912-.910 = .002), which reveals no significant change. Hence, it can be assumed that CMV poses no serious problem. Furthermore, according to Boyar et al. (2008: 231), when assessing theoretically supported hypotheses reinforced by supportive findings and developing *"modelling studies where causal relationships are emphasised; common method bias is not a serious concern"*. Moreover, according to Christian et al. (2009: 1122), *"common methods bias may not be a major concern in the safety domain"*. They found that self-reports for safety criteria may produce slightly downward biased underestimates which may *"reflect artifactual or method-induced restriction in range of scores due to underreporting"* (Ibid: 1122). However, the study cautiously identifies that the relationships are not significantly different from each other. In conclusion, the procedural techniques used to reduce bias in the data collection process and Harman's single factor test and latent common variance factor test ensure the absence of common method bias in the study.

5.4 Analysis of Structural Model (Path Model)

The main objective of the structural model is to answer all the questions presented in the research. This is a technique in SEM that takes a confirmatory approach to the inquiry of a structural theory relating to some phenomenon (Al-Refaie, 2013). It is also known as a path model and by testing the hypotheses, the path model estimates the strength of the relationships between variables (Kline, 2011: 103; Ho, 2006: 281). In the current study, this technique was used due to its *"appropriate and most efficient estimation technique for a series of separate multiple regression equations"* that are assessed simultaneously (Ghauri & Grønhaug, 2005:

200; Hair et al., 2010: 17). Furthermore, extensive use of path model analysis in safety literature demonstrates its efficacy in validating the outcomes (e.g., Cheyne et al., 1998; Hofmann & Morgeson, 1999; Griffin & Neal, 2000; Cavazza & Serpe, 2009; Clarke, 2012; Fernández-Muñiz et al., 2014; Zohar et al., 2014; Barbaranelli et al., 2015). Therefore, following in the footsteps of previous safety scholars, the current study uses SEM and reports each fit indices' results. The following section discusses the model specification, estimation, and its evaluation process.

5.4.1 Model Specification

Built upon existing concepts and stages of preliminary tests to establish a well-fitting measurement model, the theoretic links hypothesised in the structural model denote observable relations in the studied population. In the structural model, all the latent variables are represented by at least three indicators. Additionally, the model has no correlated error terms, feedback loops, and reciprocal causation, which establishes that the model can be involved in the repeated application of procedure for successive results (recursive model). However, as the structural model has constructs that are measured by using multi-item scales, many indicators are involved in the model. For that reason, the structural model has been developed with composite factor scores/single-scale score indicators (i.e., average total scores of all the indicators for a single factor) to measure the variables (Bollen, 2014). This technique helps to overcome the complexity of the model by optimising the size of the sample relative to parameter estimates and considering the measurement errors. In the structural model, a single-headed arrow portrays the relationship between an endogenous and exogenous latent variable, or between two endogenous variables.

5.4.2 Model Estimation and Evaluation

For estimating and developing the path model, the maximum likelihood discrepancy technique has been used in the study. The fit indices of x^2/df, RMR, RMSEA, and SRMR were utilised for absolute fit measures, CFI, TLI, and IFI were used to measure incremental fit, and

PNFI, and PCFI were used to assess the parsimony fit measure. Table 5.37 shows the goodness fit summary of the proposed research model.

Table 5.37: Summary of Model Fit Indices for the Proposed Research Model

Fit Index	Indices	Obtained Fit Indices	Suggested Fit Indices	Model Fit
Absolute Fit Indices	x^2/df	1.282 p=.095	≤5; p>.05	Excellent
	RMR	0.002	≤.05	Excellent
	SRMR	0.049	<0.08	Excellent
	RMSEA	0.033	≤.08, fit well ≤.05, fit very well	Excellent
	PCLOSE	0.876	>.05	
	GFI	0.969	≥.90	Excellent
	AGFI	0.930	≥.90	Excellent
Incremental Fit Indices	CFI	0.992	≥.90	Excellent
	TLI	0.983	≥.90	Excellent
	IFI	0.992	≥.90	Excellent
	NFI	0.964	≥.90	Excellent
Parsimony Fit Indices	PCFI	0.501	>.50	Excellent
	PNFI	0. 490	>.50	Acceptable

GFI=Goodness of Fit Index; **RMR**=Root-mean-square Residual; **SRMR=**Standardized Root Mean Square Residual; **RMSEA**=Root-mean-square Error of Approximation; **CFI**=Comparative fit Index; **TLI**=Tucker–Lewis Index; **IFI**=Incremental Fit Indices; **NFI**=Normed Fit Index; **PCLOSE**= p of Close Fit or RMSEA

The results in Table 5.37 meet all the requirements for a good fit model. With respect to the threshold values, the results show that the absolute fit measures are $x^2/df=1.282$, $p>0.05$; RMR=0.002, SRMR=0.049 and RMSEA=0.033 with a PCLOSE of 0.878, which meets the requirements. In the model, the chi-square test p-value is 0.95 (more than 0.05), which fits the chi-square model assumption, representing good model fit of the data. In addition, incremental fit measures also illustrate good model fit by exceeding the cut-off value of 0.90, where CFI=0.992, TLI=0.983, and IFI=0.992. Lastly, parsimony fit measures also validate the goodness of fit of the model because PCFI= 0.501 are higher than the cut-off value of 0.50 and PNFI= 0.490 is at acceptable range. Meanwhile, GFI=0.969, AGFI=0.930, and NFI=0.964 also show good fit of the model. Hence, from the results illustrated in Table 5.37, it can be manifested that the findings have a good fit and can be used to test the proposed hypotheses of the study.

5.4.3 Hypothesis Testing

After the validation of psychometric components of the questionnaire through satisfactory measurement and structural model fit, research hypotheses need to be tested. In

Figure 5.8, a single-headed arrow between two latent variables represents each hypothesis conjectured in the research. The acceptance or rejection of a hypothesis is dependent on the significance of the standardised coefficient (β), which it denotes the percentage and nature of the relationship between endogenous and exogenous variables. The higher the values are, the greater is the joint explanatory power of the exogenous variables. Hypotheses are typically examined through a null hypothesis (Ho), in which no statistically significant relationship (significant p-values) exists between the two measured phenomena, or among groups, or study variables. Three different level of significance are used in the current study, which are 0.05=acceptable significance, 0.00=strong significance, 0.001=high significance. Table 5.38 illustrates the results of hypothesis testing for the proposed research model.

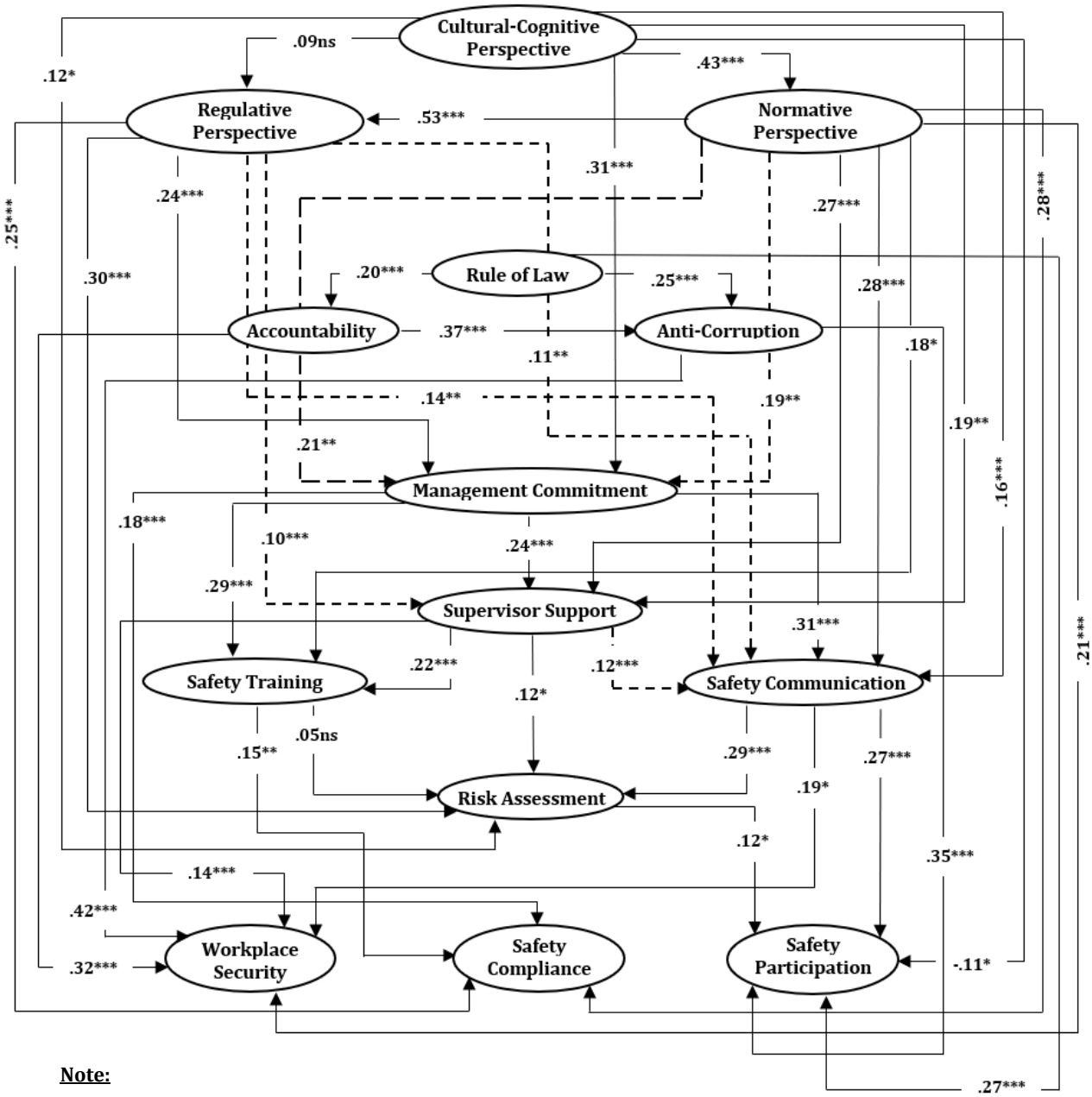
The hypothesis table represents the findings according to the relationship sequences proposed in the research framework model. First, the table shows the relationship between factors that constitute the institutional perspective. Secondly, it explains the interrelationships between safety climate factors. Thirdly, the table predicts the relationship between safety climate and safety performance factors. Fourthly, it shows the relationships between institutional perspectives and safety climate factors. Fifthly, Table 5.38 demonstrates the direct association between institutional perspectives and safety performances followed by the relationships between governance and safety performance. Finally, the table explains the interrelationships between the governance factors. Later, the chapter also discusses mediation, multi-group and interaction effects among the research variables. As shown in Table 5.38 and Figure 5.8, the results exhibit significant hypothetical relationships from the theoretical research framework. However, three of the hypotheses (H1b, H4c, and H6) are rejected due to their insignificant relationships. The following sections discuss the results in detail.

Table 5.38: Summary of Path Model Results and Hypothesis Testing

Domains	Hypotheses	Path Directions			Results	Std. β	S.E.	C.R.
Institutional Dimensions	H_{1a}	Cultural-Cognitive Perspective	→	Normative Perspective	Supported	0.425	0.056	7.508***
	H_{1b}			Regulative Perspective	Rejected	0.090	0.049	1.537ns
	H_2	Normative Perspective	→	Regulative Perspective	Supported	0.525	0.045	9.845***
Safety Climate Constructs	H_{3a}	Management Commitment	→	Safety Communication	Supported	0.310	0.047	6.100***
	H_{3b}			Safety Training	Supported	0.290	0.061	4.685***
	H_{3c}			Supervisors' Support	Supported	0.236	0.058	3.872***
	H_{4a}	Supervisors' Safety Support	→	Risk Assessment	Supported	0.116	0.050	2.117*
	H_{4b}			Safety Training	Supported	0.216	0.066	3.333***
	H_5	Safety Communication	→	Risk Assessment	Supported	0.294	0.057	4.765***
	H_6	Safety Training	→	Risk Assessment	Rejected	0.054	0.048	1.033ns
Safety Climate & Safety Performance	H_{7a}	Safety Communication	→	Safety Participation	Supported	0.268	0.057	4.566***
		Risk Assessment				0.116	0.057	2.108*
	H_{7b}	Management Commitment	→	Safety Compliance	Supported	0.184	0.055	3.213***
		Safety Training				0.149	0.054	2.736**
	H_{7C}	Supervisors' Safety Support	→	Workplace Security	Supported	0.143	0.06	3.875***
		Safety Communication				0.189	0.071	2.353*
Institutional Perspectives & Safety Climate	H_{8a}	Regulative Perspective	→	Management Commitment	Supported	0.238	0.055	4.386***
				Risk Assessment		0.299	0.047	5.710***
	H_{8b}	Normative Perspective	→	Supervisors' Safety Support	Supported	0.226	0.048	3.810***
				Safety Communication		0.277	0.039	5.601***
				Safety Training		0.137	0.051	2.217*
	H_{8c}	Cultural-Cognitive Perspective	→	Management Commitment	Supported	0.311	0.043	6.143***
				Supervisors' Safety Support		0.186	0.047	3.173**
				Safety Communication		0.156	0.038	3.202***
				Risk Assessment		0.121	0.04	2.228*
Institutional Perspectives & Safety Performance	H_{9a}	Regulative Perspective	→	Safety Compliance	Supported	0.250	0.057	4.275***
	H_{9b}	Normative Perspective	→	Safety Compliance	Supported	0.280	0.048	4.811***
				Workplace Security		0.214	0.053	3.963***
	H_{9c}	Cultural-Cognitive Perspective	→	Safety Participation	Supported	-0.110	0.039	-2.184*
Governance & Safety Performance	H_{11a}	Accountability	→	Workplace Security	Supported	0.316	0.058	5.884***
	H_{11b}	Anti-Corruption	→	Workplace Security	Supported	0.421	0.044	8.415***
				Safety Participation	Supported	0.348	0.030	6.950***
	H_{11c}	Rule-of-Law	→	Safety Participation	Supported	0.274	0.038	5.609***
Governance Dimensions	H_{12a}	Rule-of-Law	→	Accountability	Supported	0.196	0.054	3.477***
	H_{12b}	Rule-of-Law	→	Anti-Corruption	Supported	0.250	0.069	4.668***
	H_{13}	Accountability	→	Anti-Corruption	Supported	0.370	0.077	6.461***

***P< 0.05; **P< 0.01; *** P< 0.001; ns= not significant, Note: Hypothesis H_{4c} is presented in Table 5.39**

Figure 5.8: Validation of Research Framework



Note:

Direct Effect

Full Mediation Effect

*P< 0.05; **P< 0.01; *** P< 0.001; ns= not

5.4.3.1 The Relationship among Institutional Perspectives

With respect to the factors of the institutional perspective, H_{1a}, H_{1b}, and H_2 predict the interrelationships between the three institutional factors. The results suggest that the cultural-cognitive dimension is a determinant of the normative dimensions ($\beta_{H1a} = .425$, with $p < 0.001$), while it has no relationship with the regulative dimensions ($\beta_{H1b} = .090$ with $p = .124 > .05$). It indicates that while *Hypothesis 1a* is strongly supported, *Hypothesis 1b* is rejected. On the other hand, the normative dimension has a positive influence on the regulative institutional perspective ($\beta_{H2} = .525$, with $p < 0.001$), which strongly supports *Hypothesis 2*.

5.4.3.2 The Relationship among Safety Climate constructs

Regarding the factors that help to develop safety climate within an organisation, the study findings support the assumption that management commitment to safety positively influences the implementation of safety communication, safety training and supervisors' safety support within an organisation ($\beta_{H3a} = .310$; $\beta_{H3b} = .290$; $\beta_{H3c} = .236$ with $p < 0.001$), which supports *Hypotheses 3a, 3b, and 3c.* In addition, the results show that supervisors' safety support influences employee's risk assessment ($\beta_{H4a} = .116$, with $p < 0.05$) and implementation of safety training ($\beta_{H4b} = .216$, with $p < 0.001$). Thus, *Hypotheses 4a* and *4b* are also confirmed. Furthermore, the study shows that implementation of safety communication influences the safety risk assessment of employees ($\beta_{H5} = .294$, with $p < 0.001$), which confirms *Hypothesis 5.* However, the study did not find any relationship between safety training and change of safety risk assessment ($\beta_{H6} = .054$, with $p = .301 > .05$), which does do not support *Hypothesis 6.*

5.4.3.3 Impacts of Safety Climate on Safety Performance

The relationships between safety climate and safety performance factors are supported in the path analysis. The results indicate that safety communication ($\beta_{H7a} = .268$, with $p <$

0.001) and risk assessment ($\beta_{H7a} = .116, \text{with } p < 0.05$) influence workers' safety participation, whereas management commitment ($\beta_{H7b} = .189, \text{with } p < 0.001$) and safety training ($\beta_{H7b} = .149, \text{with } p < 0.01$) influence workers' safety compliance behaviours. Thus, these results confirm the *Hypotheses 7a* and *7b*. Furthermore, the results show that supervisors' safety support ($\beta_{H7c} = .143, \text{with } p < 0.001$) and safety communication ($\beta_{H7c} = .189, \text{with } p < 0.05$) influence workplace security, which confirms *Hypothesis 7c.*

5.4.3.4 Impacts of Institutional Perspectives & Safety Climate

The study analyses the impacts of the three institutional perspectives on the safety climate factors of an organisation. The results show that all the institutional perspectives influence safety climate factors. The regulative perspective has a positive impact on management commitment to safety ($\beta_{H8a} = .238, \text{with } p < 0.001$) and employee's safety risk assessment ($\beta_{H8a} = .299, \text{with } p < 0.001$). Normative institutional perspective shows significant positive relationships with supervisors' safety support ($\beta_{H8b} = .226, \text{with } p < 0.001$), safety communication ($\beta_{H8b} = .227, \text{with } p < 0.001$), and safety training ($\beta_{H8b} = .137 \text{ with } p < 0.05$). Furthermore, the cultural-cognitive institutional perspective has an influence on management commitment to safety ($\beta_{H8c} = .311 \text{ with } p < 0.001$), supervisors' safety support ($\beta_{H8c} = .186 \text{ with } p < 0.01$), safety communication ($\beta_{H8c} = .156 \text{ with } p < 0.001$) and employee's safety risk assessment ($\beta_{H8c} = .121 \text{ with } p < 0.05$). Hence, such results confirm *Hypotheses 8a, 8b* and *8c.*

5.4.3.5 Impacts of Institutional Perspectives & Safety Performance

According to the theoretical foundations for our structural model, this study proposes that institutional perspectives have a direct impact on the safety performance of an organisation. The statistical results of the path model indicate strong confirmation of such proposals. The results indicate that, while the regulative institutional perspective influence

safety compliance behaviour ($\beta_{H9a} = .250, \text{with } p < 0.001$), the normative institutional perspective influences safety compliance behaviour ($\beta_{H9b} = .280, \text{with } p < 0.001$) and workplace security ($\beta_{H9b} = .214, \text{with } p < 0.001$). Thus, the results indicate that *Hypotheses 9a and 9b are supported.* Alternatively, cultural-cognitive perspective shows negative influence on workers' safety participation behaviour ($\beta_{H9c} = -.110, \text{with } p < 0.05$), which also confirms *Hypothesis 9c.*

5.4.3.6 Impacts of Governance & Safety Performance

The statistical results indicate a significantly strong positive association between governance and safety performance factors. The study indicates that accountability ($\beta_{H11a} = .316, \text{with } p < 0.001$) influences workplace security, while rule-of-law influences ($\beta_{H11b} = .274, \text{with } p < 0.001$) workers' safety participation behaviour. However, anti-corruption influences both workplace safety ($\beta_{H11c} = .421, \text{with } p < 0.001$) and workers' safety participation behaviour ($\beta_{H11c} = .348, \text{with } p < 0.001$). Thus, based on these results, *Hypotheses 11a, 11b and 11c* can be confirmed.

5.4.3.7 The Relationship among Governance constructs

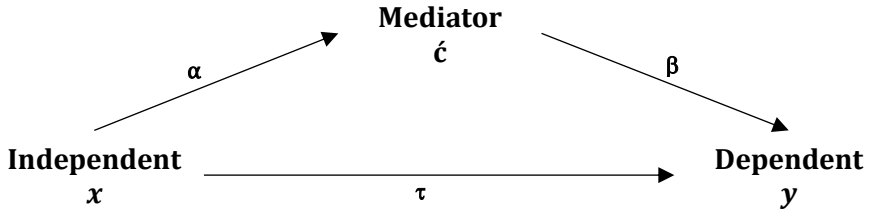
The study results indicate the interrelationships among the governance constructs. The path coefficient between rule of law and accountability ($\beta_{H12a} = .196, \text{with } p < 0.001$) has been found to be significant. In addition, rule-of-law and anti-corruption ($\beta_{H12b} = .250, \text{with } p < 0.001$) also show a significant relationship. Hence, the results confirm *Hypotheses 12a and 12b.* Furthermore, the study shows that accountability also influences corrupt behaviours ($\beta_{H13} = .370, with\ p < 0.001$), confirming *Hypothesis 13.*

5.4.3.8 Mediation Effect

In the mediation effect or indirect effect analysis, we normally assess how the inclusion of a third hypothetical exogenous variable (ć) is affecting an observed relationship between the

independent variable (x) and dependent (endogenous) variable (y). In other words, according to Zhao et al. (2010), an independent variable (x) affects a distal dependent variable (y) through a mediating variable (ć). Figure 5.9 shows the path of the indirect effect a mediator variable. In the figure τ represents the total effect of $\boldsymbol{x}$ on $\mathbf{y}$, while β represent the effect of $\acute{\mathbf{c}}$ on $\mathbf{y}$ adjusted for $\boldsymbol{x}$ and α represents the estimation of the effect of $\boldsymbol{x}$ on $\acute{\mathbf{c}}$. In order to assess the mediation effects both structural equation modelling and linear regression can be used, however SEM is viewed as the most preferred method by various scholars (i.e. Kenny et al., 1998; Cheung & Lau, 2007; Preacher & Hayes, 2008; Lau & Cheung, 2012). Iacobucci et al. (2007: 673) in their influential study showed that SEM yields more parsimonious and better results than liner regression (e.g. precise estimates with smaller standard errors, and minimum bias). Furthermore, Preacher & Hayes (2008: 887) state that unlike regression analysis, SEM *"explicitly models measurement error, allowing researchers to test hypotheses using the latent constructs rather than imperfectly measured indicators"*. Hence, the current study adopts SEM to analyse mediation effect to avoid bias and larger standard error.

Figure 5.9: Path of Indirect Effect



Following the suggestion of scholars to examine direct and indirect effects (Freedman, 1981; Sauermann, 1989; Bollen & Stine, 1992; Mooney et al., 1993; Cheung & Lau, 2007; Hair et al., 2010), a bootstrapping technique has been used in SEM. It helps to obtain robust statistics (Yung & Bentler, 1994) and assess the stability of the parameter estimates. The fundamental idea behind using bootstrapping is that it generates multiple subsamples from an original data set and the sampling distribution is free from normality assumptions (Byrne, 2010). First,

direct effects between independent and dependent variables were obtained, without employing a mediator variable. Then, adding the mediator variables, the study measures both the direct and indirect effects (standardised β) between independent and dependent variables with 1000 bootstrapping samples and 0.95 confidence interval (Shrout & Bolger, 2002; Hayes, 2009).

According to Baron & Kenny (1986), mediation effect can be classified into full, partial, and no mediation effect. Baron & Kenny (1986: 1176) asserted that the *"strongest demonstration of mediation occurring"* is when a mediator nullifies the direct relationship between independent and dependent variables. This means full mediation will be present if *"there is an indirect effect but no direct effect"*, whereas partial mediation will be achieved *"when there are both indirect and direct effects"* (Zhao et al., 2010: 198). According to Hair et al. (2010: 767), the mediation will be partial even if pre-existing direct effect between dependent and independent variable is reduced by a significant portion. Table 5.39 illustrates the direct and indirect effects between different relationships. First, the result shows that there is no mediation effect of supervisory safety support in the relationship between management commitment and safety communication (β_{H4c}=.09, with p=.518 >0.1), which rejects *Hypothesis 4c.* However, the study found that there is a significant relationship between management commitment and workers' perceived safety risk, which is mediated by supervisor's support (β=.123, with p<0.001).

Table 5.39: Mediation Effects

Direct Path	Direct Effect ($\hat{\tau}$)	Indirect Path	Direct Effect (Mediator) (α)	Indirect Effect (β)	Mediation
Management Commitment→Safety Communication (H_{4c})	.310***	Management Commitment→Supervisors' Support→safety communication	.302**	.09ns	No Mediation
Management Commitment→Risk Assessment	.031ns	Management Commitment→Supervisors' Support→Risk Assessment	.27ns	.123***	Full
Normative→Management Commitment	.077ns	Normative→Accountability→Management Commitment	.000	.211**	Full
		Normative→Anti-corruption→Management Commitment	.000	.209**	Full
Normative→Supervisor's Support	.226***	Normative→Accountability→Supervisor's Support	.226**	.116***	Partial
Normative→ Safety Communication	.277***	Normative→Accountability→Safety Communication	.277***	.086***	Partial
Normative→Safety Training	.137*	Normative→Accountability→Safety Training	.137*	.163***	Partial
Regulative→Management Commitment	.238**	Regulative→Accountability→Management Commitment	.238**	.078***	Partial
Regulative→Supervisor's Support	.091ns	Regulative→Accountability→Supervisor's Support	.000	.109***	Full
Regulative→Safety Communication	.055ns	Regulative→Accountability→Safety Communication	.000	.144**	Full
		Regulative→Rule-of-law→Safety Communication	.000	.112**	Full
Regulative→Risk Assessment	.304***	Regulative→Rule-of-law→Risk Assessment	.301*	.064**	Partial
Cultural-cognitive→Management Commitment	.309**	Cultural-cognitive→Accountability→Management Commitment	.309**	.125***	Partial
		Cultural-cognitive→Anti-corruption→Management Commitment	.311**	.111**	Partial
Cultural-cognitive→Supervisor's Support	.186**	Cultural-cognitive→Accountability→Supervisor's Support	.185**	.236***	Partial
		Cultural-cognitive→Rule-of-law→Supervisor's Support	.186**	.225***	Partial
Cultural-cognitive→Safety Communication	.156**	Cultural-cognitive→Accountability→Safety Communication	.155**	.306***	Partial
		Cultural-cognitive→Rule-of-law→ Safety Communication	.155**	.299**	Partial
Cultural-cognitive→Risk Assessment	.121*	Cultural-cognitive→Accountability→Risk Assessment	.121*	.257***	Partial
		Cultural-cognitive→Rule-of-law→Risk Assessment	.120*	.261***	Partial

***P< 0.05; **P< 0.01; *** P< 0.001; ns= not significant. All values presented are standardised values.**

In addition, Table 5.39 shows the effects of mediating factors (accountability, anti-corruption and rule of law) on the relationships between institutional factors and safety climate factors. Accountability and anti-corruption were found to fully mediate the relationship between the normative perspective and management commitment (β=.211; β=.209 with p<0.01). Similarly, accountability was found to fully mediate the relationship between the regulative perspective and safety communication (β=.109, with p<0.001) and regulative perspective and supervisor's support (β=.144, with p<0.001). Furthermore, it is found that rule of laws fully mediates the same relationship between regulative perspective and safety communication (β=.112, with p<0.01). As seen from Table 5.39 other relationships between institutional factors and safety climate are also partially mediated by governance factors. Hence, these results support *Hypotheses 10a, 10b and 10c*. While the direct relationship between cultural-cognitive and regulative perspective has already been rejected (*hypothesis 1b*), the study examines the indirect relationships through the normative perspective. The study identifies the existence of full mediation of the normative perspective in the relationship between the cultural-cognitive perspective and the regulative perspective (β=.207 with p<0.001).

5.4.3.9 Multi-Group Analysis

The study assumes that the proposed research framework should be different for compliant factories and non-compliant factories. To identify the difference in research model between two different groups the study performs a multi-group analysis. Following the suggestion of scholars (Koufteros & Marcoulides, 2006; Qureshi & Compeau, 2009; Hair et al., 2010), the current study splits the median to form a categorical two-level moderator in SEM and performs the multi-group analysis separately for both groups. Then, to assess the difference in the model for two groups, the study uses chi-square difference and CFI difference test as suggested by scholars (Cheung & Rensvold, 2002; Byrne, 2010; Hair et al.,

2010; Schumacker & Lomax, 2010). When the p-value of the chi-square difference test is significant, it can be concluded that the model differs across groups. In addition, when the difference in CFI is >0.01, it portrays difference between the groups. Table 5.40 shows the results of the multi-group model analysis.

Table 5.40: Multigroup Model Fit - Factory Type Impact

Fit Index	Indices	Suggested Fit	Multigroup Model Fit Indices		Model Comparison
			(Compliant: N=166)	(Non-compliant: N=90)	
Absolute Fit Indices	x^2/df	≤5; p>.05	1.051 p=.378	1.442 p=.025	Chi-Square (x^2) =128.145 *df = 44* p=0.000
	RMR	≤.05	.002	.002	
	SRMR	<0.08	.056	.084	
	RMSEA	≤.08, fit well; ≤.05, fit very well	.018	.070	
	PCLOSE	>.05	.913	.183	
	GFI	≥.90	.960	.905	
	AGFI	≥.90	.911	.788	
Incremental Fit Indices	CFI	≥.90	.998	.917	
	TLI	≥.90	.996	.840	
	IFI	≥.90	.998	.930	
	NFI	≥.90	.962	.802	
Parsimony Fit Indices	PCFI	>.50	.515	.474	
	PNFI	>.50	.500	.414	

Model	x^2/df	P value	RMSEA	PCLOSE	CFI	ΔCFI	TLI
Unconstrained	1.188	---	.027	.985	.988	---	.977
Structural weights	1.661	.000	.051	.430	.940	0.048	.918
Structural covariances	1.764	.000	.055	.231	.927	0.061	.906
Structural residuals	1.825	.000	.057	.137	.915	0.073	.900

GFI=Goodness of Fit Index; **RMR**=Root-mean-square Residual; **SRMR=**Standardized Root Mean Square Residual; **RMSEA**=Root-mean-square Error of Approximation; **CFI**=Comparative fit Index; **TLI**=Tucker–Lewis Index; **IFI**=Incremental Fit Indices; **NFI**=Normed Fit Index; **PCLOSE**= p of Close Fit or RMSEA

Table 5.40 shows that both samples illustrate acceptable model fit, except that the non-compliant sample, shows TLI (0.840), PCFI (0.474) and PNFI (0.414), which are less than the recommended cut-off values. Additionally, fit statistics show that the compliant model better fits the data than the non-compliant model. Having demonstrated a satisfactory model fit for both models, chi-square test for the comparison between models illustrates that the two groups are significantly different (Chi-Square=128.145, df = 44, p=0.000). Moreover, significant structural weights (*x2/df*=1.661, p=0.000) and the difference between CFI is ≥ 0.01 (Unconstrained Model CFI-Structured Model CFI = 0.988 - 0.940 = 0.048), which reveals significant difference between groups. Furthermore, at the level of individual hypothesised relationships, the invariant latent mean test was performed and Table 5.41 shows the results.

Table 5.41: Invariance Tests for Factory Type Impact

			Compliant Std. β	Non-compliant Std. β	Difference in Std. β	P-value for Difference	Relationship Interpretation
Cultural-Cognitive Perspective	→	Normative Perspective	0.528***	0.121	0.406	0.000	Stronger for Compliant
Normative Perspective	→	Regulative Perspective	0.549***	0.417***	0.132	0.296	No Difference
Management Commitment	→	Safety Communication	0.272***	0.133	0.140	0.250	Only Significant for Compliant
		Safety Training	0.314***	0.048	0.266	0.199	Only Significant for Compliant
		Supervisors' Support	0.241**	0.055	0.186	0.219	Only Significant for Compliant
Supervisors' Safety Support	→	Risk Assessment	0.126	0.086	0.040	0.964	No Difference
		Safety Training	0.167*	0.231*	-0.064	0.359	No Difference
Safety Communication	→	Risk Assessment	0.370***	0.129	0.241	0.363	Only Significant for Compliant
Safety Communication	→	Safety Participation	0.249**	0.291***	-0.042	0.135	No Difference
Risk Assessment			0.090	0.173*	-0.083	0.463	Only Significant for Non-Compliant
Management Commitment	→	Safety Compliance	0.254***	-0.046	0.300	0.033	Stronger for Compliant
Safety Training			0.172*	0.103	0.069	0.446	Only Significant for Compliant
Supervisors' Safety Support	→	Workplace Security	0.184***	-0.023	0.207	0.095	Only Significant for Compliant
Safety Communication			0.064	-0.043	0.107	0.392	No Difference
Regulative Perspective	→	Management Commitment	0.217**	0.031	0.186	0.043	Stronger for Compliant
		Risk Assessment	0.271***	0.348***	-0.077	0.393	No Difference
Normative Perspective	→	Supervisors' Safety Support	0.246**	0.143	0.103	0.230	Only Significant for Compliant
		Safety Communication	0.276***	0.203*	0.073	0.124	No Difference
		Safety Training	0.264***	-0.135	0.399	0.003	Stronger for Compliant
Cultural-Cognitive Perspective	→	Management Commitment	0.322***	0.086	0.237	0.002	Stronger for Compliant
		Supervisors' Safety Support	0.204**	0.120	0.084	0.228	Only Significant for Compliant
		Safety Communication	0.160**	0.084	0.077	0.179	Only Significant for Compliant
		Risk Assessment	0.099	0.177	-0.078	0.545	No Difference
Regulative Perspective	→	Safety Compliance	0.200**	0.330***	-0.130	0.378	No Difference
Normative Perspective	→	Safety Compliance	0.240**	0.283**	-0.043	0.830	No Difference
		Workplace Security	0.332***	0.030	0.301	0.005	Stronger for Compliant
Cultural-Cognitive Perspective	→	Safety Participation	-0.072	-0.150*	0.078	0.497	Only Significant for Non-Compliant
Accountability	→	Workplace Security	0.299***	0.315***	-0.016	0.658	No Difference
Anti-Corruption	→	Workplace Security	0.297***	0.595***	-0.298	0.017	Stronger for Non-Compliant
		Safety Participation	0.355***	0.383***	-0.028	0.671	No Difference
Rule-of-Law	→	Safety Participation	0.266***	0.298***	-0.033	0.890	No Difference
Rule-of-Law	→	Accountability	0.196**	0.167	0.029	0.740	Only Significant for Compliant
Rule-of-Law	→	Anti-Corruption	0.185**	0.371***	-0.186	0.052	No Difference
Accountability	→	Anti-Corruption	0.348***	0.372***	-0.025	0.427	No Difference
***P< 0.05; **P< 0.01; *** P< 0.001; ns= not significant, Invariance test has been estimated through SEM Plugins developed by Gaskin & Lim (2018)**							

In Table 5.41, the significance of the chi-square difference test (p-value for difference) reveals that different relationships show different characteristics. For instance, relationships between cultural-cognitive perspective→normative perspective (Compliant β=0.528, Non-compliant β=0.121, with p<0.001), management commitment→safety compliance (Compliant β=0.254, Non-compliant β=-0.046, with p<0.05), regulative perspective→management commitment (Compliant β=0.217, Non-compliant β=0.031, with p<0.01) show significant differences across the groups and relationships are stronger for compliant factories. In contrast, relationships between normative perspective→regulative perspective (Compliant β=0.549, Non-compliant β=0.417, with non-significant p-value), supervisor's support→risk assessment (Compliant β=0.126, Non-compliant β=0.086, with non-significant p-value), anti-corruption→safety participation (Compliant β=0.355, Non-compliant β=0.383, with non-significant p-value) have no difference between the groups. However, the study has found only one relationship, that is, anti-corruption→workplace security (Compliant β=0.297 Non-compliant β=0.595, with p<0.05) stronger for non-compliant samples.

Nevertheless, the study found that despite being insignificant in group difference, some of the relationships are only significant for complaint factories, such as management commitment→safety communication (Compliant β=0.272***, Non-compliant β=-0.133), safety training→safety compliance (Compliant β=0.172*, Non-compliant β=-0.103), and rule-of-law→accountability (Compliant β=0.196***, Non-compliant β=-0.167). Similarly, despite being insignificant in group difference, two of the relationships are only significant for non-compliant factories, such as risk assessment→safety participation (Compliant. β=0.090, Non-compliant β=-0.173*) and cultural-cognitive perspective→safety participation (Compliant β=-0.072, Non-compliant β=-0.150*). The current study also analyses the mediation difference between the groups. Table 5.42 illustrates the invariance test results for indirect paths.

Table 5.42: Invariance Tests of Mediation Effects for Factory Type Impact

Indirect Path	Compliant Std. β	Non-compliant Std. β	Difference in Std. β	P-value for Difference	Relationship Interpretation
Management Commitment→Supervisors' Support→Risk Assessment	0.131***	0.022	0.109	.380	Only Significant for Compliant
Normative→Accountability→Management Commitment	0.276***	0.021	0.255	.005	Stronger for Compliant
Normative→Accountability→Supervisor's Support	0.120***	0.024	0.096	.436	Only Significant for Compliant
Normative→Accountability→Safety Communication	0.212***	0.014	0.198	.004	Stronger for Compliant
Normative→Accountability→Safety Training	0.148**	0.040	0.108	.558	Only Significant for Compliant
Normative→Anti-corruption→Management Commitment	0.249***	0.023	0.226	.103	Only Significant for Compliant
Regulative→Accountability→Management Commitment	0.091***	0.003	0.088	.001	Stronger for Compliant
Regulative→Accountability→Supervisor's Support	0.108***	0.025	0.083	.453	Only Significant for Compliant
Regulative→Accountability→Safety Communication	0.164**	0.037	0.127	.002	Stronger for Compliant
Regulative→Accountability→Risk Assessment	0.075***	0.046	0.029	.559	Only Significant for Compliant
Regulative→Rule-of-laws→Safety Communication	0.101***	0.038	0.063	.269	Only Significant for Compliant
Regulative→Rule-of-laws→Risk Assessment	0.067***	0.047	0.020	.928	Only Significant for Compliant
Cultural-cognitive→Accountability→Management Commitment	0.180***	0.002	0.178	.203	Only Significant for Compliant
Cultural-cognitive→Accountability→Supervisor's Support	0.285***	0.019	0.266	.426	Only Significant for Compliant
Cultural-cognitive→Accountability→Safety Communication	0.369**	0.036	0.333	.184	Only Significant for Compliant
Cultural-cognitive→Accountability→Risk Assessment	0.343**	0.046	0.297	.440	Only Significant for Compliant
Cultural-cognitive→Anti-corruption→Management Commitment	0.167**	0.009	0.158	.857	Only Significant for Compliant
Cultural-cognitive→Rule-of-laws→Supervisor's Support	.280***	0.025	0.255	.297	Only Significant for Compliant
Cultural-cognitive→Rule-of-laws→ Safety Communication	0.374**	0.038	0.336	.058	Only Significant for Compliant
Cultural-cognitive→Rule-of-laws→Risk Assessment	0.357**	0.046	0.311	.069	Only Significant for Compliant
***P< 0.05; **P< 0.01; *** P< 0.001; ns= not significant, p-value for chi-square difference estimated through SEM Estimands developed by Gaskin & Lim (2018)**					

Table 5.42, demonstrates that four of the indirect relationships are significantly different between the groups. For the Compliant sample, the relationships are significantly stronger for mediating relationships of accountability between normative perspective→management commitment (Compliant β=0.276 Non-compliant β=0.021, with p<0.01) and normative perspective→safety communications (Compliant β=0.212 Non-compliant β=0.014, with p<0.01). Similarly, complaint samples are significantly stronger for mediating relationships of accountability between regulative perspective→management commitment (Compliant β=0.091 Non-compliant β=0.003, with p<0.001) and regulative perspective→safety communications (Compliant β=0.164 Non-compliant β=0.037, with p<0.01). Furthermore, the analysis shows that while the other relationships are not significantly different between groups, all the mediating relationships are significant for the compliant samples. Hence, all the above results reveal that there is a difference between the compliant factories' and non-compliant factories' safety behaviours.

5.4.3.10 Interaction Effects

Although not hypothesised, it was of interest to identify interaction effects among the rejected hypotheses variables, that is to see what happens to the rejected relationships when other variables are taken into account. Hence, multiple regression models were performed to predict the interaction between the cultural-cognitive and regulative perspectives (Hypothesis 1b) and safety training and risk assessment (Hypothesis 6). Table 5.43 and Figure 5.10 illustrate the interaction of the normative perspective with the cultural-cognitive and regulative perspectives. From the table it can be assumed that a suppression effect is present, a situation in which the magnitude of the effect becomes larger when a third variable is included in the regression equation (MacKinnon et al., 2000; Shrout & Bolger, 2002; Schippers et al., 2015).

Table 5.43: Interaction Effect of Normative Perspective on Cultural-Cognitive Perspective – Regulative Perspective

	Unstandardized β	Coefficients	Std. Coefficients β	t	Sig.
Constant	.156	.009		16.671	.000
Normative Perspective	.353	.057	.422	6.220	.000
Cultural-Cognitive Perspective	.068	.049	.083	1.405	.161
Normative x Cultural-Cognitive Perspective	.406	.216	.120	1.877	.062
Dependent Variable: Regulative Perspective					

Figure 5.10: Interaction Effect of Normative Perspective on Cultural-Cognitive Perspective – Regulative Perspective

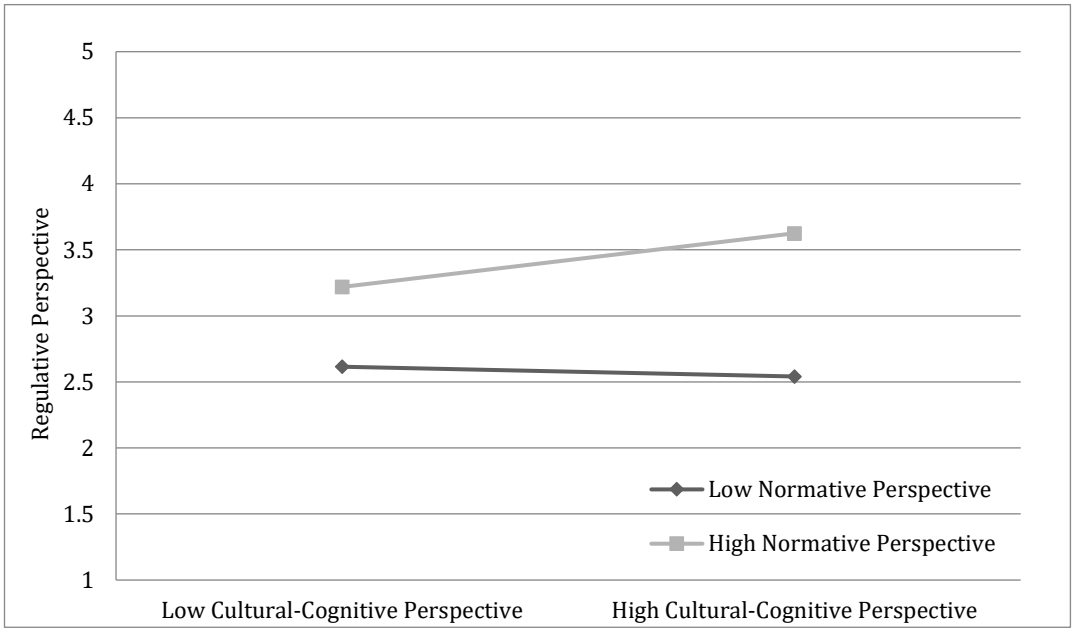


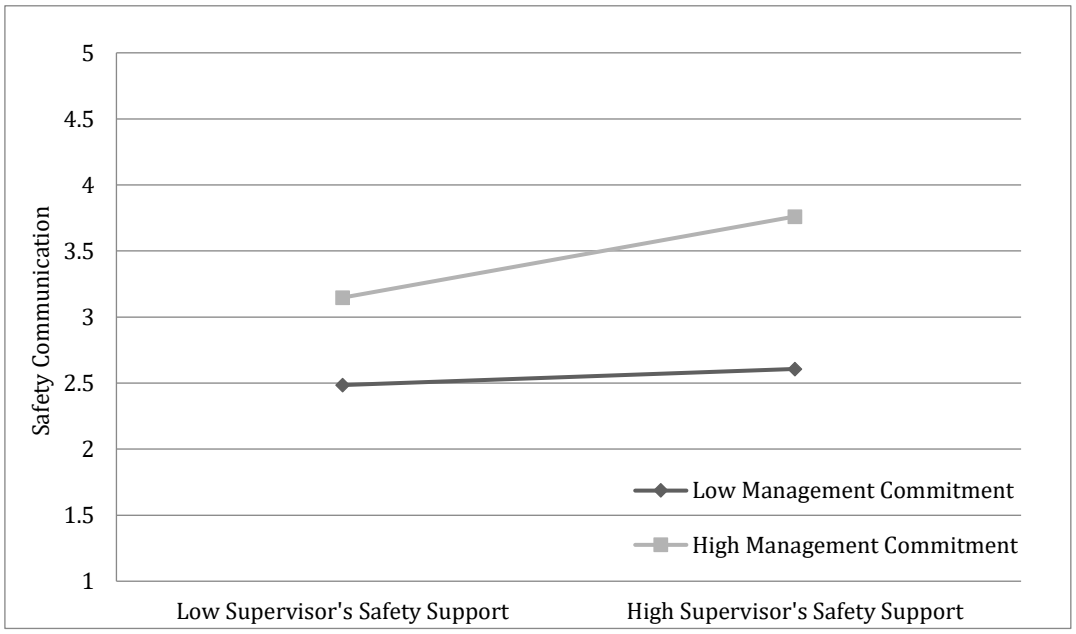
Table 5.43 and Figure 5.10 show that the normative perspective has an impact on the relationship between the cultural-cognitive and regulative perspectives at the 90% confidence level (β=0.120, with p=0.062 < 0.10). This seems to suggest that when adding the normative to the cultural-cognitive perspective in one step, the positive effect of the cultural-cognitive perspective on regulative perspective enlarges and becomes significant (increase in β from 0.083ns to 0.120, p=0.062 < 0.10). Similarly, when the study tries to find an interaction effect between supervisor safety support and safety communication (to test the rejected Hypothesis 4c), the result shows the presence of an interaction effect (β=0.123, with p=0.077 < 0.10). The finding shows that the relationship between supervisor's safety support and safety communication was stronger among employees whose management had a commitment to safety (increase in β from 0.037ns to 0.123, p=0.077 < 0.10). Like the

previous outcome, the significance of the relationship is at 90% confidence level. Table 5.44 and Figure 5.11 show the interaction effect between management commitment, supervisor's safety support, and safety communication.

Table 5.44: Interaction Effect of Management Commitment on Supervisor's safety support – Safety Communication

	Unstandardized β	Coefficients	Standardized Coefficients β	t	Sig.
Constant	-.005	.008		-.617	.538
Management Commitment	.425	.059	.454	7.221	.000
Supervisor's Safety Support	.181	.060	.184	3.030	.003
Supervisor's Support x Management Commitment	.365	.205	.123	1.778	.077
Dependent Variable: Safety Communication					

Figure 5.11: Interaction Effect of Management Commitment on Supervisor's safety support – Safety Communication



Alternatively, when interaction effect analysis was performed on safety training and risk assessment (to test the rejected Hypothesis 6), it seemed that supervisor's support (β= -0.050, with p=0.484 >0.05) and safety communication (β=0.030, with p=0.656 >0.05) do not affect the relationship. However, Figure 5.12 and Table 5.45 shows the presence of interaction between safety training and risk assessment.

Table 5.45: Interaction Effect of Management Commitment on Safety Training – Risk Assessment

	Unstandardized β	Coefficients	Standardized Coefficients β	t	Sig.
Constant	.176	.009		20.272	.000
Management Commitment	.213	.062	.240	3.456	.001
Safety Training	.113	.060	.123	1.892	.060
Training x Management Commitment	.813	.241	.242	3.374	.001
Dependent Variable: Risk Assessment					

Figure 5.12: Interaction Effect of Management Commitment on Safety Training – Risk Assessment

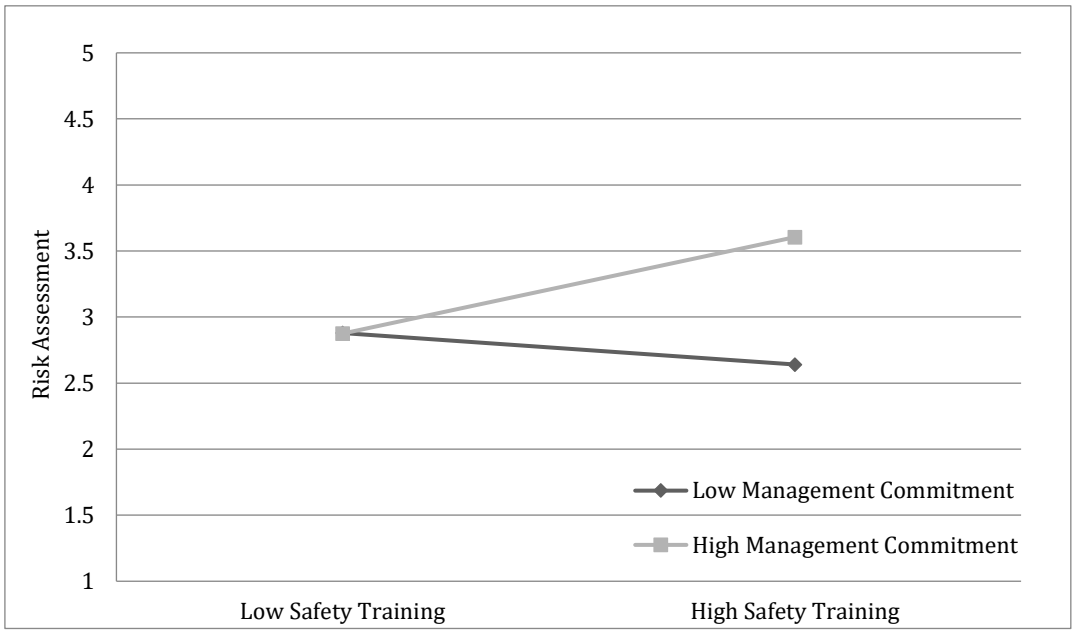


Table 5.45 and Figure 5.12 show that a suppression effect of management commitment is present. The result illustrates that management commitment has an impact on the relationship between safety training and risk assessment (β =0.242, with p<0.001). When adding management commitment to safety training in one step, the positive effect of safety training on workers' risk assessment enlarges and becomes significant (increase in β from 0.123ns to 0.242, p<0.001). This seems to suggest that the relationship between safety training and workers' risk assessment was stronger among employees whose management had a high commitment to safety.

5.5 Summary

This chapter has presented the result of various analyses of the collected data. First, the chapter presented the descriptive statistics of the sample. Secondly, it reported the results of the case and variable screening (i.e. missing data, unengaged responses, outliers, skewness and kurtosis, multicollinearity and non-response bias tests) to ensure that the data is functional, consistent, and valid to perform further statistical tests. Then the results of EFA were presented. The EFA results illustrate reliable structures for the institutional perspectives, governance, safety climate and safety performance dimensions to perform CFA. CFA was used to assess and validate the research instrument. The results confirm that the measures used were reliable and suitable for the studied population. Furthermore, reliability, discriminant validity and convergent validity testing were performed on the data set and the results showed that the theoretically developed model had adequate statistical power to perform structural equation modelling (SEM). SEM validates the proposed research framework. In addition, direct and indirect effects between independent, dependent and moderator variables were investigated. Next, a multi-group analysis was performed to assess the difference in the proposed model between the two groups and the results demonstrates a significant difference between the groups. Finally, interaction effect was analysed to assess the two rejected hypotheses and their results were discussed. The following chapter will interpret and discuss the findings of this current chapter in more detail.

Chapter 6

Discussion of the Results

6.1 Introduction

Based on the analysis of the previous chapter, this chapter interprets and discusses the findings of the research. Along with the discussion, this chapter provides support to the findings with the previous studies. The chapter discusses the structure of the constructs for the four main dimensions (i.e. institutional perspectives, governance, safety climate and safety performance) and the fit of the constructs within those dimensions. Then, for each dimension, the chapter inspects and explains the interrelationships of its constructs. Besides, the chapter explains the hypothesized relationships between the constructs. Lastly, the chapter describes the multi-group analysis results and their impact on the relationships in the research models.

As stated in Chapter One, the objectives of this research are to assess the research model in the context of Bangladesh, besides incorporating and validating some key variables that are expected to be relevant to ensure the application of and compliance with safety-related issues to enhance organisational safety performance within the RMG industry. To achieve the objectives, a top-down research model has been developed and tested, in order to examine whether integrating macro-institutional factors (normative, regulative, and cultural-cognitive issues) and governance mechanisms (accountability, anti-corruption, and rule of law) can establish a comprehensive set of essential organisational safety practices that have the ability to ensure workplace safety. The previous chapter has analysed the collected data to assess the objective related hypotheses, while this chapter discusses the findings of the data analysis and research hypotheses. The following sections discuss and justify the identified relationships in the light of previous work in the field.

6.2 Antecedents of Institutional Perspectives

This study identifies that the regulative perspective of an institution controls and promotes a specific pattern of organisational behaviour by using authoritative power. Hence, regulative institutions represent rule-setting, monitoring, and sanctioning activities. First, using EFA for 15 items, the study explored the structure of regulative perspective constructs in this study. Exploratory factor analysis in the study has produced a two-factor structure of the regulative perspective (governmental inspection, monitoring & sanctions), within which the first factor seems to fit the univariate model better to measure the institutional framework. Furthermore, the mean scores for the five items are in the lower half of the distribution (overall mean score 1.63) and measure governmental inspection related issues. The mean scores confirm workers' agreement that there is regular governmental inspection of the factory's building structure, gas lines and electrical wiring, firefighting equipment and inspection of secured housekeeping storage units. These items resemble the ideas of scholars such as DiMaggio & Powell (1983), Scott (1995), Pavlou (2002), Teo et al. (2003), Liang et al. (2007), Ahlstrom & Bruton (2010), and Hossain et al. (2015).

Secondly, the study explored the structure of the normative perspective, which represents how things should be done (norms) and what are the socially constructed values. Using EFA for 15 items, the study has identified a two-factor structure for the normative perspective (industry norms and industry values). However, the first factor (industrial norms) fits better within the model to measure the overall institutional perspective and all the mean scores of the items in the first factor show that the distribution of means is in the lower half of the distribution (overall mean score 1.59). The scores illustrate that workers mostly agreed that governmental bodies, garments manufacturing associations and international associations have established the industrial norms of maintaining labour standards, implementing health and safety practices, ensuring the presence of labour unions and various facilities for workers. All these items represent the suggestions provided

by scholars such as Wicks (2001), Greenwood et al. (2002), Kostova & Roth (2002), Scott (2008a), Nadvi & Reichert (2015), Pasamar & Alegre (2015) and He et al. (2016).

Finally, the study explored the structure of the cultural-cognitive perspective, which represents the shared beliefs and logic of actions. Using EFA for 14 items, the study has identified a two-factor structure for the cultural-cognitive perspective (industrial standards, industrial belief), in which the first factor (industrial standards) fits better within the model to measure the overall institutional perspective. The mean scores of the items remain in the lower half of the distribution (overall mean score 1.87), demonstrating workers' agreement on an institutional focus on drawing attention and promoting the importance of various industrial practices. For instance, workers perceived that various associations and government encourage the factories to provide free medical treatment for workers, establish a collective dialogue between factory owners and workers, take safety initiatives, raise awareness and provide training, and compensation for injured workers etc. These items characterise the ideas of scholars such as Scott (1995), Wicks (2001), Teo et al. (2003), Liang et al. (2007), Ahlstrom & Bruton (2010), Hossain et al. (2015), Pasamar & Alegre (2015) and He et al. (2016).

Further, to confirm the structure of the institutional perspective, the confirmatory factor analysis (CFA) was performed. All the factors (i.e. governmental inspection, industry norms, and industry standards) from the institutional perspective show a good fit in the unidimensional CFA model ($x^2/df=1.448$, $p=.006$ ($p>0.05$), RMR=0.002, SRMR=0.044, RMSEA=0.042 with a PCLOSE of .777, CFI=0.979, TLI=0.972, IFI=0.980, PNFI=0.687, and PCFI=0.718). Additionally, the unidimensional model displays convergent and divergent validity. The findings of unidimensional CFA support the application of the three-construct model for measuring the institutional perspective. The assessment of the major fit indices shows that the structure of the institutional perspective scale is appropriate and thus, the scale is a valid and reliable tool to measure the institutional factors in the Bangladeshi RMG Manufacturing industry.

6.3 Institutional Perspectives and their Interrelationships

To gain enriching insights into the interrelationships of institutional perspective factors, the study uses SEM to confirm the proposed hypotheses. The research result shows that the influence of cultural-cognitive perspective on a normative aspect of the institution is strongly significant ($\beta_{H1a} = .425$, with $p < 0.001$). The result indicates that industrial standards have an influence on industry norms, which is consistent with the recommendation of previous studies (i.e. Wicks, 2001; Nissen, 2007; Scott, 2008b; Drew & Kriz, 2012; Zhou et al., 2017). For instance, Michailova & Ang (2008) illustrate that normative institution is manifested in the form of national culture of a given country. The principal elements of cognitive systems are constitutive rules (Wicks, 2001), which contribute to defining beliefs, values, and norms. The relationship identified in the study shows that when social actors have a considerable preferences for a standard (cognitively established rules), which results in it being institutionalised, followers will pursue such action, driven by the logic of appropriateness (normative rules) (Thornton & Ocasio, 2008). This kind of relationship helps to understand and clarify actions and why practices become instantiated. Hence, the result suggests that the cultural-cognitive perspective is indeed crucial to develop a normative perspective of institutions in the safety climate context.

In contrast, the result shows that the cultural-cognitive perspective does not have any influence on a regulative aspect of the institution ($\beta_{H1b} = .090$ with $p = .124 > .05$). This result shows that industrial standards do not influence governmental inspection, which supports the finding of Zhou et al. (2017). In their study, they found that the cultural-cognitive perspective of the institution may reduce or substitute the roles of the regulatory perspective of the institution. One of the explanations behind this outcome can be that, opposite to Western countries' tendency to an emphasis on strict legal regulations, in developing countries like Bangladesh, some companies tend to "keep inspection bodies in their pockets". The basis of this statement is twofold: many of the garment factory owners either direct policy-makers or exercise political influence. Secondly, the obvious reason is

corruption – garment factory owners induce the regulatory bodies effortlessly. As a result, regulative bodies become reluctant to inspect whether prescribed industrial standards are being implemented or not. Therefore, industry standards are being ignored by governing bodies and do not have any effect on regulation.

Another explanation for this insignificant result may be that, if the cultural atmosphere does not offer any specified industrial standards to be taken for granted, it will be very difficult for regulatory agencies to monitor or investigate such standards. For instance, various extra-organisational influences (e.g., buyers standards, different agency certification standards etc.) affect organisations' interpretation of safety standards and the process of safety standard internalisation differently. This difference in standards and lack of guidance can create confusion within the regulatory bodies and even for organisations. Therefore, regulative bodies may become hesitant to inspect the standards within the industry. Parallel to this augment, Le Coze & Wiig (2013) found that cultural rationales created ambiguity and confusion, not only for the oil and gas industry in Norway but also for the inspectors representing the regulatory bodies themselves. In a similar vein, Antonsen et al. (2017) has found that the cultural institutional field surrounding the policy makers and organisation can exert a strong impact on both, and on the relationship between them. This is an interesting discovery, which has not been adequately discussed in the extant literature and needs further investigation.

However, this study finds that the normative perspective of institution mediates the relationships between the cultural-cognitive and regulative perspectives ($\beta_{H2} = .525$, with $p < 0.001$). The interaction effect between these factors also confirms that when a normative perspective is introduced in the relationship, the relationship between the cultural-cognitive and regulative perspective becomes significant (β=.120, with p=.062 < 0.1). Both the results indicate that regulations are influenced more when cognitively followed constitutive rules are established normatively. This means that when industrial standards become industrial norms - practically approved behaviour, then the regulative

institutions will take more action to ensure that organisations are operating in accordance with their institutional requirements. For example, the industry standard is that governing bodies should regularly check the functionality of fire alarms in factories (taken for granted). However, when checking fire alarms is a mandate (conformation to taken for granted rules), it becomes an industrial norm (rule-of-thumb) and thus regulatory bodies are more obliged to inspect the institutional requirement. Therefore, the result suggests that together, the normative and cultural-cognitive perspectives of a country's institutions are extremely important for the regulative perspective. Hence, it can be argued that when institutional perspectives are applied in combination, policy instruments become more efficient, consistent with the view of Alexander (2012) and Hasle et al. (2014).

Finally, the study finds that the relationship between the normative and regulative perspectives (**H2**) is strongly significant (β=.525 with $p<0.001$). The relationship suggests that higher industry norms encourage higher governmental inspection practice. This also supports the outcome of the interaction effect. This finding is consistent with various scholars (Edelman & Suchman, 1997; Dobbin & Dowd, 2000; Scott, 2008b; Szyliowicz & Galvin, 2010), who considered that particular regulative action is shaped by the wider normative context. Dacin et al. (1999) state that normative institutional arguments directly dictate the form of rules. Furthermore, Rojas (2010) and Nilsson (2015) state that institutional actors gain power by leveraging normative practices into regulative authority. Hence, institutional norms are pivotal to develop and enforce regulative actions. These findings are important to safety climate because they help to clarify the link between macro institutional forces such as societal norms, culture, and industry-specific actions. In this way, the institutional theory offers a different way of understanding and determining the role of the external environment.

6.4 Antecedents of Safety Climate

A review of the existing literature reveals that the factors most commonly used to measure safety climate in a manufacturing industry context are management commitment,

supervisors' support, safety communication, safety training, and workers safety risk assessment. Out of these five factors, management commitment to safety has been identified as the most appropriate area to start any safety improvements. A variety of studies (Agnew et al., 2013; Bahari & Clarke, 2013; Bosak et al., 2013; Cheng et al., 2016; Chen et al., 2017) identify that management commitment is an influential predictor of a strong organisational safety climate. Therefore, first, using EFA for 16 items, the study explored the structure of the management commitment construct. The EFA solution provided a three-factor structure solution (i.e. management engagement and operational procedure & structural security) among which the first two factors seem to fit the theoretical concept well to measure safety climate. However, the first factor was identified as more suitable for the model, since all its five items are related to perceived safety commitment of the management. Moreover, the mean scores for the five management commitment items are in the lower half of the distribution (overall mean score 1.51). This confirms workers' positive perception of their management's commitment to ensure their safety and the items support the suggestion of previous research such as Zohar (2000), Mearns et al. (2003), Huang et al. (2006), Vinodkumar & Bhasi (2009), Beus et al. (2010b), Bahari & Clarke (2013), and Liu et al. (2015).

Secondly, the study explored the structure of the supervisor's safety support construct. Supervisor's safety support plays a critical role in communication between management and employees, delegating job tasks, distributing responsibilities, ensuring quality and maintaining safety (i.e. Hofmann et al., 2003; Therkelsen & Fiebich, 2004; Clarke, 2006a; Michael et al., 2006; Fernández-Muñiz et al., 2014). Using EFA for 12 items, the study identifies a two-factor solution (supervisor's assistance and supervisor's cooperation) for the construct, while only the first factor fits well in the model. All the four items represent the workers' perception of the supervisor's offer of safety assistance and the mean scores are in the lower half of the distribution (overall mean score 1.43). These scores suggest that workers believe that their supervisors behave in a friendly manner in the workplace, do not harass them, or make threats, ensure a risk and hazard-free

workplace, and treat employees impartially, which are consistent with the suggestions of previous research such as Probst & Estrada (2010), Conchie et al. (2013), Cigularov et al. (2013), and Fernández-Muñiz et al. (2014).

Thirdly, the study explored the structure of the safety communication construct. Scholars (Hofmann & Stetzer, 1998; Casey & Krauss, 2013; Manapragada & Bruk-Lee, 2016; Zwetsloot et al., 2017) have identified effective communication as a crucial factor for developing and maintaining a safe working environment. EFA for 14 items identifies a two-factor solution for the construct (safety information and safety signs). The first factor fits well into the model and mean scores for the seven items show that the distribution of mean is in the lower half of the distribution (overall mean score 1.48). These scores suggest that workers believe their organisations provide adequate information about correct and incorrect safety actions, act upon safety feedback from the employees, provide emergency safety signs, and inform them about the changes in working procedures and possible work hazards which corroborates the ideas of scholars such as Hofmann & Stetzer (1998), Fernández-Muñiz et al. (2007), Brondino et al. (2012), Bahari & Clarke (2013), and Ghahramani & Khalkhali (2015).

Fourthly, scholars have identified safety risk assessment as an effective predictor of workers' involvement in safety-related actions and for developing a rigorous organisational safety climate (Rundmo, 2001; Arezes & Miguel, 2008; Gandit et al., 2009; Ji et al., 2011; Kouabenan et al., 2015; Xia et al., 2017). Hence, the study examined the structure of the safety risk assessment construct by using EFA for 15 items, from which a two-factor structure was identified (perceived health safety and perceived work safety). Both the factor structures fit the theoretical concepts, while the second-factor structure fits the research model. Mean scores for the four items show that the distribution of mean is in the lower half of the distribution (overall mean score 1.63). This shows that workers perceive that their workplace is safe and they have few chances of being involved in an accident, can easily evacuate the building in any case of emergency, do not have to work long hours in the

same position, and their operating machines are secured, so they do not pose any risk to their health. All these attributes reflect the low perception of risks, which is expected to make workers feel assured of their wellbeing and these attributes are suggested by scholars Vinodkumar & Bhasi (2009), Sinclair et al. (2010), Cui et al. (2013), and Kwon & Kim (2013).

Finally, the study identifies a two-factor structure (safety preparation and safety practice) from the 10 items of the safety training construct using EFA. Previously, a number of studies (Barling et al., 2003; Cooper & Phillips, 2004; Hofmann & Stetzer, 1996; Vinodkumar & Bhasi, 2010; Fugas et al., 2011; Huang et al., 2012a; Ford et al., 2014) have shown noticeable evidence that applying safety training changes organisational safety climate and employees' safety behaviours. The current study recognises that the second safety training factor fits well in the current research model and the mean scores for the four items show that the distribution of means is in the lower half of the distribution (overall mean score 1.61). Such results show that employees have been trained on the first day in the factory. In addition, workers believed that they had been adequately trained to report near-miss incidents, and locked doors during factory operations, and provided with training to avoid injuries or accidents. All these attributes reflect that workers believed they had been trained sufficiently to avoid any risky situation and accidents. These practices are similar to the suggestions of Vinodkumar & Bhasi (2010), Brondino et al. (2012), Huang et al. (2012a), and Liu et al. (2015).

Further, to confirm the structure of the safety climate dimension, the study performed confirmatory factor analysis (CFA). All the factors (i.e. management engagement, supervisor's assistance, safety information, safety practice and perceived health hazard) from the safety climate dimension show a good fit in the unidimensional CFA model ($x2/df=1.448$, $p=.006$; RMR=0.002, SRMR=0.044, RMSEA=0.042 with a PCLOSE of .777, CFI=0.979, TLI=0.972, IFI=0.980, PNFI=0.687 and PCFI=0.718). In addition, the unidimensional model displays convergent and divergent validity. The findings of unidimensional CFA support the application of the five-construct model for measuring the

safety climate. The assessment of the major fit indices shows that the structure of the safety climate scale is appropriate and thus, the scale is a valid and reliable tool to measure the safety climate issues in the Bangladeshi RMG Manufacturing industry.

6.5 Safety Climate Factors and their Interrelationships

First, the study shows that management commitment to safety is positively and significantly related to a safety communication $(\beta_{H3a} = .310, \text{with } p < 0.001)$. The result shows that management commitment to safety issues establishes an implicit and explicit statement to workers about the significance and value of workplace safety. The finding is in agreement with Hahn & Murphy (2008), who found that management commitment to safety was transmitted through communication in a nuclear weapon management site in the USA. In addition, Kath et al. (2010) found that management commitment to safety can change employees' safety behaviour through safety communication. This indicates that organisations must communicate to speed the safety commitment among all employees, so that the commitment is rendered into concrete actions. Barling et al. (2002) confirm that when managers prioritise safety, communicate higher safety morals and inspire workers to follow safety goals, this results in fewer occupational injuries. Hence, the more the management is committed to safety, the more likely they will communicate the required safety information to the employees, so that employees can work with the maximum safety. This also accords with a conclusion of Fernández-Muñiz et al. (2012) drawn from the study conducted on OHSAS 18001-certified organisations in Spain.

Next, the result shows that management commitment to safety is positively and significantly related to safety training $(\beta_{H3b} = .290, \text{with } p < 0.001)$. The finding shows that management commitment to safety is filtered down to all workers through the arrangement and implementation of safety training, which can have a noticeable impact on safety. It can be stated that management's commitment can increase the quality of training sessions, which motivates workers to acquire necessary information quickly and proficiently and this finding is consistent with the study of Demirkesen & Arditi (2015).

O'Toole (2002) found that lower workplace accident rates and an improved organisational safety culture are the consequence of management's commitment to safety training. Additionally, a study on limited-service (fast food) restaurants in the U.S. conducted by Huang et al. (2012a) found that when workers perceive that their management is committed to safety, they also perceives that the safety training is good, which impacts the future workplace injury incidents. Hence, it can be argued that workers' assessment of management's interest in their safety and well-being can be manifested through management's engagement in initiatives and activities such as safety training, which ultimately can impact the organisational safety performance. This finding also corroborates the findings of Vinodkumar & Bhasi (2010), Vinodkumar & Bhasi (2011) and Amponsah-Tawaih & Adu (2016).

Furthermore, the result shows that management commitment to safety is positively and significantly related to supervisor's safety support $\left(\beta_{H3c} = .236, \text{with } p < 0.001\right)$. The finding indicates that management commitment to safety leads to a situation where organisational safety policies are enacted by supervisors. According to Zohar & Luria (2005), management commitment to safety is reflected by the supervisory safety practices and that supervisors implement organisational safety policies and procedures promised by the management. The finding suggests a cascading influence by which management commitment to safety filters down through organisational hierarchies. Supervisors act as a 'channel' through which management's safety priorities are communicated and help workers regarding the correctness of their safety behaviour. This finding supports previous research of Simard & Marchand (1994), Hsu et al. (2010), and Lingard et al. (2012) who suggest that management commitment has effects on safety supervision of line managers, which in turn has positive effects on the safety awareness and employee safety practices. Further, in two construction samples from the UK and Spain, Meliá et al. (2008) have found that the organisational safety response and supervisor safety response are strongly correlated. Moreover, the fact that the current study identifies the relationship between management engagement and workplace safety is fully mediated by supervisors' safety

practice ($\beta = .038, \text{with } p = .021 < 0.05$), shows that the relationship between management and supervisors plays a critical role in the process of developing and maintaining the organisational safety climate. However, the study did not find any relationship between management commitment and workers' risk assessment. It is possible that workers can assess their workplace conditions as risky without completely understanding their management's commitment to safety, as other safety-related efforts might be inadequate elsewhere within the organisation.

To explore the supervisor's role in various safety climate factors, the study analyses three proposed relationships. First, the study shows that the supervisor's safety support is positively and significantly related to workers' safety risk assessment ($\beta_{H4a} = .116, \text{with } p < 0.05$). The finding suggests that a supervisor's safety assistance can positively influence workers' understanding of safety issues and thus, positively influence workers' perception of work safety. This finding is in agreement with Beus et al. (2010b), who found that perceptions of risk involved in the job can be shaped by supervisor actions. Likewise, Taylor & Snyder (2017) and Oah et al. (In Press) found that workers who perceive supervisor's as committed to safety practices may display positive feelings about lower risk in the workplace. Similarly, among construction workers, Meliá et al. (2008) found that workers who receive positive safety response from their supervisor can positively assess their risk in the workplace. Therefore, it can be perceived from the relationship observed in the study that the actions of supervisors who neglect safety practices and compromise their workers safety would definitely affect workers' perceptions regarding workplace risk.

Secondly, the study has found that the supervisor's safety support is positively and significantly related to safety training ($\beta_{H4b} = .216, \text{with } p < 0.001$). The finding suggests that supervisor assistance plays a significant role in influencing safety training intervention. This result could mean that the supervisor's safety support can encourage workers to learn more quickly about safety training practices, resulting in greater training transfer. The outcome supports the finding of Casey et al. (2018) who found that supervisor support

influences the effectiveness of training and the extent to which supervisors seek to support safety training is related with workers' safety compliance behaviours. In addition, a study based on a large metropolitan public transit agency conducted by Jiang & Probst (2016) found that supervisors' support acts as mentorship to prioritise safety, persuading employees to join and take part in safety related trainings, which ultimately helps to voice workers' suggestions to improve safety. Similarly, Du & Sun (2012) also found that managers' and supervisors' active safety leadership positively affects safety training. Therefore, the study result supports the view that supervisors assistance can significantly affect safety practices through supervisors manifestation of examples pertaining to reporting near-miss incidents, identification of hazards, and ways of avoiding injuries and accidents.

Contrary to expectations, this study did not find that the supervisor's safety support mediates the relationship between management safety commitment and safety communication $\left(\beta_{H4c} = .09, \text{with p} = .518 > 0.1\right)$. Although this result differs from previous research such as Lingard et al. (2012), one explanation behind the result could be the assigned role of the supervisor. Due to production pressure, role demand, or formal procedures, supervisors may be restrained from being able to communicate safety related issues with workers. A similar situation was suggested by Chitayat & Venezia (1984) and Conchie et al. (2013), who identified that leadership can have a ''lack of power'' because of the norms, regulations and procedures of an organisation. Therefore, rather than supervisors' "power over" safety processes, they only may have "power to" act in particular ways or specified safety activities. This result emphasises the necessity for factories to involve supervisors more with safety procedures, and seek suggestions for improvement, which may increase supervisors' feelings of autonomy and involvement in their safety role. However, the study has found a suppression effect of management commitment on the supervisor's support and safety communication. While the relationship of the supervisor's support and safety communication was insignificant, introducing management commitment to the relationship made it significant (increase in β from .037ns to .123,

p=.077 < 0.1). The result indicates that inspired and encouraged by management engagement, supervisors who were not otherwise able to communicate are more likely to communicate about safety. This finding helps us to understand that management engagement increases and improves the role of supervisory support in terms of safety communication and thus, supports the proposition of involving and empowering supervisors more in their safety role.

Lastly, to find the effect of safety communication and safety training on workers risk assessment, the current study analysed two relationships. The study focused that safety communication has a positive and significant influence on workers safety risk assessment ($\beta_{H5} = .294, \text{with } p < 0.001$). The result demonstrates that safety information can positively affect workers' perceived work safety. This means that if workers have more information about safety, they perceive their workplace to be more secure. The finding resembles the outcome of Oah et al. (In Press), who found that in manufacturing organisations various communications related to safety and hazards can lower workers' perception of risk. Furthermore, a study conducted on the agriculture and food industry by Verbeke (2005) found that consumer's risk perception intensifies based on food safety communication and negatively influences consumers' attitudes. Moreover, Riley (2014) found that different warning messages can draw individuals' attention and in turn, influence their risk assessments. Hence, the current study result implies the necessity of developing the conditions for open and free communication within the factories, which can encourage the exchange of safety information and improves workers' perceived work safety. One of the issues that emerges from this finding is that open communication is vital, as it helps to develop confidence in management, among co-workers, and improve personal safety commitment, all of which can lay a foundation for ensuring organisational safety.

Further, this study has been unable to demonstrate that safety training has a relationship with employees' safety risk assessment ($\beta_{H6} = .054, \text{with } p = .301 > .05$). While the finding contradicts other research results such as Duffy (2003), Becker &

Morawetz (2004), Leiter et al. (2009), our finding is similar to one study conducted by Meliá et al. (2008) in three different samples (English, Spanish and Chinese). In their study, they have found that, in the Chinese construction sample, the workers' perception of risk was not related to different organisational safety responses (i.e. safety structures, fulfilment of safety rules, safety inspections, safety training and information, safety meetings, promotional campaigns and safety incentives and sanctions). There are several possible explanations for this result. One explanation is related to the way workers perceive their relationship with risks. Manufacturing industry is hazardous; the occurrence of accidents is not rare, and the significance of workers' behaviour in increasing or reducing risks is particularly obvious. On the other hand, due to the fact that risk assessment is subjective (Starren et al., 2013), it can differ between workers (Flin et al., 1996). Thus, in the hazardous environment of the manufacturing industry, workers may psychologically defend themselves by subjectively concluding that risk is a result of external factors or attributed to chance and not to their own safety behaviours. Therefore, workers try to side-step blame for likely accidents and evade responsibility for the presence of risks. In a study conducted by Alamgir (2014) it was found that 73% of the workers thought that fatal fires or other accidents could not be prevented anyway and their ANOVA result showed that the perception did not differ between trained and untrained workers. Hence, due to the self-protecting attribution bias for avoiding accepting responsibility for risks, safety training might not influence the risk assessment of the workers.

A second explanation of the result might be that the safety training provided to the workers was not adequate to enable them to identify the hazards and risks related to their work. The training in the factories might only demonstrate what to do in case of fire or in an emergency, while it may not demonstrate how to identify possible hazardous situations that can lead to accidents. Hence, despite the fact that workers perceive that their training is adequate enable them to escape from emergency and save their lives, the training might not be adequately devised to identify the indiscernibility/existence of risk factors within their work process that ultimately can lead to an emergency.

Thirdly, the outcome may be explained by a suppressor effect, which increases the predictive validity of another variable by its inclusion in a regression equation (Conger, 1974; Cohen & Cohen, 1983: 94). According to the correlation matrix (see Appendix F, Table F.1), safety training and risk assessment are significantly correlated (0.357, $p < 0.01$). Following the suggestion of Lu & Yang (2011), a series of regressions was performed to further examine the suppressor effect and the study found that only management commitment showed a positive beta weight ($\beta = 0.242$, $p \leq 0.001$) with safety training which suggested that management commitment is a suppressor, suppressing the effect of safety training on workers' risk assessment. The result seems to suggest that the relationship between safety training and workers' risk assessment is stronger among workers whose management has a high commitment to safety. From the identified reasons discussed above for the insignificant relationship between safety training and workers' risk assessment, it can be suggested that there is a need for intervention. Management involvement should address work-related risk through training by showing the connection between supervisors, workers, organisational risk preventive actions and workers' safety and well-being consequences.

6.6 Antecedents of Safety Performance

To identify the antecedents of safety performance, EFA was conducted for three difference constructs related to safety behaviour and workplace security. First, EFA was performed for 9 items of workplace security and explores the two-factor structure solution (i.e. workplace safety and workers safety). However, the first factor was identified as more suitable for the model, since all its four items are related to identifying workplace accidents. Moreover, the mean scores for the four items are in the lower half of the distribution (overall mean score 1.65). This confirms that workers were not involved in work related accidents such as experiencing electrical short-circuit or fire explosions, involvement in machine-related accidents, or injuries that prevented them from being able to go to work. These items reflect the suggestions of previous research such as Barling et al. (2002), Probst et al. (2013), Hon et al. (2014), and Aryee & Hsiung (2016).

Secondly, the study explored the structure of safety participation and safety compliance construct, which is suggested by different scholars as a measure of safety performance (DeArmond et al., 2011; Fernández-Muñiz et al., 2014; Hon et al., 2014; Sampson et al., 2014; Barbaranelli et al., 2015). EFA was performed for 8 items of safety participation and a single factor structure (workers' engagement) identified. Mean scores for all the five items in the factor are spread in the lower half of the distribution (overall mean score 1.54) and the items represent participation in safety activities such as encouraging co-workers to get involved in safety-related activities, reporting near-miss incidents, stopping violation of safety procedures, and attending non-mandatory safety meetings. Similarly, EFA was performed for 5 items of safety compliance and a single factor structure (workers habit) identified. Mean scores for all the four items in the factor are spread at the lower half of the distribution (overall mean score 1.55) and the items represent safety compliance activities such as following standard operating procedures, appropriate work practice, ensuring safety while working and not ignoring safety issues while in a hurry. All the items of safety participation and safety compliance corroborate the suggestions of previous research such as Neal and Griffin (2002, 2006), Burke et al. (2002), Hofmann et al. (2003), Clarke (2006b), Christian et al. (2009), Vinodkumar & Bhasi (2010), Lu & Yang (2011), Martínez-Córcoles et al. (2013), Fernández-Muñiz et al. (2014), Hon et al. (2014), and Yuan et al. (2015)

Further, all the factors (workplace security, safety participation and safety compliance) from the safety performance dimension display a good fit in the unidimensional CFA model (x^2/df=2.219, p=.001 (p>0.05), RMR=0.002, SRMR=0.054, RMSEA=0.069 with a PCLOSE of .107, CFI=0.973, TLI=0.956, IFI=0.973, PNFI= 0.682, and PCFI= 0.595). Besides, the unidimensional model demonstrates convergent and divergent validity. The findings of unidimensional CFA support the application of the three-construct model for measuring safety performance. The assessment of the major fit indices shows that the structure of the safety performance scale is appropriate and thus, the scale is a valid and reliable tool to measure safety performance issues.

6.7 Relationships between Safety Climate and Safety Performance

The study shows that all the safety climate factors are related to at least one of the safety performance factors. The result shows that safety communication ($\beta_{H7a} = .268, \text{with } p < 0.001$) is related to safety participation of workers. It suggests that safety information and workers' work safety assessment can influence workers' engagement in behaviours that support and create an atmosphere to conducive to organisational safety. The finding supports the result of Griffin & Neal (2000), and Lu & Yang (2011), who found that safety communication is significantly related with safety participation behaviour. Additionally, Cigularov et al. (2010) found that contractors who use communications are more likely to increase workers' safety awareness and derive safety participation behaviours such as reporting of safety problems, errors, near-misses, unsafe conditions, or practices. Furthermore, Curcuruto et al. (In Press) have found that supervisors' safety communication is highly related with workers' safety participation behaviour. This result provides a direction towards a well-developed safety communication system within the factories that can affect employees' motivations to participate voluntarily in safety behaviours.

The current study also found that risk assessment ($\beta_{H7a} = .116, \text{with } p < 0.05$) is significantly and positively related to workers' safety participation behaviour. Although contradictory to the insignificant effect found by Ford & Tetrick (2011), the result suggests that when workers perceive work safety positively, then they are more likely to participate voluntarily in safety activities. The result supports the findings of Xia et al. (2017) who found that direct risk perception acts as a motivator to elicit workers' safety participation behaviours. Similarly, Thurston & Glendon (2018) found that risk assessment enhances workers' participation in safety related activities. Therefore, it can be perceived that organisational efforts to encourage workers' safety participation behaviours can be enhanced by developing workers' positive risk perception with interventions in certain factors, such as through effective communication. Previous studies (Gyekye, 2006; Bohm &

Harris, 2010) have found that sharing information or accident simulation can help to strengthen workers' risk perception.

On the other hand, management commitment was found to be significantly and positively related to safety compliance ($\beta_{H7b} = .189$, with $p < 0.001$). This suggests that when workers have a positive view of management commitment, they are more likely to comply with organisational safety rules, standards, and procedures. The finding is similar to the study of Vinodkumar & Bhasi (2010) who found that management commitment predicts safety compliance behaviour directly. Similarly, a study on 50 different lighting processing, metal, shoes, electronics, and toys manufacturing companies, by Liu et al. (2015) found management commitment to be the most proximal antecedent of safety compliance behaviour. This result is consistent with previous scholars' deductions that management commitment is critical to employee safety performance (Christian et al., 2009; Kao et al., 2009; Hon et al., 2014; Amponsah-Tawaih & Adu, 2016; Smith et al., 2016). Hence, the result suggests that management commitment to workers safety related activities leads to worker dedication to comply with organisational safety regulations and practices.

Similarly, the current study shows that safety training has a significant positive relationship with workers' safety compliance behaviours ($\beta_{H7b} = .149$, with $p < 0.01$). This suggests that effective safety practice influences workers' habit complying with safety rules and regulations. The finding is similar to the study of Lu & Yang (2011) in which they found that safety training is a major predictor of safety compliance behaviour in the context of passenger ferry operations. Additionally, a recent study on safety training intervention in the Australian prawn fishing industry by Casey et al. (2018) has revealed that the perception of the safety training transfer climate was positively related to the rate of safety compliance behaviours. Furthermore, Shin et al. (2015) found that safety training is directly and positively related to the affective commitment to safety behaviour. Our finding is consistent with other studies (DeJoy et al., 2000; Harvey et al., 2001; Vredenburgh, 2002; Zohar, 2002a; Christian et al., 2009; Hadjimanolis et al., 2015) and suggests that when the workers

are well trained regarding safety, their safety performance gets better. Therefore, a comprehensive training programme needs to be introduced to make the workers systematically understand human errors and unsafe behaviours in manufacturing operations, to ensure overall organisational safety performance.

Lastly, the result shows that the supervisor's safety support has a significant positive relationship with workplace security. This suggests that the supervisor's assistance reduces the chance of being involved in an accident and increases workplace safety. The finding is similar to a study by Zohar (2000), who found that 16% of the variance in injuries was accounted for by supervisory actions and expectations. Additionally, in a subsequent study, Zohar (2002b) found that for shop-floor employees, transactional supervision enhances safety performance consistency. In addition, other studies (i.e. O'Dea & Flin, 2001; Zohar, 2002a) show that transformational supervisory leadership is linked to improved safety records. Furthermore, Wu et al. (2017) found that along with management, frontline supervisors also take a major part in accident prevention role. The study result expanded upon these findings by suggesting that more active supervisors can develop positive social exchange relationships with workers that can help to reduce accidents or injuries and increase workplace security. According to Zohar (2000: 594), active supervisors are *"perceived as regularly monitoring subordinates' performance, obtaining reliable information, and providing contingent responses"*.

Along with the supervisor's safety support, the study also found that safety communication has a significant relationship with workplace security ($\beta_{H7c} = .189, \text{with } p < 0.05$). The results show that the more safety information is circulated, the more likely it is that workers will have fewer workplace accidents or injuries and improve workplace security. The result is consistent with the finding of Mearns et al. (2003), who found that communication was significantly correlated with the rate of accidents. Furthermore, Huang et al. (2018) found that quality of communication is significantly related with lost time injury (i.e. the number of work days lost due to injury) among long-

haul truck drivers. Moreover, in a study based on outdoor recreational safety, Cheng et al. (2016) found that safety information can improve the responsiveness of recreationists to likely risks and decrease the rate of accidents. Hence, the result suggests that proper and clear installation of safety signs in places, demarcation of the scope of safety activities, and circulation of safety information provides workers with safety parameters to follow and supports them to recognise hidden hazards which can ultimately reduce workplace accidents and increase workplace security.

6.8 Relationships between Institutional Perspectives and Safety Climate

The findings of the study demonstrate that institutional factors are related to at least two of the safety climate factors. First, the study found that regulative institution has a significant positive impact on management commitment to safety ($\beta_{H8a} = .238, \text{with } p < 0.001$) and employees' safety risk assessment ($\beta_{H8a} = .299, \text{with } p < 0.001$). The first relationship suggests that regular governmental inspection can increase management engagement to safety activities. The finding corroborates the finding of Hossain et al. (2015), who found that, regulatory pressure has a positive impact on management commitment to adopt occupational health and safety within private universities in Bangladesh. Furthermore, Zhang et al. (2017) found that when the government carries out regular safety inspections and investigates hidden risks, leadership safety behaviours improve (i.e. management commitment to safety, safety communication and feedback, safety policy, safety training, and safety incentive). Similarly, the second relationship suggests that regular governmental inspection can improve workers perception of their work safety. It suggests that the more governmental or regulatory bodies inspect (i.e. regular inspection of building structural safety, properly planned spaces for different manufacturing activities, and installation of safety equipment), the better workers' risk assessment will be. These relationships are justifiable because when the government formulates an inclusive workplace safety laws and regularly monitors the application of such law(s), management will be more committed to comply with those safety laws to

survive in the industry or avoid sanctions. Additionally, when workers perceive that the government is regularly monitoring and inspecting their workplace, the workers will be assured about their safety and they will perceive their workplace to be safe. Therefore, the result suggests that national government's attitude toward safety has a great influence and acts as a crucial factor to ensure the organisational safety climate in Bangladesh.

Secondly, the normative institutional perspective was found to be related to supervisors' safety support ($\beta_{H8b} = .226$, with $p < 0.001$), safety communication ($\beta_{H8b} = .227$, with $p < 0.001$), and safety training ($\beta_{H8b} = .137$ with $p < 0.05$). Contrary to He et al. (2016) who did not find any evidence to establish a relationship between normative pressures and applicability of organisational safety procedures and work practices, the current study has found significant evidence of such relationships. The results illustrate that normative institutions influence the applicability of safety procedures and work practices (i.e. safety communication, safety training, and supervisor's safety support). The result suggests that when industry associations or unions or governing bodies offer common messages and promote standards on the necessity and significance of having best practices such as effective communication, efficient training and the role of supervisors within the factories to ensure workplace safety, organisations tend to implement them and emphasise those issues more. The result is similar to the findings of Zhao et al. (2017) who found that in terms of place branding strategy, organisational behaviour regarding trust is primarily an outcome of industrial norms and behavioural rules created by the professional organisations or industry associations. A number of other studies (Trevino et al., 2008; Bhakoo & Choi, 2013; Berrone et al., 2013; Bunduchi et al., 2015) have also found the influence of normative institution on adoption of different organisational activities and practices, from adopting innovation to supply chain management. Therefore, the result suggest that normative institutions are a powerful or proximal factor to result in organisational change in safety procedures and practices.

Finally, the study has found that the cultural-cognitive perspective of the institution has relationships with four of the safety climate factors: management commitment (β_{H8c} = .311 with $p < 0.001$), supervisors' support (β_{H8c} = .186 with $p < 0.01$), safety communication (β_{H8c} = .156 with $p < 0.001$) and workers' risk assessment (β_{H8c} = .121 with $p < 0.05$). The result suggests that the cultural-cognitive atmosphere of an industry can also significantly encourage organisational applicability of safety procedures and work practices. Similar to the current study outcome, He et al. (2016) found that mimetic institutional pressure significantly affects organisational safety commitment, clarifying workers' safety responsibilities, regulating safety procedures, and developing safety perceptions among organisational members. In addition, D'aunno et al. (2000) have found that cognitive institutional elements contribute to endorsing divergent organisational changes. Furthermore, Kostova & Roth (2002) found that the cognitive institutional profile can influence the variance in organisational internalization. Besides, Combs et al. (2009) found that due to mimetic pressure, organisations tend to implement training to managers, believing that will improve organisational results. Therefore, the result suggests that when culturally constructed ideals are cognitively followed, such as safety values, standards, and rules that are ubiquitous throughout the industry, organisations tend to internalise those practices.

Moreover, the cultural atmosphere enables industry standards (working conditions, labour rights, training etc) to be a fact taken for granted, which can reduce or substitute the roles of the regulatory institution to some extent. This argument has been discussed previously in this chapter and has not been conferred in the extant literature, which requires further attention and investigation. Nevertheless, the results led us to believe that while all the institutional perspectives are pivotal to ensure the organisational safety climate, the process of establishing safety as a convention within the industry is more intensely rooted in the cognitive and normative aspects of the institution than in the regulative aspect. This assertion is in agreement with the findings of Trevino et al. (2008). The basis of this assertion is that safety rules, regulations and laws do not cover every detail

of safety operations and procedures, which can be dynamic and complexly related to specific situations. In such a case, rules, regulations, and laws only provide procedural instruction and guidance rather than definitive protocols. Alternatively, norms and culturally established standards usually offer some insights and benchmarking to safety procedures and thus, are decisive to the institutionalisation process. However, our findings suggesting that institutional perspectives have an influence on adopting or changing organisational practices corroborate various other studies in different contexts, such as Guler et al. (2002), Caronna (2004), Björkman et al. (2007), Kim et al. (2010), Huo et al. (2013), Kim et al. (2013), and Pasamar & Alegre (2015).

6.9 Relationships between Institutional Perspectives and Safety Performance

The study finds that institutional perspectives have significant relationships with safety performance factors. First, the result indicates that the regulative perspective influences safety compliance behaviour ($\beta_{H9a} = .250$, with $p < 0.001$). The results suggest that regular governmental inspection can influence workers' safety habit. When workers perceive that the workplace and its safety practices are being regularly monitored by government agencies, it seems that the workers tend to participate and get involved in safety activities. Secondly, the normative perspective influences safety compliance behaviour ($\beta_{H9b} = .280$, with $p < 0.001$) and workplace security ($\beta_{H9b} = .214$, with $p < 0.001$). The result suggests that industrial norms promoted by consulting firms or industry associations help in changing workers' perception of safety activities and developing safe working habits. This is also evident in the relationship with workplace security. When the industrial norm changes the habit of workers in terms of safety practices, the workplace will be more secure. Workers will be more willing and involved to reporting near-miss incidents, identifying hazards or preventing unsafe activities. The result is similar to the finding of He et al. (2016), that institutional pressures significantly affect employees safety involvement. Additionally, Elg et al. (2017) found that local institutional context can change employee behaviours to support legitimacy and help aligning organisational policy with country

contexts. Moreover, Susskind et al. (2014) also found that institutional influence has a significant impact on individuals' perceptions, beliefs, and attitudes. The results corroborate findings from various other studies, which found that institutional environment can enhance different aspects of organisational performance such as financial and non-financial performance (Guo et al., 2014; Esteban-Lloret et al., 2014), export performance (Ngo et al., 2016), supply chain performance (Wu & Jia, 2018), and CSR performance (Kim et al., 2013; Martínez et al., 2016).

Furthermore, the study finds that the cultural-cognitive perspective has an influence on workers' safety participation behaviour. Interestingly the observed relationship was significantly negative ($\beta_{H9c} = -.110, \text{with } p < 0.05$), which means that the when safety standards are culturally established within the industry, workers' safety engagement decreases. One possible explanation behind the negative relationship could be that, safety participation is voluntary and discretionary in nature, which involves extra-role activities (Neal & Griffin, 2002; Lu & Yang, 2011; Xia et al., 2017). Workers need self-motivation to engage in safety participation, rather than complying with obligatory safety rules and regulations (Hon et al., 2014). Therefore, when workers perceive that safety is culturally-cognitively established in the industry, they see safety as taken for granted in the organisation. As a result, they might refrain from participating in voluntary safety activities. Hence, the organisation may increase workers' motivation by introducing a reward system for voluntary safety activities, to ensure workers' safety engagement.

6.10 Antecedents of Governance

To identify the antecedents of the governance dimension, the study conducted EFA for three different constructs, namely accountability, anti-corruption, and rule-of-law. First, the EFA was performed for 16 items of accountability and explores two-factor structure solution (answerability and responsibility). However, the first factor is more suitable for the model, since all its 10 items are related to identifying procedural, vertical, and horizontal organisational accountability towards ensuring safety. Moreover, the mean scores for all 10

items are in the lower half of the distribution (overall mean score 1.62). This confirms the workers' perception of their companies' accountability towards safety, where they believe that their company is accountable for a regular audit of electrical safety, active involvement of staffs, or awareness programme to communicate safety and security. In addition, they believe that their company is accountable to government for periodical inspection of all fire protection equipment and responsible to the government for regular supervision of building structural safety. Furthermore, the workers believe that companies are responsible for arranging employer-employee dialogue, allocating full-time safety representatives, establishing health and safety committee and providing a resting place for employees. The items associated with the accountability factor replicate the suggestions of previous research such as Bovens (2007), Hall et al. (2007), Chen et al. (2012), Hall et al. (2015), and Peng et al. (2015).

Secondly, EFA was performed for 12 related to the anti-corruption construct and found a two-factor structure solution (i.e. ethicality and transparency). However, the first factor is more suitable for the model, since all its 5 items are related to identifying demand and supply of unethical activities of organisations. Due to the negative phrasing of the questions, the mean scores for all five items are in the upper half of the distribution (overall mean score 4.02). This confirms the workers' belief that their companies are not involved in paying money to officials and auditors to avoid safety compliance issues with the factory, getting safety certificates without inspection, or involving management representatives in safety committee. The items associated with the anti-corruption behaviour factor mirror the suggestions of previous research such as Collins et al. (2009), Spencer & Gomez (2011), Tabish & Jha (2012), Pillay & Kluvers (2014), and Athanasouli & Goujard (2015).

Finally, EFA for 12 items was performed for the rule-of-law construct and the study explored a two-factor structure solution (i.e. rule conformity and rule implementation). The first factor was found to be more fitting for the model, since all its 7 items are related to identifying conformity with institutional rules by the organisations and access to justice.

The mean scores for all seven items are at the lower half of the distribution (overall mean score 1.67). This suggests that workers perceived that their companies followed the rules prescribed by the government. The workers believed that their companies would be penalised by the government in case of any accidents, and their company did not force employees to sign in dismissal letters or force pregnant workers to be dismissed. Additionally, they revealed the minimum payments on time and worked maximum of eight hours a day. The items associated with the rule-of-law factor resemble the suggestions of previous research such as Skaaning (2010), May (2011), and Roxas & Chadee (2013).

Further, all the factors (i.e. answerability, ethicality, and rule conformity) from the governance dimension demonstrate a good fit in the unidimensional CFA model (x2/df=1.336, p>0.05; RMR=0.002, SRMR=0.049, RMSEA=0.036 with a PCLOSE of .742, CFI=0.993, TLI=0.989, IFI=0.993, PNFI= 0.662, and PCFI= 0.648). Also, the unidimensional model shows convergent and divergent validity. The findings of unidimensional CFA support the application of the three-construct model for measuring the governance construct. The assessment of the major fit indices shows that the structure of the governance scale is appropriate and thus, the scale is a valid and reliable tool to measure the safety administration and direction issues within the RMG industry.

6.11 Governance Factors and their Interrelationships

The current study has found that the governance constructs are closely linked together. The study identifies that the path coefficient between rule-of-law and accountability ($\beta_{\mathbf{H12a}} = .196, \text{with } p < 0.001$) is positive and significant. This suggests that ensuring rule of law delivers means holding organisations accountable for their actions. A study in five different countries by Joshi (2017) found that legal empowerment can significantly increase organisational involvement with communities to enhance their credibility by being more accountable towards society. Furthermore, they found that implementing the law is critical because the *"shadow of the law in the background, makes accountability work at the local level somewhat easier"* (Ibid: 168). Additionally, Elbasani &

Šabić (2018) found evidence that enforcement of EU-promoted rule of law keeps power holders accountable and offers institutional and social protection. Besides, a study by Farrall (2014) on the UN Security Council's practice found that the rule of law and accountability has a mutually reinforcing interdependent relationship. A similar argument have been suggested by other scholars such as Selznick (2016: 26), Gomes (2017) and Vuković (2018). Based on the current finding, consisted with previous research, it can be assumed that the rule of law is a rational foundation of organisational accountability. This suggests that by influencing accountability, rule of law can protect fundamental workers' rights, enhance access to justice for vulnerable workers, and improve the industry safety environment and institutional effectiveness.

Secondly, the study illustrates that rule-of-law has an influence on anti-corruption ($\beta_{\mathbf{H12b}} = .250, \text{with } p < 0.001$). This suggests that ensuring rule conformity increases the ethical behaviours of the organisation. The result is similar to the generally established negative relationship between government inefficiency of implementing laws and corruption, across different countries (Shleifer & Vishny, 1993; Davis, 2004; Dawson, 2013; Kim et al., 2018; Mauro et al., In Press). Haggard & Tiede (2011) in their study on 74 developing and transition economies found that rule of law not only restraint private power, but also restrains illegal exchange between private beneficiaries and state bureaucrats and politicians. Additionally, Nwabuzor (2005) found that due to weak enforcement of the rule of law, developing nations like Nigeria and Venezuela have severe problems of corruption in managing their oil wealth. Furthermore, as previously discussed, a meta-analytic study by Judge et al. (2011) found that legal factors are strongly correlated antecedents of corruption. This suggests that institutional checks or enforcement of laws can reduce unethical organisational behaviour. Therefore, government involvement in regulatory execution by setting exemplary prosecution and punishment, such as heavy fines or heavy jail terms is necessary, to ensure companies' ethical behaviour in terms of complying with safety practices.

Finally, the study finds that accountability has a strong positive relationship with anti-corruption ($\boldsymbol{\beta_{H13}} = .370, with\ p < 0.001$). The finding suggests that when organisations are answerable for their activities to institutions, they tend to behave more ethically. Similar to the current study result, Lederman et al. (2005) found that formal accountability mechanisms within a given country, systematically decrease the corruption level. Furthermore, a recent systematic study by Lyrio et al. (2018) on 63 articles reveals that scholars have concluded that weak accountability mechanisms enable corruption activities. Moreover, as previously discussed in the literature, Lindstedt & Naurin (2010) and Lambert-Mogiliansky (2015) found that accountability through declaring information and social accountability mechanisms (e.g., social audit, community monitoring, citizen report cards, and complaint mechanisms) can reduce the level of corruption. Drawing on the result and literature support, the study argues that the ethical behaviour of an organisation is a product of the quintessential concept of accountability. It can be assumed that a well-designed accountability procedure involving different institutions and stakeholders can play a significant role in reducing the extent of organisational corruption.

6.12 Governance and its Relationships with Safety Performance

The study has found new evidence on the relationship of governance with safety performance factors. The study shows that accountability, rule of law, and anti-corruption have relationships with workplace security and workers safety participation behaviour. First, the study indicates that accountability influences workplace security ($\boldsymbol{\beta_{H11a}} = .316, \text{with } p < 0.001$). This suggests that when organisations are answerable to someone, their workplace safety increases. It seems that when organisations become accountable for their actions to authority, stakeholders, or society, they tend to follow industrial safety standards, which ultimately can decrease accidents and injuries. The study result is similar to the study of Peng et al. (2015) who suggested that organisational practices that increase the sense of accountability among employees can develop a regulatory fit effect that improves safety performance.

Secondly, rule of law is found to be associated with workers' safety participation behaviour ($\beta_{H11b} = .274$, with $p < 0.001$). The result suggests that when organisations are obliged to conform to laws due to strong rule of law implementation, workers become more voluntarily active in safety activities. The explanation behind the relationship is that due to the strong rule of law, organisations are impelled to comply with industrial standards, hence, showcasing the significance and importance of maintaining and ensuring safety, which ultimately drives workers to participate in safety activities. The results are similar to the finding of Cheng et al. (2010) who illustrate that the degree of compliance with labour safety laws is responsible for workplace accidents for small construction enterprises. Furthermore, Hong et al. (2018) found that government laws and regulation can play an active part in improving safety performance.

Finally, the study shows that anti-corruption behaviour influences both workplace security ($\beta_{H11c} = .421$, with $p < 0.001$) and workers' safety participation behaviour ($\beta_{H11c} = .348$, with $p < 0.001$). This suggest that when an organisation behaves more ethically, organisational safety performance increases. The finding illustrates that when organisations are not involved in corrupt behaviours, workplace security increases. This suggests that if an organisation operates in a country where the frequency of corruption is high, the possibility of legal action against any violation of rules and standards is low and thus, organisations may ignore international and domestic legislation leading to workplace accidents. While research in Bangladesh shows that corruption has a positive influence on RMG firms' productivity (Fernandes, 2008) and industry growth (Ahmed et al., 2014), it is inevitable and confirmed through historical records of industrial accidents that in the long run corruption, can create conditions for industrial tragedies. In addition, the result seems to suggest that the ethical behaviour of an organisation increases workers' involvement in voluntary work safety practices. The explanation behind the involvement might be that when an organisation is not involved in corrupt behaviours, its management practice and organisational policies portray the commitment towards safety and sends a cue to the workers about the significance and importance of safety in the organisation. Therefore,

workers become influenced by the different organisational safety activities and become motivated to practise and participate more in safety activities. The study result also resembles the findings of other studies (Donadelli et al., 2014; Haider et al., 2018; Cooray & Dzhumashev, 2018; Zakharov, In press) where it was found that anti-corrupt behaviour positively influences organisational performance.

6.13 Mediating Role of Governance Factors

The study offers new evidence on the mediation effect of governance factors within the relationships of institutional perspectives and safety climate factors. The study has found that governance factors mediate, fully or partially, the various relationships between institutional factors and organisational safety practices. The study illustrates that the relationship between normative institutions and management safety commitment is fully mediated by organisational accountability (β=.211; with $p<0.01$). Similarly, the study has found that anti-corruption behaviour also fully mediates the relationship between normative institutions and management safety commitment (β=.209; with $p<0.01$). The results suggest that industrial norms affect management commitment to safety more when organisations become answerable for their activities. It means that the obligation of an organisation to justify its activities, take responsibility for those activities, and disclosing the results makes the management more committed to following or practising industrial safety norms. In a similar vein, when the government ensures that the organisation does not get involved with corrupt activities, management becomes more engaged in ensuring industrial safety norms. This resembles the finding of Athanasouli & Goujard (2015) who demonstrated that corruption affects management practices and reduces aggregate productivity. Hence, the result suggests that when management cannot bribe/influence governing bodies or cannot take illegitimate ways to put their self-interest ahead of the organisational interest, management engage more to ensure that the organisation comply with industrial safety norms and practices.

Furthermore, the study has found that accountability also fully mediates the relationship between the regulative perspectives and supervisor's support (β=.144, with p<0.001) and that between the regulative perspective and safety communication (β=.109, with p<0.001). This suggests that governmental inspection is more effective in terms of implementing safety communication and ensuring supervisor's support when organisations are answerable to someone. It seems that despite having a factory inspection by governing bodies, the organisation will be forced to ensure supervisory safety assistance and provide safety information when it becomes answerable for its activities. These results show that accountability can enhance participatory practices and availability of information within an organisation, which is consistent with the finding of a bibliometric study on the public sector conducted by Lyrio et al. (2018). In addition, the study also identifies that rule of law fully mediates the same relationship between the regulative perspective and safety communication (β=.112, with p<0.01). This means that governmental inspection is more effective in terms of ensuring safety communication when organisations are forced to conform to the rules. This suggests that governmental inspection along with ensuring rule of law (penalty in case of non-compliance) can force organisations to provide necessary safety information to workers.

The study also has found that accountability partially mediates the relationships between cultural-cognitive perspectives and four safety climate factors (i.e. management commitment, supervisor's support, safety commitment, and risk assessment). In addition, it has been identified that accountability partially mediates the relationships between the normative perspective and three safety climate factors (i.e. supervisor's support, safety commitment, and safety training). Similarly, the study has found that the rule of law partially mediates the relationships between cultural-cognitive perspectives and safety climate factors (i.e. supervisor's support, safety commitment, and risk assessment). From all these mediation effects, accountability seems to be a stronger mediator between institutional perspectives and implementing organisational safety practices. However, the result suggests that making organisations accountable or ethical or obidient to the laws can

play a very crucial role in varying degree (fully or partially) to ensure management commitment to safety and creating a compulsion to pledge safety practices in factories.

6.14 Impact of Compliant and Non-Compliant Factories

The invariance test, using multi-group analysis, for the research model has discovered that the factory types (compliant and non-compliant) differ at the overall level. Based on the chi-square difference test, structural weights, structural covariances, and structural residual values, the research model reveals that factory types moderates the relationships between institutional perspectives, governance, safety climate and safety performance. A few of the individual variables shows that the value of Std. β is significantly different, while for other direct relationships, most of the relationships tend to be stronger for compliant factories but insignificantly different. However, analysing the results suggests that the influence of industrial standards on industrial norms has more impact on complaint factories than non-complaint factories. In a similar vein, the result shows that industry standards and governmental inspection influence management commitment and workplace security more in compliant factories than non-compliant ones. Due to the fact, that compliant factories tend to comply with institutional standards, norms, and rules more, it is obvious that the institutional influence will impact compliant factories more.

Nevertheless, the study has found that the relationship between anti-corruption behaviour and workplace security impact is stronger for non-compliant factories. It seems logical that when non-compliant factories behave unethically, their work becomes less safe, which means the occurrence of accidents is higher. This suggests that for a non-compliant factory, the organisation falls short of maintaining industry standards, norms and regulation. In addition to the situation, when these organisations engage in corrupt behaviour to hide their deficiencies and problems, it leads to more workplace accidents. In addition, the study found that the effect of management's commitment to worker safety complaint behaviour is stronger for complaint factories. It seems to suggest that when workers know they work in a compliant factory, management commitment on safety

motivates workers to participate and engage in safety behaviour more. In contrast, workers from non-compliant factories know that their management is not committed to their safety. Hence, even if the non-complaint organisations arrange safety training or other safety activities, workers are not driven to engage in safety behaviours and activities, as they think risk is unavoidable.

Furthermore, the study found four of the indirect relationships are significantly different between the groups, while other mediating relationships tend to be stronger for compliant factories but insignificantly differ between compliant and non-compliant factories. The study shows that accountability has more influence on the relationships between industrial norms, governance inspection, and management engagement in compliant factories. Similarly, accountability has more influence on the relationships between industrial norms, governance inspection, and safety communication in compliant factories. The results suggest that institutional norms and regulations affect management commitment and their safety communication more when compliant factories are more accountable to someone. This confirms that in a compliant factory, the organisation tends to follow the rules and standards prescribed by the institutions. However, these compliant factories will follow and execute safety activities more if they are accountable to proper authority or stakeholders or to society. Alternatively, the reason for finding an insignificant difference between groups can be that the impact of the relationships between the variables is the same for both the compliant factories and non-compliant factories. For example, in the case of compliant factories, positive management commitment to safety will influence better training, communication, and better support from the supervisors, while the same impact will be observed if in non-compliant factories management offers the same commitment to safety. Also, for the same reason, the impact of other relationships does not differ between compliant factories and non-complaint factories.

6.15 Summary

This chapter has contributed to the existing literature and extends our understanding of the effect of different institutional factors and governance mechanisms have upon the likelihood of implementing organisational safety climate and improving safety performance in the Bangladeshi RMG manufacturing industry. The chapter provides logical explanations for the approved relationships, which are compatible with the theoretical underpinnings of the current research. In general, the chapter has identified and discussed three external macro factors (government inspection, industry norms, and industry standards) and intermediary mechanisms (accountability, anti-corruption, and rule of law) that influence management commitment and supervisors support followed by the application of safety procedure and work practice process. Consequently, the study reveals that along with the process, organisations tend to improve their safety performance. The following Table 6.1 reviews the connection between research objectives, conditions of the relationships, findings and research implications.

Table 6.1: The Link between Research Objectives, Research Findings and Research Implications

Research objectives	Condition(s)	Findings	Implications
Examine how institutional perspectives systematically influence safety climate in the Bangladeshi RMG manufacturing industry	The explicit regulative pressure commonly takes the crucial role of compelling organisations to adopt proper safety measures to safeguard their people. In contrast, the normative and cultural-cognitive perspectives influence organisations in a less persuasive way to behave in a specific manner that is considered as valid among their peers within their professional network	Institutional factors are related to at least two of the safety climate factors. The regulative institution has a significant positive impact on management commitment to safety ($\beta_{H8a} = .238$, with $p < 0.001$) and employee's safety risk assessment ($\beta_{H8a} = .299$, with $p < 0.001$) Additionally, the normative institutional perspective has found to be related to supervisors' safety support ($\beta_{H8b} = .226$, with $p < 0.001$), safety communication ($\beta_{H8b} = .227$, with $p < 0.001$), and safety training ($\beta_{H8b} = .137$ with $p < 0.05$) Furthermore, the cultural-cognitive perspective of the institution has significant relationships with four of the safety climate factors: management commitment to safety ($\beta_{H8c} = .311$ with $p < 0.001$), supervisors' safety support ($\beta_{H8c} = .186$ with $p < 0.01$), safety communication ($\beta_{H8c} = .156$ with $p < 0.001$) and employee's safety risk assessment ($\beta_{H8c} = .121$ with $p < 0.05$)	1. When the government will formulate inclusive workplace safety laws and regularly monitors the application, management will be more committed to complying with those safety laws in order to avoid sanctions and survive in the industry. Additionally, when workers will perceive that the government is regularly inspecting their workplace, the workers will be assured about their safety and they will perceive their workplace to be safe. 2. When industry associations or unions or governing bodies offer common messages and promote standards on the necessity and significance of having best practices such as effective communication, efficient training and the role of supervisors within the factories to ensure workplace safety, organisations tend to implement them and emphasise those issues more. 3. Culturally constructed ideals are cognitively followed, such as safety values, standards, and rules that are ubiquitous throughout the industry, organisations tend to internalise those practices. The findings suggest that regulations and laws only provide procedural instruction and guidance rather than definitive protocols. Alternatively, norms and culturally established standards usually offer some insights and benchmarking to safety procedures and thus, are decisive to the institutionalisation process.
Investigate how institutional perspectives affect organisational safety performance	All the three institutional dimensions offer an outline for action and provide details on both the organisational structures and the actions of individuals within those structures.	The regulative perspective influences safety compliance behaviour ($\beta_{H9a} = .250$, with $p < 0.001$). The normative perspective influences both safety compliance behaviour ($\beta_{H9b} = .280$, with $p < 0.001$) and workplace security ($\beta_{H9b} = .214$, with $p < 0.001$). Interestingly, the study has found a significantly negative relationship between the cultural-cognitive perspective and workers' safety participation behaviour ($\beta_{H9c} = -.110$, with $p < 0.05$).	1. When workers perceive that the workplace and its safety practices are being regularly monitored by government agencies, it seems that the workers tend to participate and get involved in safety activities. 2. When the industrial norm changes the habit of workers in terms of safety practices, the workplace will be more safe and secure. 3. When workers perceive that safety is culturally-cognitively established in the industry, they see safety as taken for granted in the organisation. As a result, they might refrain from participating in voluntary safety activities.

Research objectives	Condition(s)	Findings	Discussion
Examine the role of governance mechanisms on organisational safety climate adoption in the Bangladeshi RMG manufacturing industry	Given the possibility that agents might maximise their individual utility at the expense of the principal's utility, a strong governance mechanism can play a vital role to align the utility functions between principal and agent.	The study has found that governance factors mediate, fully or partially, the various relationships between institutional factors and organisational safety practices. Accountability and anti-corruption were found to fully mediate the relationship between the normative perspective and management commitment (β=.211; β=.209 with p<0.01). Similarly, accountability was found to fully mediate the relationship between the regulative perspective and safety communication (β=.109, with p<0.001) and regulative perspective and supervisor's support (β=.144, with p<0.001). Furthermore, it is found that rule of laws fully mediates the same relationship between regulative perspective and safety communication (β=.112, with p<0.01).	1. The obligation of an organisation to justify its activities, take responsibility for those activities, and disclosing the results makes the management more committed to following or practising industrial safety norms. In addition, when the government ensures that the organisation does not get involved with corrupt activities, management becomes more engaged in ensuring industrial safety norms. 2. Governmental inspection is more effective in terms of implementing safety communication and ensuring supervisor's support when organisations are answerable to someone. Furthermore, despite having a factory inspection by governing bodies, the organisation will be forced to ensure supervisory safety assistance and provide safety information when it becomes answerable for its activities. 3. Making organisations accountable or ethical or obedient to the laws can play a very crucial role in varying degree (fully or partially) to ensure management commitment to safety and creating a compulsion to pledge safety practices in factories.
Investigate the role of governance mechanisms in enhancing organisational safety performance	Governance mechanisms enable government and organisations to work together to provide a basis for improvement and help to achieve desired performance outcomes	The results suggest that accountability influences workplace security ($\beta_{H11a} = .316, \text{with } p < 0.001$). In addition, rule of law is found to be associated with workers' safety participation behaviour ($\beta_{H11b} = .274, \text{with } p < 0.001$). Moreover, anti-corruption behaviour influences both workplace safety ($\beta_{H11c} = .421, \text{with } p < 0.001$) and workers' safety participation behaviour ($\beta_{H11c} = .348, \text{with } p < 0.001$).	1. When organisations become accountable for their actions to authority, stakeholders, or society, they tend to follow industrial safety standards, which ultimately can decrease accidents and injuries. 2. Strong rule of law forces organisations to comply with industrial standards, hence, showcasing the significance and importance of maintaining and ensuring safety, which ultimately drives workers to participate in safety activities. 3. when an organisation is not involved in corrupt behaviours, its management practice and organisational policies send a signal to the workers about the significance of safety which motivates the worker to practice and participate more in safety activities.

Chapter 7

Conclusions

7.1 Introduction

This research has contributed to the existing literature by reporting the likelihood effect of institutional perspectives and governance mechanisms upon the organisational safety climate adoption and safety performance enhancement in the Bangladeshi RMG manufacturing industry. This chapter presents main theoretical and practical implications of the research. The chapter also represents the limitations of the methods and implications of the research. Furthermore, taking the study limitations into account, the chapter also offers direction for future research. The following section will provide a summary of the research objectives and related findings.

7.2 Summary of the research objectives and findings

To achieve the research objectives, the current research has developed a framework that unites two strands of significant management inquiries. The first line of inquiry questions the effect of institutional settings on organisational safety practices and performance. The second part of the exploration investigates the intervening effect of governance mechanisms on organisational safety practices and performances. Developing a conceptual model linking institutions, governance, safety climate and safety performances, the study argues that existing literature and practices have inadequately acknowledged the challenges of pursuing macro factors (norm, culture, and regulation) and governance mechanisms (accountability, anti-corruption, and rule of law) in explaining organisational compliance with safety climate and safety performance issues. To pursue the two main inquiries, the study has used Institutional Theory as the primary lens to understand the macro factors that influence the adoption of safety practices in the Bangladeshi RMG manufacturing industry. By using the secondary lens of Agency Theory, the study argues that institutional pressure to pursue social objectives often leeds to a

"double bottom line" problem for organisations, involving complex social goals beyond profitability. As a result, organisations might proactively seek to "craft" their environment by bending rules and regulations to yield a more favourable situation, which ultimately initiates agency costs. If we consider a classic question in institutional theory: what explains the decline of an institutionalized practice? Two of the most compelling answers are that decline is caused by resistance from actors pressured to adopt and the ineffectiveness of the practice. Both potential answers benefit from re-imagining governance as a practice that can bring the alignment between institutional outlines and organisational practices and result in better organisational safety performance. As a result, the study argues that while institutional pressure influences manufacturing companies' intention to adopt safety measures, governance is necessary to counter industrial defiance resistance to adopting safety practices and enhance safety performance.

To identify whether institutions and governance have any impact on the safety climate and safety performance, this study first presented an extensive literature review which offers comprehensive understanding of the key concepts of the research. Then various relationships were identified and hypotheses between the variables were proposed (Chapter 3). Next, Chapter 4 explained the methodology used to select samples, collect data, develop measurements and test the hypotheses. Then, Chapter 5 offered the results of different univariate and multivariate analyses, demonstrating the outcome of the formulated hypotheses. Chapter 6 presented a comprehensive discussion on the research findings, suggesting that the research objectives presented in the first chapter have been adequately addressed.

One of the key findings of the study demonstrates that three institutional perspectives directly influence at least two of the safety climate factors. However, the cultural-cognitive dimension is the most pertinent to institutionalised safety practices in the workplace, followed by normative and regulative institutions. Secondly, the study introduces strong evidence to confirm that the governance mechanisms influence the relationships between

institutional perspectives and safety climate factors. The findings suggest that ensuring organisational accountability, ethical behaviour, and guaranteeing the implementation of laws play a vital role in ensuring organisational safety and creating a compulsion to pledge safety practices in factories. Thirdly, study shows that both institutional perspectives and governance mechanisms directly influence organisational safety performance. While regulative and cultural-cognitive institutions directly affect workers safety compliance and safety participation behaviour accordingly, the study shows that normative institutions affect both safety compliance and workplace security of an organisation. Likewise, the study presents evidence that accountability, rule of law, and anti-corruption can also play a strong role in influencing workplace security and workers' safety participation behaviour.

Along with the key findings of the study, the results also confirm that the three institutional perspectives are interrelated. However, the study finds that the cultural-cognitive dimension does not directly influence the formation of regulative institutions, rather it interacts with normative institutions to influence regulative systems indirectly. In addition, the study identifies that all three predictors of governance mechanisms: accountability, anti-corruption, and rule of law, are also intimately linked together. Besides, the study identifies a five-factor safety climate model for the Bangladeshi RMG manufacturing industry and shows that safety climate factors are internally reliant on each other. Similar to the previous research, the current study confirms that management has most significant role in influencing the way safety is supervised, practised, and performed by workers in the Bangladeshi RMG factories. By achieving the research objectives, this study manifests a number of theoretical and methodological contributions and several practical implications. Hence, the following sections of the chapter present the contributions and implications of the current study findings.

7.3 Research Contributions

The findings of the current study hold the potential for contributing to the existing literature in several ways. The theoretical and methodological contributions in the areas of

institutional theory, governance mechanisms, safety climate and safety performance are been presented in the following sub-sections. The discussion suggests different ways to encounter persistent conceptual ambiguity in this field of research.

7.3.1 Theoretical Contributions

1) The current study extends the safety climate research by examining the effect of different institutional perspectives on the organisational intention of safety practice application. The study documents that the institutional perspective is an auspicious dimension for safety climate research. It allows us to better interpret organisational stimulus to adopt safety to ensure workers' and workplace safety. Indeed, the use of institutional theory in safety climate is rather limited, whereas in international business, strategy, organisational behaviour and other management related literature have examined institutional pressures for a long time. Scholars, such as Rocha (2010), Hasle et al. (2014), and He et al. (2016) have urged researchers to utilise the institutional perspective to examine its applicability and offer new knowledge on the mechanisms that can lead to effective interventions of safety climate to ensure workers' health and safety. The current study has responded to their proposition. The present study extends the domain of institutional theory by empirically validating its applicability and highlighting the influence of external constituents on safety climate adoption in manufacturing factories. The findings suggest that organisations are not only driven by the rational need to reduce accidents but also socially bounded rational entities. The study has confirmed that establishing an organisational safety climate is a highly socialised activity that is very much contingent on the institutional pressures to comply with specific requirements and the organisational intention to uphold their legitimacy.

The findings of this study demonstrate that the predictive relationships of the three institutional perspectives on ensuring organisational safety climate fall into a particular order: cultural-cognitive is the most dominant, followed by normative and then regulative. The study shows that the organisational application of safety procedures and work

practices is mainly an effect of industrial standards and belief established by different extra-organisational and governing bodies (i.e. government, international buyers, different associations or professional organisations etc.). In addition, the normative atmosphere of an institution can also significantly encourage the adoption of organisational safety measures. The study further shows that regulatory processes (e.g., governmental inspection) on safety climate are basically manifested in the form of power and legal proceedings corresponding to the functions of normative and cultural-cognitive forces. The results contribute to our understanding that, in the context of the Bangladeshi industrial culture, promoting safety climate requires not only legal fortification but also functioning norms, beliefs, values, cultural aspects, and behavioural rules that are pervasive throughout society. However, the study identifies that individual factories can be required to work to different institutional safety standards, which can potentially produce uncertainty and confusion around safety inspections, which is similar to the suggestion of Harzing (2006). Sometimes the confusion around safety inspections can be caused because the cultural institutional platform can enable safety climate to be a taken for granted factor. Therefore, cultural-cognitive perspectives may decrease or change the role of regulatory force in driving the organisational safety climate to some extent. This is a novel finding, illustrating that the cultural-cognitive institutional perspective indeed is central to initiate organisational safety practice in the Bangladeshi manufacturing context.

2) The study questions the core function of external governance mechanisms regarding the implementation of organisational safety climate factors. While this study has highlighted the nature of institutional support influencing organisational safety practices, it has sought further evidence on precisely when and how cultural-cognitive, normative, and regulative institutional supports can effectively implement safety practices. The results of the current research successfully attain the research aims, shedding some important light on the merits of governance in safety climate improvements. The study shows that governance mechanisms (accountability, anti-corruption, and rule of law) are influential predictors of ensuring safety practices. These mechanisms significantly play a mediating

role between the institutional perspectives and ensuring organisational safety climate practices. The three governance mechanisms can be performed independently or mutually at varying levels to ensure organisational safety practices. The study has found that governance mechanisms dominate in the absence of macro-level institutional functions and partially mediate with the emergence of macro-level institutional functions. Thus, governance is powerful but does not entirely override institutional factors' influence on organisational safety conducts. The finding of the current study mirrors the idea of agency theory, particularly the fundamental belief of control as a way of managing the implementation of safety practices. To the best of the author's knowledge, this research is the first to examine the mediating role of governance between institutional perspectives and safety climate issues. As such, this research contributes to knowledge by empirically confirming that governance mechanisms work as a powerful invisible force to ensure the conformity to institutional norms, standards, rules, and regulations and implementation of organisational safety practices.

3) The current study extends our understanding by examining the relationship of the three institutional perspectives and governance mechanism with organisational safety performance. The current study is the first of its kind that examines these relationships in the safety climate context, deriving interesting results as to how institutional norms, values, standards or regulative forces directly affect the workplace accidents/security, workers safety compliance, and participation behaviours. The study illustrates that only normative rules contribute to ensuring workplace safety, while all three institutional perspectives actually influence and force workers to participate in voluntary and mandatory safety activities. This suggests that institutional context can change employee behaviours and workplace safety incidents. Especially, when the adoption of safety climate is internalised beyond the institutional rationale, organisations can develop abilities that facilitate safety process alignment with the workers and address other inertial mechanisms to secure workplace safety. Thus, the study theoretically contributes by identifying institutional environment as an antecedent of safety performance that would typically lead to a safety

active workplace. Furthermore, the study potentially provides new insights into the consequences of governance on safety performance. The study has investigated whether governance can effectively improve safety performance other than institutional support. In the existing safety performance literature, scholars have ignored the possible safety performance outcome via the external force of dedicated governing bodies. The current study's governance framework shows that the improved cooperation and reduced opportunistic behaviour along with proper enforcement of laws can improve organisational safety performance. The result not only highlighted the complementarity function of governance mechanisms in ensuring organisational safety practices but also shows certain conditions within which employees to provide a greater or lesser degree safety support and show safety behaviours to enhance safety performance. According to the agency theory, institutions which are well known for their ability to bring social changes (Goranova & Ryan, 2014), can resolve agency problems through monitoring managers and can bring organisational change (Shleifer & Vishny, 1997). The study results show support for this notion by identifying that different shareholders/governing bodies/business associations can improve workplace security or employee safety compliance and participatory behaviour by implementing competitive pressure of law, ensuring public disclosure of safety efficiency level, and by improving transparency and ethical behaviours. As a result, the study contributes to the literature by providing empirical evidence that governance mechanisms can be a powerful and functional tool to positively manoeuvre organisational safety performance.

4) The pursuit of good governance highlights the conceptual significance of accountability, low levels of corruption, and implementing the rule of law. Despite the importance of the governing environment, little empirical research has been conducted that examines the relationship between accountability mechanisms, perceptions of corruption, and rule of law implementation (Krawczyk et al., 2013). The current study represents an effort to develop a theoretical basis for this vein of research and identifies governance as a combination of accountable process, ethical relationship between agency and principals,

and the execution of laws and regulations. This study potentially provides new insights on how rule of law influences both the mechanisms of accountability and anti-corruption behaviours. Further, our results indicate that increased accountability leads to anti-corruption behaviours between the two parties (agency and principal). One of the reason for such relationship might be that more access to information about how safety practices are implemented ensures the ethical practices of organisations and stops opportunistic behaviours of public officials. The study empirically contributes to our understanding by identifying that accountability, anti-corruption, and rule of law work interdependently in executing the governance mechanism, which ultimately sets the context and boundaries for the role of management, such as ensuring safety within the organisation. It extends agency theory by showing that control (rule of law) is enhanced by increasing the sensemaking of organisational members (accountability) which influences organisational practices (anti-corruption behaviour) and these mechanisms must be synchronized across institutional and organisational levels.

5) Additionally, the study also contributes to our understanding of the interrelationships between the institutional perspectives. Scott (2008b, 2010) stresses the idea of a possible approach where all the three institutional perspectives are contributing in an interdependent and mutually reinforcing way to provide different bases of social order. The current study empirically confirms that all the institutional perspectives are interdependent and directly or indirectly influence one another. The result suggests that the cultural-cognitive institutional perspective forms the basis of normative institutional platforms and indirectly influences regulative institutional aspects because our internal interpretation is shaped by the external cultural context. As Hofstede (1991: 4) states "culture provides pattern of thinking, feeling, and acting: mental programs or the "software of the mind", or while Douglas (1988: 473) states that culture should be treated as "cognitive containers in which social interests are defined and classified, argued negotiated and fought out". Additionally, the study shows that the normative institutional perspective provides a bedrock for regulative controls. The result suggests that normative beliefs are not merely

expectation or prediction; rather it shows how specific actors are supposed to act and behave, which is similar to the proposal of Scott (2008b: 64). Therefore, the study further contributes to our understanding of how values, norms, standards, intrinsic reward, social sanctions, or pressure for rule conformity act interdependently to provide meaning to a social system.

7.3.2 Methodological Contribution

1) The current study is one of its kind that administered an exhaustive study of the literature to identify the measures of institutional perspective, governance, safety climate, and safety performance factors. One of the main challenges for this research has been to ensure the appropriate measures for the constructs of this study. Especially, developing measurement scales for institutional perspectives and governance dimensions have been challenging tasks in this study. The dynamic nature of different institutional perspectives and their governing processes have made it difficult to identify the items for usable measurement scales for both the dimensions. However, the measurement items of all the four dimensions have been primarily conceptualised and identified from 10 pilot interviews with relevant professionals in the manufacturing industry. The personal interviews have made these newly developed measures more suitable and representative of the Bangladeshi business environment. The study also uses existing measures that have already been proven to be workable in prior studies and recasts them to fit the current study context. Next, the study has used a large-scale pilot study (87 participants) to validate the different variables. Finally, the study identifies and confirms the factor structures of all four dimensions by using EFA and CFA, which revealed high reliability and validity of the measurements. Therefore, it is very likely that all the factor structures identified in the current study have the potential to support the development of future institutional, governance and safety climate research.

2) Another methodological contribution is the development of a safety climate measure for eastern countries. Especially, this study is the first to shed new light on the

development of safety climate measures for the Bangladeshi setting. This five-factor structure of safety climate model is believed to be the most suitable for measuring safety in the manufacturing plants in the least developed countries (LDC). The effort to develop safety climate measures for LDC countries tries to contribute to the demand for inadequate safety measures for different national contexts, focused by various scholars such as Bahari & Clarke (2013), Zohar & Polachek (2014), Barbaranelli et al. (2015) and Griffin & Curcuruto (2016). Therefore, this contribution will help to better understand how the meanings and measures of safety climate may differ in eastern and western cultural contexts. In addition, across industries, a generalisation of safety climate model remains an imperative issue, while the dynamic character of different industries makes it difficult to implement a common safety climate model (Grote, 2007). Therefore, studies (Zohar, 2014; Griffin & Curcuruto, 2016) have urged development of industry-specific safety climate scales to identify how the interaction between industry-specific features can develop organisational safety climate perceptions. Zohar (2010: 1521) states that such scale development will offer *"opportunities for eliciting and testing hypotheses regarding processes underlying climate emergence"*. The safety climate scale in this study is a RMG manufacturing industry-specific scale, which is likely to recognise new and different context-dependent items of climate perceptions. Furthermore, it will help to further understand the interaction process through which managerial orientations, operational safety systems and industry-specific features might determine the ways safety climate perception develops.

3) Even though the study complies with the ethical rules of research, which are based on western realities, the current study has encountered difficulties with the socio-cultural realities of the host country (Bangladesh). Many a time, western-based ethical context of research does not fit into non-western cultures (Roshid, 2014) and hence, researchers experience a variety of challenges. The Bangladeshi RMG sector has received substantial criticism from the global society due to its poor working and employment conditions. In addition, some factory management exploits underprivileged and uneducated workers, which generates common outrage and unrest in the RMG sector. Therefore, such situations

have made the industry gatekeeper very sensitive and sceptical regarding outsiders who want to conduct research related to this sector, even if it might be beneficial for the industry. One of the ways to approach and convince these gatekeepers was through the referral of industry associations (BGMEA/Alliance Bangladesh/Accord Bangladesh/The German Society for International Cooperation (GIZ)/Better Work (ILO)/labour foundations etc). Additionally, this referral process also helped to avoid the problem of accessing the research participants. Due to very busy schedules, participants did not have enough time to pay attention to the questionnaire. Besides, most of the manufacturing units consider that 'time is money', and thus, supervisors would not allow their workers to spend time and effort on things that would not get their targets fulfilled. Therefore, the referral system can methodologically help future researchers to overcome the barrier for any conservative and hypersensitive industry and get approval from the management to get access to organisational participants.

7.4 Practical Implications

The current study not only offers theoretical and methodological contributions but also offers practical implications. The study suggests three different practical implications (i.e. government, third-party institutions, and managerial) of the study. The following subsections discuss the implications in detail.

7.4.1 Implications for Government

The study presents strong evidence that initiation and proliferation of safety climate should not only be considered as a proactive requirement for industry accident reduction rather it should be treated as a socialised movement that is controlled by external institutional settings. For example, factories that have been rectified by the national initiative NTPA[17] may become safe temporarily but will not remain safe if external government pressure is not present and oversight is neglected (Barrett et al., 2018).

[17] NTPA - National Tripartite Plan of Action on Fire Safety and Structural Integrity

Therefore, related institutional forces should be used to develop policies to facilitate an improved safety climate for the industry. The empirical results demonstrate that the government has a strong influence on forcing RMG factories to adopt safety policies and practices in Bangladesh. The findings illustrate that all the three institutional perspectives (regulative, normative, and cultural-cognitive) strongly influence either management's commitment to safety or the application of safety procedures and work practices. Furthermore, institutional perspectives have been shown to influence workers' safety behaviours and workplace safety. Therefore, most importantly, the government needs to provide safety practice guidance and directions at both the strategic, high managerial, and employee level to standardise the best practice and develop a benchmark for safety culture within the industry.

Now, to develop safety practice as an industrial culture, the government first needs to educate garments factory owners regarding the consequence of safety for the sustainability of their business. This is because many factory owners in Bangladesh are first-generation industrialists who lack the essential know-how to run an organisation. Thus, they often make parochial business decisions that damage the image of the RMG industry instead of uplifting it. Secondly, the government's legislative arm should monitor the application of industrial safety standards to ensure organisational conformance to safety practices. Thirdly, the government should strictly ensure adherence to social responsibilities, which not only include organisational respect for labour law but also the social obligations related to the business operation. Fourthly, the government should improve the physical capacity of the public sector (e.g., infrastructure, funds, human resource etc.) to train the factory inspectors, top and mid-level management, and workers on labour law and workplace safety awareness in order to develop a self-sustaining industrial safety culture for the long run. Fifthly, the government should also put effort to build capacity on developing soft skills (leadership and negotiation techniques, technical training on safety and security). Sixthly, to develop a safety culture in the industry, the government should modulate social dialogue between management and workers (e.g., labour union penetration, increased interaction

between management and workers). Seventhly, the government can introduce a 'Pay for Safety Scheme', which has been proven to be successful in different industrial contexts (e.g., Chinese construction industry-removing contractor pricing for safety items from consideration in the competitive bidding process). Finally, the government can promote and introduce occupational health and safety courses in different public/private universities to develop knowledgeable and trained future leaders'.

The study findings also illustrate that governance mechanisms (accountability, anti-corruption and rule of law) play an important role in governmental activities and organisational safety practice adoption and safety performance. The government should establish a business environment that promotes and ensures law execution, organisational accountability in case of any incidents and ethical business conducts. To do so, a well-designed persuasion procedure involving the shareholders can play a substantial role in cultivating workers welfare by safeguarding the accountability of public officials and factory owners and can increase the extent of ethical behaviour. Hence, the government should put emphasis on reformation of the public sector that encourages good governance practices (e.g., audit to ensure accountability, information access reforms, anti-corruption investigation through watchdog agencies, compensation mechanisms, access to courts, etc.). In an ideal world the government of Bangladesh should be capable of governing the whole RMG industry. However, the world is not so utopian and of course, the government has not taken its responsibility vigorously. Hence, the government may perhaps gain assistance by developing an industry task force which will share responsibilities between industry associations, labour unions, international brands, civil society organisations, ILO, World Bank, and associated humanitarian organisations. Therefore, the current study recommends some implications for third party agencies.

7.4.2 Implications for Third Party Agencies

The current study considers various business associations, labour unions, international brands, civil society organisations, international and local NGO's, and

humanitarian organisations as third-party agencies. Since safety reformation of the RMG industry will be a daunting task for government alone, third-party agencies can play a dynamic role in governing the safety initiative in the RMG industry. While third-party agencies such as the Accord, and Alliance have a legally-binding agreement that ends in 2018, they should further continue collaborative work with the government, business associations, and factory owners to strengthen the health and safety protections of garment workers. Along with the typical nature (regulating, monitoring, and inspection) of these third-party agencies, they should create a culture where factories develop a deeper understanding of how and to whom to be accountable. In addition, international buyers must be made accountable to requiring a proper work environment, safety and labour rights at the factories. Moreover, international buyers should ensure the factory standards by compelling factory owners to implement a code of conduct and asking for certification from international organisations to ensure their factory legitimacy, which can improve the ethical behaviour of the factories.

In the Bangladeshi RMG industry scenario, business associations are very powerful actors within the system, as the government left the control of the industry to the business association. Therefore, business associations' willingness to implement legal punitive measures against violation of laws can reduce organisational unethical behaviour. In addition, the government must execute the punitive measures to ensure the reduction of repetitive fraudulent practices. Finally, an Integrated Digital Safety System should be developed through which industry agencies can centrally monitor and inspect the updates of factory situations, risk reports, workers complain, safety requirements of the factories and other issues. Such a central system can reduce monitoring effort and increase productivity and efficiency while enhancing the organisational accountability towards maintaining workers' and workplace safety.

7.4.3 Implications for Management

Understanding the legal, normative and cultural-cognitive institutional environment can assist factory owners in devising appropriate structures for safety co-operation to foster collaboration with government and different other third-party agencies. In addition, conforming to institutional requirements can help factory management to leverage resources for safety initiatives. The current study findings indicate how firms may experience higher levels of safety performance by collaborating with government and third-party institutions. The study also identifies that a collaborative tripartite system is necessary to make the industry safer for workers.

The current study has led to the establishment of a valid and reliable safety climate scale for the RMG industry. Factory owners can use this scale to assess workers' actual perceptions toward their workplace safety climate. Workplace conditions are constantly changing; so are safety conditions and thus, a periodic re-examination of the organisational safety climate status is required. Therefore, by using the RMG manufacturing safety climate diagnostic' tool, management can identify the level of safety climate perception to correct and improve the safety quality of the workplace to protect workers safety. Additionally, the factors of the safety climate tool can offer a basis for precise application of safety matters and can facilitate the development of a better environment, conducive to the positive safety perception of workers. Additionally, the success of any safety strategy cannot depend only on the commitment of the management (Zwetsloot et al., 2017). The current study result shows that management commitment influences the supervisor's safety support and hence, management should convey their commitment to the mid-level managers or supervisors so that they recognise the importance of ensuring safety practices and providing appropriate support to workers. At the same time, supervisors often lack knowledge of legal obligations, safety procedures, and management skills. This being the case, management should provide additional training to supervisors to develop technical skills, together with communication skills to convey the fundamental safety notions to the workers for whom they are

responsible. Such an implication can develop competencies within the supervisors, who are very crucial individuals in recognising risks and changing worker behaviour.

Management should also design safety programmes that will facilitate safety communication and safety training. When management commits to enhance workplace security and safety performance, their vision and belief should regularly be conveyed through communication (e.g., toolbox talk and morning briefing) to make workers believe that any accident is preventable. Hence, management should encourage workers to form a representative voice to negotiate improvements in their working conditions. Furthermore, management needs to arrange a dialogue with the workers for negotiation regarding workplace issues, which can also be expected to impact the worker's safety behaviours. Besides, rather than solely relying on traditional organisational channels, management should design and enforce some direct and innovative communication channels for continuous circulation of safety and risk preventive information. For instance, a safety kiosk with emojis can be installed on the factory premises, where workers can go and express their feelings about factory safety issues anonymously. Emojis are easy to understand and a great way to engage workers, as emojis can address people no matter what language they speak. Furthermore, using emojis will demonstrate that the management is flexible enough to adapt communication to the demands of their workers. Additionally, management can open a safety hotline/letterbox for workers who want to address any workplace issues. The study believes that through such communication channels open and honest perceptions of workers can be identified and effective actions can be taken.

Management should establish a safety training system that can develop workers' safety behaviours. Training can develop safety awareness and risk assessment process for workers. While the current study shows no relationships between safety training and workers' risk assessment, further analysis suggests that there is a need for intervention. The study identifies that management involvement plays a vital role in the relationships. Management involvement should address work-related risk through training by showing

the connection between supervisors, workers, organisational risk preventive actions and workers safety and wellbeing consequences. Additionally, management should ensure and establish that the identification of risk would not lead to blaming and punishing the workers. Furthermore, workers, tend to have weak knowledge of safety behaviour, practice, procedures, and risk consciousness. Hence, direct education through training can have significant effects on the formation of their safety behaviours.

Moreover, management should take an innovative approach to train their employees. For instance, an in-house 'Safety Café' can be established through which management offer various forms of support to workers. In the 'Safety Café' new workers can be given training on work procedure. In addition, existing workers can access counselling, advice on domestic violence, advice on physical and mental health issues, emergency medical services, safety and legal advice, and regular group training. Such an innovative approach can enhance high level of worker turnover in the factory and their safety behaviours. Besides, regular factory maintenance, servicing of installed safety systems and discipline need to be established by the management for improving workers' risk perception and keeping the factories safe. Last but not the least, workers often also lack knowledge and understanding of the concept and activities of a labour union. Hence, allowing the formation of labour unions and developing their communication and leadership skills can help workers to gain confidence and experience to tackle small issues before jumping into conflicts with the factory owners.

7.5 Limitations and Further Research

While the current study has identified important relationships among the institutional perspective, governance, safety climate and safety performance dimensions, it is not without its limitations. Hence, some limitations of this study are worth be mentioning and essential to be countered in further research.

The current study was conducted in a specific context of the Bangladeshi RMG manufacturing industry. Even though, the conceptual framework and the propositions for the institutional perspective, governance, safety climate and safety performance are

supported by empirical evidence from the Bangladeshi data, the generalisability of the results to other contexts merits further examination. Further research in other contexts and cultural settings can provide richer understanding about the factors used in this current study. In addition, further comparative studies can offer a more comprehensive grasp on the meaning of safety climate, which might differ between different cultural and national contexts. Especially, cross-cultural insinuations of safety climate will aid to clarify how crucial factors e.g., managerial engagement, might vary across national contexts. It will also offer new understandings on how different national systems, e.g., cultural values and legislations, can impact the relationship between safety climate and outcomes.

One of the limitations lies in the nature of the survey. The study has used a perception based self-reported questionnaire survey which is commonly linked with common method variance (CMV) problem. Such an opinion-based survey may be subjected to bias or inflate responses due to evaluation apprehension or social desirability issues. Despite the limitations of CMV (see Antonakis et al., 2010), the current study has used Harman's one-factor approach and a latent modelling approach to assess the risk of CMV, as suggested by Podsakoff et al. (2003); Richardson et al. (2009) and Bagozzi (2011). With the addition of a common latent methods factor, the structure of the relationships described in the study did not alter substantially and thus, the study argues that common method variance has not been a threat to this study. Besides, in a meta-analysis, Christian et al. (2009) found little indication of inflationary CMV on safety climate with self-reported accidents/injuries. In fact, they stated that self-reported survey may somewhat undervalue the relationships with safety climate and other related constructs. Nevertheless, further research should try to reproduce these results using mixed methods or multisource data, (e.g., managers/line supervisors rating of workers' safety performance).

Due to the time restriction and cost limitation, the study is limited by its cross-sectional design. Hence, it is not possible to infer causality based on the outcomes, rather the causal relationships have been discussed based on the existing theoretical foundation. While correlation indicates the relationships, Gefen et al. (2000) stated that a study should

demonstrate that no other factor exists within the cause and effect relationships. Even though structural equation modelling can identify association, showing the direction of the relationship, it is possible to omit factors or difficult to establish that no other factor is causing the relationship. Hence, the results should use relevant theoretical support to infer the causality. While Casey & Krauss (2013: 139) stated that cross-sectional research is suitable *"in the early stages of theory development to demonstrate relationships between variables",* further studies should reproduce these outcomes and identify causality using longitudinal study. Additionally, due to the perception-based scale used in this study, it is highly likely that participants' perceptions might change over a period of time (Hossain et al., 2015). Therefore, in the near future, a longitudinal-design based study is required in this research domain. Besides, the study has found that the dependent variables error terms are correlated with the independent variables error term and to counter that issue, future study should use two-stage least-squares (2SLS) regression as suggested by Antonakis et al. (2010).

While the current study has identified management commitment as an important influencer on safety climate issues, it is not without its limitations. The measurement of management commitment in the current study is based on contextual factors, while individual factors have been overlooked. Even though the contextual factors are important for managerial practices, individual factors (e.g., self-efficacy, individual's personality) are also significant influencer on employees' behaviours (Barling et al., 2000; Bono & Judge, 2004; Hofmann & Jones, 2005). Since an employee's safety perception and behaviour is influenced by different managerial activities, managerial activities for safety commitment should be considered as a process of interaction in which individual and contextual factors mutually influence employees to achieve safety goals. Prevailing safety leadership studies have included different sub-factors to measure safety leadership. For instance, Eid et al. (2012) used balanced processing, moral perspectives, transparency, and self-awareness, while Lu & Yang (2010) used safety concern, safety policy, and safety motivation to assess safety leadership. Alternatively, Wu et al. (2017) assessed safety leadership through safety

controlling, safety caring, and safety caring. Hence, the current author believes that management commitment should be conceptualised systematically in order to explain the process through which management commitment is demonstrated. Besides, conceptualisation will provide inclusive knowledge of why and how management commitment can impact safety climate and safety performance. Therefore, future studies should try to develop different subfactors of management commitment and assess its impact on safety climate and performance.

Due to the nature of the current research data, safety climate and safety performance have been evaluated only at an individual level, not at a collective level. Organisational climate emerges with individual employees' perceptions and experiences, which become shared socially through a variety of mechanisms and thus, evolve as a group-level property (Zohar, 2010). As a result, Zohar & Luria (2005) have endorsed the safety climate as a multi-level construct, which should be measured at different levels of an organisation, such as individual, group or organisational level. However, due to the limitation of the data collection process, this study only used individual-level analysis. Therefore, caution is required to generalise the results in various settings and further studies should consider multilevel construct measurement (individual, group, and organisation) in an attempt to a broaden investigation of safety climate issues.

Future studies should also consider developing a more comprehensive scale for assessing institutionalisation of safety practices through grounded research in the different context of safety climate issues. Additionally, as a benchmarking tool, future research is needed in a wider range of industries to test the capacity of the institutional perspective and governance mechanisms to influence organisational safety practices and performance. While governance mechanisms are important and by themselves explain external factors that influence organisational safety climate and performance, there are plenty of external factors, which by nature are complex and dynamic. Hence, besides using governance mechanisms as external factors, further studies should seek to explore other variables such as buyers' engagement, cost of safety implementation, workers' education level, or

involvement in labour unions etc. Furthermore, safety policy and rules and co-workers' support could have been included as other determinants of safety climate but were omitted due to the limitation of respondents. To incorporate more variables into the research model, we would need more respondents, which was difficult to achieve for such a sensitive industry. Hence, with a greater number of respondents, further research can incorporate and test these two factors in the current research model. Lastly, the effect of a positive safety climate on enhancing workplace security or improving safety behaviours is now become established. However, it is comparatively unknown how a positive safety climate can influence other organisational outcomes such as innovation, organisational change, productivity or emotional well-being. Hence, future research should address these gaps and help to develop further insights and practical improvements.

7.6 Summary

This study maintains that the RMG industry needs a collaborative approach to be sustainable in long run. From the findings, the study remains convinced that governmental pressure alone is not enough to protect the industry and its workers. Further alliance with different national and international organisation is required to take up the challenge to improve industry working condition. The worker is the most important asset for any manufacturing setup of a nation and the preservation of their life is, therefore, a supreme priority of any society. While safety climate has been recognised as the most important issue to ensure workers' safety, existing research provides little insight into the driving factors of safety adoption in the manufacturing industry and ways to foster its improvement. Therefore, the study has developed a research model to explain, from an institutional perspective, how regulative, normative, and cultural-cognitive institutional settings influence organisational safety climate adoption and enhance safety performance. Further, the study perceives that governance mechanisms also influence the safety practice adoption process. Using structural equation modelling, the study clearly indicates that institutional norms, rules, and cultures along with ensuring accountability, ethical behaviour and execution of laws are indispensable for safety climate adoption and safety performance

enhancement in the RMG manufacturing industry in Bangladesh. The current study also elucidates the way in which different institutional influences could be better brought into play to facilitate safety climate improvement in the industry. Based on the findings, this chapter offers plausible theoretical, methodological, and practical contributions. The study has proposed some recommendations for government, third-party agencies, factory owners, and representatives of a civil society, which can be a valuable input for ensuring a safer workplace for workers and a sustainable future for the industry. However, the study is not without limitations and hence future research is advised to address these limitations.

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Appendix A

Summary of Key Studies – Institutional Perspective

Table A.1: Some Key Studies on Institutional Theory

Study	Research Focus	Theoretical Framework	Methodology	Study Variables	Findings related to Institutional Factors
Meyer & Rowan (1977)	The formal structures of many organisations in post-industrial society dramatically reflect the myths of their institutional environments instead of the demands of their work activities	Institutional Isomorphism	Theoretical	N/A	**Propositions** • As rationalized institutional rules arise in given domains of work activity, formal organizations form and expand by incorporating these rules as structural elements • The more modernized the society, the more extended the rationalized institutional structure in given domains and the greater the number of domains containing rationalized institutions • Organizations that incorporate societally legitimated rationalized elements in their formal structures maximize their legitimacy and increase their resources and survival capabilities • Attempts to control and coordinate activities in institutionalized organizations lead to conflicts and loss of legitimacy, elements of structure are decoupled from activities and from each other • The more an organization's structure is derived from institutionalized myths, the more it maintains elaborate displays of confidence, satisfaction, and good faith, internally and external
Zucker (1977)	The effect of different degrees of institutionalization in constructed realities on cultural persistence	Ethnomethodological Approach to Institutionalization	**Experimental** A total of 180 female subjects were used, with 45 subjects in each of the three experimental conditions and 45 subjects in the control condition	Level of institutionalisation; Transmission, Maintenance, and Resistance to change of cultural understanding	• Depending on the degree of institutionalization (both objective and exterior) some the cultural understandings are so permanent and universal while others are unique to person, place or time. • The more institutionalized, the greater the maintenance without direct social control, which means that the greater the degree of institutionalization, the less likely sanctions will exist • Resistance to change is fundamentally affected by institutionalization, regardless of sanctions.
DiMaggio & Powell (1983)	What makes organisations so similar	Institutional Isomorphism	Theoretical	Coercive isomorphism, Mimetic isomorphism, and Normative isomorphism	**Propositions** • The greater the dependence of an organisation on another organisation, the more similar it will become to that organisation in structure, climate, and behavioural focus • The greater the centralization of organisation A's resource supply, the greater the extent to which organisation A will change isomorphically to resemble the organisations on which it depends for resources • The more uncertain the relationship between means and ends the greater the extent to which an organisation will model itself after organisations it perceives to be successful • The more ambiguous the goals of an organisation, the greater the extent to which the organisation will model itself after organisations that it perceives to be successful • The greater the extent to which an organisational field is dependent upon a single (or several similar) source of support for vital resources, the higher the level of isomorphism • The greater the extent to which the organisations in afield transact with agencies of the state, the greater the extent of isomorphism in the field as a whole

					• The fewer the number of visible alternative organisational models in a field, the faster the rate of isomorphism in that field • The greater the extent to which technologies are uncertain or goals are ambiguous within afield, the greater the rate of isomorphic change • The greater the extent of professionalization in a field, the greater the amount of institutional isomorphic change • The greater the extent of structuration of a field, the greater the degree of isomorphism
Scott (1987)	Compare and contrast institutional theories used in organisational analysis, the theoretical frameworks and arguments of leading contributors to institutional theory are reviewed and empirical studies using institutional arguments are examined	Institutional Theory	Theoretical	N/A	**Theoretical Analysis** • By instilling value, institutionalization promotes stability: persistence of the structure over time • Institutionalization is based fundamentally on a shared social reality which, in turn, is a human construction, being created in social interaction • Institutionalized belief systems constitute a distinctive class of elements that can account for the existence and/or the elaboration of organisational structure • Institutions refer to relatively enduring systems of social beliefs and socially organized practices associated with varying functional arenas within societal systems, e.g., religion, work, the family, politics, which are viewed as both symbolic-cognitive and normative systems and behavioural systems • When an organisation's power is "authorized" it is, presumptively, supported and constrained by the actions of officials' superior to it and in a position to oversee its appropriate use • Inducement strategies create structural changes in organisations and organisational fields by providing incentives to organisations that are willing to conform to the agent's conditions • Organisations acquire certain structural features not by rational decision or design but because they are taken for granted as "the way these things are done" • Via a broad array of adaptive mechanisms occurring over a period of time and ranging from co-optation of the representatives of relevant environmental elements to the evolution of specialized boundary roles to deal with strategic contingencies, organisations come to mirror or replicate salient aspects of environmental differentiation in their own structures • High level of overall agreement about the extent of formal policies and the areas to which they apply is the result not of organisational but of institutional processes • When beliefs are widely shared and categories and procedures are taken for granted, it is less essential that they be formally encoded in organisational structures • Institutional frameworks define the ends and shape the means by which interests are determined and pursued • State actors are more likely to employ coercion or inducement in pursuing their ends, and they are more likely to attempt to create a formal organisational network to carry out their purposes • The professions bodies are expected to rely primarily on normative and/or memetic influences and to attempt to create cultural forms consistent with their own aims and beliefs

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Oliver (1991)	Convergent insights of institutional and resource dependence perspectives to the prediction of strategic responses to institutional processes	Institutional Perspective; Resource Dependency Theory	Theoretical	**Cause:** Legitimacy or social fitness, Efficiency or economic fitness; **Constituents:** Multiplicity of constituent demands, Dependence on institutional constituents; **Content:** Consistency with organisational goal, Constrains imposed on the organisation; **Control:** Legal coercion, Voluntary diffusion of norms; **Context:** Environmental uncertainty, Environmental interconnectedness	**Propositions** • Lower degree of social legitimacy related to higher organisational resistance to institutional pressures (IP) • Lower degree of economic gain related to higher organisational resistance to IP • Lower degree of external dependence on pressuring constituents, related to higher organisational resistance to IP • Lower degree of legal coercion on institutional norms and requirements leads to higher organisational resistance to IP • Lower degree of voluntary diffusion of institutional norms, values, or practices leads to higher organisational resistance to IP • Lower level of uncertainty in the organisation's environment leads to high organisational resistance to IP • Lower degree of interconnectedness in the institutional environment cause high organisational resistance to IP • Lower degree of consistency of institutional norms or requirements with organisational goals provide higher organisational resistance to IP • Higher degree of constituent multiplicity leads organisational resistance to IP • Higher degree of discretionary constraints leads to more organisational resistance to IP
Holm (1995)	The fundamental paradox of how actors can change institutions if their actions, intentions, and, rationality are all conditioned by the very institution they wish to change	Rational choice Theory, Agency Theory, Institutional Economics, Economic History, New Institutionalism	Theoretical: cases of the mandated sales organisation (MSO), in Norwegian fisheries from1930-1994.	Nested System Perspective	• Social practices are the most deeply institutionalised and should be considered as key for institutional analysis. • institution effected a set of power relations, directly between the rules and the individuals (i.e. fishermen). • Institutional power relations indirectly effects between individuals (i.e. fishermen) and institutions (i.e. MSO). • Institutions are associated with power through their effect on the social behaviours and beliefs of the actors. • Institutions poses and implement power through the strategies of actors intending to change institutional settings via political affluence.
Deephouse (1996)	Whether isomorphism in strategies is related to legitimacy conferred by regulator and media	Institutional Isomorphism, Legitimacy	***Sample*** Commercial Banks in the Minneapolis-Saint Paul metropolitan area, U.S. ***Method*** Secondary data from financial reports from 1985-1992 ***Analysis*** Logistic and Tobit regression	Regulatory assessment, Absence of regulatory enforcement action, Media endorsement, Firm Age, Firm Size, Performance	• Organisations that conform to the strategies used by other organisations recognized by regulators and the general public as being more than those that deviate from normal behaviour. • Regulators and the media confer legitimacy in different ways • Regulators do not consider firm's age and size as important factor in judging organisational safety and soundness • Performance had a positive relationship with regulatory endorsement and regulatory examinations would find the banks had better-quality assets, so enforcement actions would be less likely. • Larger and older banks had lower levels of media endorsement

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Greenwood & Hinings (1996)	Framework for understanding organisational changes from the perspective of neo-institutional theory	Old and New Institutionalism	Theoretical	Not Mentioned	**Proposition** • Organisations are structured in terms of archetypes (templates of organizing), which are institutionally derived. • Radical change is problematic because of the normative embeddedness of an organisation within its institutional context. Convergent change is the more normal occurrence. • The greater the normative embeddedness of an organisation within the institutional context, the more likely that when change occurs it will be revolutionary rather than evolutionary • Radical change in tightly coupled institutional fields will be unusual, but when it occurs, it will be revolutionary. • Radical change in loosely coupled fields will be more common, and when it occurs it will be evolutionary • Institutional fields that are impermeable will be associated with low rates of radical change. • Radical change that occurs in impermeable institutional fields will be revolutionary in pace. • Institutional fields that are permeable will be associated with a higher incidence of radical change than will occur in impermeable institutional fields. • Institutional fields that are permeable will be associated with evolutionary change. • Radical change will occur if the pattern of value commitments is competitive or reformative, irrespective of market and institutional pressures. • Interest dissatisfaction will lead to radical change only if it is associated with a competitive or re- formative pattern of value commitments. Otherwise, interest dissatisfaction will precipitate convergent change. • A reformative or competitive pattern of value commitments is more likely to occur (a) in peripheral rather than core organisations, (b) in organisations with a complex portfolio of product/services, and (C) in institutional contexts that are loosely structured. • Both reformative and competitive commitment will be associated with revolutionary change. • Radical change will not occur without an enabling pattern of power dependencies combined with either a reformative or competitive pattern of value commitments. • Radical change will not occur without a sufficient enabling capacity for action combined with either a reformative or competitive pattern of value commitments • High capacity for action will be associated with revolutionary change

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Roberts & Greenwood (1997)	Focus on comparative-efficiency of organisational design adoption that underpins transaction cost theory with an appreciation both of decision makers' cognitive limitations and the constraints imposed by institutional environments	Transaction Cost Theory; Institutional Theory - Scott's Three Institutional Pillars	Theoretical	N/A	• Efficiency-seeking (as opposed to efficiency-maximizing) organisations are shown to favour, respectively, current designs, legitimated designs, and known designs in their pursuit of organisational efficiency • A strict comparative-efficiency framework provides no internally consistent rationale for us to expect anything but instantaneous adoption of optimally efficient organisational designs. • The constrained-efficiency framework is sympathetic to the cognitive and institutional environments within which entities make design adoption decisions. • Where efficiency seeking is not a legitimate organisational goal, one should not expect to explain the adoption of a particular design with reference to its comparative efficiency • The constrained-efficiency framework generates a built-in rationale for institutional change, as opposed to the exogenous factors
Beckert (1999)	Explore how organisational structures and strategies are shaped by institutional environments, and what is the role of 'strategic choice' in the management of organisations	Institutional Entrepreneurship, Agency Theory, Gidden's Theory of Structuration, Legitimacy and Power	Theoretical	N/A	**Propositions** • Strategic agency can only be expected if institutionalized structures prevail which reduce uncertainty for organisational actors • Strategic agency that violates existing institutional rules can be expected in situations characterized by relatively high degrees of certainty within an institutional field • Institutionalizing agents' work prevails in situations of high uncertainty within an institutional field • Under conditions of greater certainty, institutionalized practices can be expected to be the more resistant to strategic agency the more they enjoy high levels of social legitimacy and the more they have the backing of powerful agents
Davis et al. (2000)	External (host country) factors and isomorphic pressures on firms' (parent organisations) entry mode decision	Institutional Isomorphism; Resource Dependency	***Sample*** 363 business unit managers from U.S. based firms competing in the pulp and paper industry. ***Method*** Self-administered questionnaire ***Analysis*** Correlation & Discriminant analysis	Market Risk, Product Usage Differences, Foreign Channels of Distribution, Language and Cultural Differences, Foreign Import Regulations, Product Specifications Differences, Foreign Tariffs on Imports, Capital for Expansion, and Transportation Costs	• SBUs with wholly owned entry-modes demonstrated high levels of internal (parent) isomorphism • SBUs using exporting, joint ventures, or licensing agreements demonstrated external isomorphism • SBUs using multiple or mixed entry-mode demonstrated low levels of isomorphic pressures

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D'aunno et al. (2000)	Role of market forces and heterogeneous institutional elements in promoting divergent change in core activities among organisations	Institutional Theory - Scott's Three Institutional Pillars	***Sample*** 2,064 U.S. rural hospitals from 1984 to 1991. ***Method*** Secondary data from The American Hospital Association (AHA), Area Resource File (ARF) (Bureau of Health Professions, 1991), Health Care Financing Administration (HCFAM) Medicare Cost reports, Inter-governmental Health Policy Project ***Analysis*** Discrete-time Event History Analysis	Conversion, **Market Position:** Geographic proximity, Relative position, Size, Diagnostic service, Inpatient treatment, Outpatient treatment, **Demand, Regulative Elements:** Capital funds, Reduction in regulation, capital for conversion, Certificate-of-Need law, JCAHO accreditation, Diversification Law, **Normative Elements:** Multihospital system member, Ownership, **Cognitive Elements:** Available conversion, Cash flow, Size, Age, Time	• Market factors affect divergent change • Institutional factors (i.e. regulatory, normative, and cognitive elements) contribute to promoting and inhibiting divergent organisational change. • Relatively focused state intervention is effective in promoting divergent organisational change. • Norms concerning governance and property rights in an organisational field influence divergent change • Organisations would mimic models of divergent change that are provided by their nonlocal, but equivalent peers
Young et al. (2000)	Board's adoption of a formal process for evaluating the performance of the corporation's CEO	Agency Theory; Institutional Theory	***Sample*** 130 short-term, California, U.S. based private hospitals. ***Method*** Secondary data from 1989 survey on hospital governance conducted by the AHA survey and OSHPD Financial Disclosure dataset. ***Analysis*** Logistic regression	Market Competition, Managed Care Penetration, Hospital's Types of Ownership	• Market competition has positive influence on board's adoption of a CEO evaluation process • Managed care penetration has positive influence on board's adoption of a CEO evaluation process • Hospital's type of ownership has no relation with board's adoption of a CEO evaluation process
Kostova & Roth (2002)	Adoption of an organisational practice by subsidiaries of a multinational corporation under conditions of "institutional duality"	Institutional Theory - Scott's Three Institutional Pillars	***Sample*** 534 managers & 3,238 non-managerial employees in 104 subsidiary locations from Canada, U.S., Argentina, UK, Netherlands, France, Spain, Australia, Portugal, and Malaysia. ***Method*** Self-administered questionnaire ***Analysis*** Correlation, ANOVA, Regression	**Regulative:** Regulatory Rules about the Quality of Products and Services in the Country, **Cognitive:** Shared Social Knowledge about Quality and Quality Management, **Normative:** Quality-related Social Norms and Values	• Favourability of the cognitive institutional profile of a host country has positive influence on implementation • Host country's regulatory profile has negative influence on the level of internalization • Host country's cognitive and normative profile has positive influence on the level of internalization • Normative profile has negative influence on the variation of internalization • Cognitive profile has positive influence on variation of internalization

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Lawrence et al. (2002)	Explore the institutional effects of collaboration, focusing on the immediate local effects of individual collaborations that may form the basis for broader, longer-term, field-level change.	Institutional Perspective	***Sample*** International NGO: Mere et Enfant in Palestine ***Method*** Personal Interview of First and Second-level Managers, Palestinian Managers, Members of its Advisory Board, and Relevant Members of the Palestinian National Authority ***Analysis*** Qualitative, Multi-case comparative research design	Not Mentioned	• Organisations wishing to effect change in institutional fields must pay attention not only to their relationship with their collaborating partner, but also to how the collaboration embeds them in the wider institutional field • Collaboration could be an important form of institutional entrepreneurship, even for small organisations • Interorganisational collaboration act as a catalyst for the initial stages of change in institutional fields and to overcome size or resource limitations • Intense interorganisational relationships are more likely to lead to learning and innovation, which might diffuse beyond the boundaries of the collaboration, and consequently form the foundation for new institutions in the field
Yiu & Makino (2002)	Provide a unifying theoretical framework to examine how institutional factors, influence the choice of foreign entry mode	Transaction Cost Theory; Institutional Theory - Scott's Three Institutional Pillars	***Sample*** 364 Japanese overseas subsidiaries ***Method*** Secondary data on parent company information obtained from Daiwa Institute of Research 1997. Host-country information obtained from IMD International and World Economic Forum ***Analysis*** Logistic regression & Hierarchical regression	**Regulative Institutions:** State Interference & Control, Investment Restriction, Policy, Bureaucracy, Protectionism, Ownership Restrictions; **Cognitive Institutions:** Memetic Entry, Historical Norm; **Normative Institutions:** Ethnocentricity, Cultural Distance	• Institutional factors have significant influence on entry-mode choice decision at different levels: Regulative and normative institutions account for the cross-national variations in the choice of entry mode, cognitive institutions account for the cross-firm variations in the choice of entry mode • Institutional factors have significant influence on entry-mode choice decision in different magnitudes: The impact of regulative and cognitive forces on the entry-mode choice might be more critical than that of normative forces.
Hitt et al. (2004)	Comparing the characteristics of international strategic alliance partners preferred by managers in two transition economies with differing institutional environments	Institutional Arrangements	***Sample*** 63 firms based in China and 58 firms based in Russia. ***Method*** Self-administered questionnaire ***Analysis*** Hierarchical linear modelling	Not Mentioned	• Institutional environment has significant influence on strategic decisions of firms: transition economy (and emerging-market) firms differ in their partner selection criteria based on the institutional environments in which they must operate

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Chizema & Buck (2006)	Using institutional perspective derive seven propositions concerning governance change in general	Neo-institutional Theory; Resource-Dependency Theory	Theoretical	**Exogenous Dynamics** (legitimacy and resources); **Endogenous Dynamics** (Interest or dissatisfaction and value commitments, Capacity for action and power dependencies)	**Propositions** • Growing firms may have to comply with the demands from the most salient resource providers, modifying their governance pattern to gain legitimacy and resources. • Actors from firms with weak performance may push for change in governance templates. • Small, peripheral companies will be early adopters of governance innovations and thus new templates. • The strength of stated value commitment from top management teams will influence governance change. • Prevailing patterns of power dependency will influence institutional change. • Firms with superior access to human, financial and technological resources have greater capacity for action, including changes to governance templates. • Firms that are highly networked with organisations in other countries (through sales, purchases or otherwise) are more likely to change their corporate governance template
Greenwood & Suddaby (2006)	Why and under what circumstances are embedded elites enabled and motivated to act as institutional entrepreneurs in highly institutionalized contexts	Network Location Theory; Dialectical Theory; Institutional Entrepreneurship	***Sample*** 39 personnel from "Big Five" accounting firms (Arthur Andersen, Deloitte Touche Tohmatsu, Ernst & Young, KPMG, PricewaterhouseCoopers) and 23 personnel from 7 different regulatory organisations ***Method*** Semi-structured Interview ***Analysis*** Qualitative	**Network Location:** Boundary bridging, Boundary misalignment, Periphery; **Contradiction:** institutional incompatibilities, Non-adaptability, Resource asymmetry, Misaligned interest, Efficiency vs. conformity; **Embeddedness:** Awareness of alternative logic, openness to alternative logic, motivation to adopt alternative logics	**Propositions** • Elite organisations occupy distinct network locations that expose them to field-level contradictions, which affect their institutional embeddedness and their capability for institutional entrepreneurship. • Central organisations within an organisational field are embedded within, institutional logics; therefore, they are neither open to alternative logics nor motivated to introduce them. • Central organisations occupying boundary-bridging locations are exposed to institutional inconsistencies, increasing their awareness of alternative possibilities. • Central organisations occupying boundary-misaligning locations are exposed to the contradictions of adaptability and resource asymmetry, increasing their openness to alternative possibilities. • Poor performance produces a contradiction between institutional conformity and functional efficiency, increasing the motivation to adopt alternative possibilities. • Institutional entrepreneurship by central organisations is a function of embeddedness. • Institutional entrepreneurship by central organisations has a higher probability of resulting in institutional change

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Bjorkman et al. (2007)	Explore human resource management (HRM) practices in multinational corporation (MNC) subsidiaries within an institutional theory framework	Institutional Theory - DiMaggio and Powell's (1983) Institutional Perspective	***Sample*** 158 subsidiaries of MNCs in U.S., Russia & Finland ***Method*** Self-administered questionnaire ***Analysis*** Correlation & GLM regression analyses	**Host country effect:** Employee training, Performance appraisal, Performance-based competition, Merit-based promotion, Internal communication; **Subsidiary Characteristics:** Status of subsidiary HR, No. of expatriates in subsidiary, Subsidiary's involvement in knowledge exchange	• MNC subsidiaries located in Russia differ from those located in the US. • Status of the subsidiary HR department statistically significant with HRM practices (appraisal, communication, performance-based compensation, promotion) • Larger no. expatriates in the MNC subsidiary the greater the use of HRM practices • The degree of subsidiary involvement in knowledge transfer with MNC ∗~ five HRM practices
(Huang & Sternquist (2007))	Uses institutional theory as a complementary framework to explain international retailers' foreign market entry choices and suggests propositions for further research	Institutional Theory - Scott's Three Institutional Pillars	Theoretical	Not Mentioned	**Propositions** • Entry timing has a U shape relationship with strength of the rule of law in host country. • Entry mode in terms of the level of resource commitment has an inverted U shape relationship with strength of the rule of law in the host country • Government policies in host country are less favourable retailers will: (a) expand into other countries; (b) favour early entry; (c) favour entry modes that involve relatively high resource commitments • Governance of the host country is great, retailers will: (a) expand into this country; (b) favour late entry; (c) favour entry modes that involve relatively low-resource commitments. • Governance of the host country is great, retailers will: (a) expand into this country; (b) favour early entry; or (c) favour entry modes that involve relatively high-resource commitments. • Cultural distance between the host and the home countries is small, retailers will: (a) expand into this country; (b) favour early entry; (c) favour high-control entry modes. • Retail market distance between the host and the home countries is small, retailers will: (a) expand into this country; (b) favour early entry; (c) favour high-control entry modes. • Retailers from (a) high power distance; (b) high individualism; (c) low uncertainty avoidance; (d) high level of masculinity culture will: (a) be more likely to expand into foreign countries; (b) favour early entry; (c) favour high-control, high resource commitment entry modes. • When perceived similarity existing between the current entry and prior entries is great, retailers will: (a) be more likely to expand into this country; (b) favour early entry; (c) favour the same entry mode. • Perceived similarity existing between the current entry and prior entries is low, retailers will: (a) be less likely to expand into this country; (b) favour late entry; (c) choose an entry mode that has been most frequently adopted by other retailers in the same environment; or (d) choose an entry mode that has been adopted by other successful retailers in the same environment.

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Schaefer (2007)	Establish the relative importance of different institutional and performance factors in the adoption and maintenance of environmental management systems	Institutional Theory - DiMaggio and Powell's (1983) Institutional Perspective	***Sample*** 3 longitudinal case studies in the UK water & sewerage industry ***Method*** In-depth interviews ***Analysis*** Qualitative	**Internal legitimacy:** Employees and Head office; **External legitimacy:** Government & its agencies, Customers, and Other stakeholders	• Institutional forces are the predominant drivers • Environmental performance issues become less important over time • Institutional drivers and economic performance rationales increase in importance over time • Conforming to institutional pressures can result in improved economic performance, • Based on institutional and economic factors, adoption of environmental management systems has wider impacts for the state of corporate environmental management and progress towards greater ecological sustainability of business.
Aidis et al. (2008)	Explore the ways in which institutions and networks have influenced entrepreneurial Development in Russia	New Institutional Theory - North's (1990) Institutional Perspective	***Sample*** Russia & 33 other countries ***Method*** Secondary data from Global Entrepreneurship Monitor (GEM) dataset ***Analysis*** Regression Analysis	Corruption Perceptions Index	• Negative environment for business, and especially entrepreneurial activity, in Russia has led to low levels of entrepreneurship • Entrepreneurial activity in Russia are different in several interesting ways from their counterparts in more business-friendly environments • Institutions weakness is detrimental to entrepreneurial activity • Even though networks are important, they are not entirely able to offset these deficiencies of institutions weakness
Cheng & Yu (2008)	Effect of institutional change on SMEs' internationalization process	Institutional Theory - DiMaggio and Powell's (1983) Institutional Perspective	***Sample*** 168 Taiwanese SMEs (manufacturing) serving or operating in Southeast Asia and China ***Method*** Self-administered Mail Survey ***Analysis*** Correlation analysis, Linear/logistic regression	**Coercive Pressure:** pressures from suppliers, current customers, potential customers, home government and stockholders; **Memetic Pressure:** uncertainty in the home country, imitating successful peers, act in response to competitors; **Normative Pressure:** pressures from the union, inter-personal contacts with other CEOs, suggestions from board members, the CEO's international work experience and the CEO's international educational experience	• SMEs early internationalization decisions are, in part, the consequences of their recognitions to cope with the institutional pressures in the home country. • SMEs' awareness of the potential opportunities of internationalization is mixed with their awareness of external institutional pressures to internationalize. • The cognition of coercive, mimetic and normative pressures by SMEs' CEOs will, jointly, determine the degree to which firms respond to their home environments.

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Delmas & Toffel (2008)	How corporate functional departments influence their subsidiary facilities' awareness of, or receptivity to, market and nonmarket pressures, and how this affects the adoption of particular management practices	Old and New Institutionalism	***Sample*** 536 Managers from 3,160 facilities from heavily polluting industrial sectors identified by U.S. EPA's Toxic Release Inventory (TRI) program ***Method*** Self-administered Online Survey ***Analysis*** Structural Equation Modelling	Government voluntary program participation, Receptivity to market and nonmarket pressure, Facility environmental non-compliance, Corporate environmental non-compliance, Nonmarket pressure exerted, Market pressure exerted, Influence of corporate legal affairs and marketing department, Stringency of environmental regulations in headquarters country, Corporate Alexander (2012), ISO 14001 implementation status.	• Beyond exposure to different levels of institutional pressures, organisational structure is key to explaining why organisations adopt heterogeneous management practices. Institutional pressures exerted by different field constituents are channelled to different organisational functions, which influence how they are received by facility managers.
Slangen & Hennart (2008)	Extending the prior studies on greenfields and acquisitions by developing an institutional theory-based framework considering the costs of integration and the liability of newness,	Institutional Perspective	***Sample*** Senior executives of 191 subsidiaries, established or acquired by 130 Dutch MNEs in 46 countries. Secondary data from REACH database ***Method*** Self-administered Mail Survey ***Analysis*** Binary Probit Model, OLS regression analysis	Subsidiary performance, Subsidiary integration, Subsidiary size, Competition, Economic conditions	• Foreign subsidiaries incur costs when they have to adapt to their MNE parents (internal conformity costs), while the liability of newness represents costs that subsidiaries incur when they have to adapt to their host-country environment (external conformity costs). • Acquisitions outperform greenfields at low and intermediate levels of subsidiary integration, but that greenfields outperform acquisitions at higher integration levels. • There is no single optimal establishment mode, but that the optimal mode is contingent upon the extent to which an MNE parent plans to integrate the focal subsidiary.
Trevino et al. (2008)	Process of institutionalization and legitimization in countries in Latin America and its impact on organisational decision-making regarding inward foreign direct investment (FDI)	Institutional Theory - Scott's Three Institutional Pillars	***Sample*** 16 Latin American nations: Argentina, Brazil, Chile, Colombia, Costa Rica, Dominican Republic, Ecuador, El Salvador, Guatemala, Honduras, Jamaica, Mexico, Paraguay, Peru, Uruguay, and Venezuela ***Method*** Panel data from UNCTAD between 1970 and 2000 ***Analysis*** Correlation analysis, Regression analysis	Educational attainment, Bilateral investment treaties, Privatization, Political uncertainty, Tax reform, Trade reform, Financial account liberalization, Inflation, Currency valuation, Market size, Trade	• Educational attainment emerged as a positive and significant predictor of inward FDI, which is most strongly associated with institutionalization and legitimization through cognitive and normative pillars. • Bilateral investment treaties work more dominantly through the cognitive and normative pillars than the regulative pillar. • Privatization is more deeply embedded in the cognitive and normative pillars and that the regulative pillar can be seen as tangential • There are inverse and significant relationship between political uncertainty and FDI • Found directional support for tax reform on inward FDI but trade reform and financial account liberalization has no significant relationship with inward FDI into Latin America. • Process of institutionalization is more deeply rooted in the cognitive and normative pillars than in the regulative pillar • Three pillars matter to attain organisational legitimacy, leading to an FDI-friendly institutional profile

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Berrone & Gomez-Mejia (2009)	Focuses on hybrid framework to explain the link between executive pay and environmental performance in polluting industry	Agency Theory; Institutional Theory	***Sample*** 469 U.S. firms reporting under the EPA's Toxics Release Inventory program ***Method*** Longitudinal data between the period 1997-2003 ***Analysis*** Correlation analysis, Fixed-effect estimation model	Total pay; Long-term pay; Firm size (assets); Firm financial performance (ROE); Market-based performance; CEO duality; CEO ownership; CEO tenure; Proportion of outside directors; Director ownership; Family firm status; Pollution prevention; End-of-pipe pollution control; Age of assets; Environmental governance; Regulatory stringency; Industry pollution position; Reporting	• Environmental performance can be an important nonfinancial determinant of CEO pay within polluting industries, even after control-ling for accounting and market-based measures of performance and other traditional determinants of executive compensation • Firms within polluting industries may achieve legitimacy in their institutional field by adopting environment-friendly processes, and their CEOs are rewarded accordingly • Agency Perspective: link between strategies and performance is uncertain, a principal will use criterion over which agents have more influence and that have may improve financial performance • Institutional Perspective: linking compensation to environmental performance induces managers to conform to institutional demands and discourages avoidance • Institutional theory can reinforce rather than negate the basic tenants of agency theory. • Pollution controls do not have significant relationship with CEO pay • Environmental performance had no impact on CEO total pay in firms with both environmental pay policy and environmental committees, as these mechanisms are symbolic rather than instrumental
Combs et al. (2009)	The degree to which social forces suggested by institutional theory motivate franchising.	Agency Theory; Institutional Theory - DiMaggio and Powell's (1983) Institutional Perspective	***Sample*** 6,893 firm-year observations from 1,300 franchisors active during 1980-2000, Canada ***Method*** Panel data from UFOCs and Alberta disclosure documents ***Analysis*** Correlation Analysis, Generalized Least Squares Regressions	Propensity to franchise, Industry franchising, Early-stage franchising, Geographic dispersion, Franchise fee, Royalty, Start-up costs, Franchisor age, Chain size	• Social forces appear to play a role in franchising that is not captured in prior research emphasizing economic factors • Internal inertia plays a much larger role than external institutional pressure • Franchisors' tendency has no relation with external institutional norms abate with geographic dispersion, but internal institutional pressures, recede as the imperative toward franchising become clearer • Normative pressures should emerge directly from professional associations in industries and indirectly through the distribution of best practices via trade publications and consultants • The decision of how much franchising to use is shrouded in uncertainty, which can lead managers to mimic successful competitors • When economic forces offer a clear alternative and external institutional pressures influence franchising, Internal institutional pressures matters
Karlsson & Honig (2009)	Develop an improved understanding of how business plans are dealt with by young organisations, longitudinally, and with contextual sensibility.	Institutional Theory	***Sample*** 37 owners, managers, and employees, in s companies over five years from Sweden ***Method*** Interviews, Observations, and Archival Data ***Analysis*** Qualitative	Not Mentioned	• Initial conformity to business plan norms gradually and without exception lead to loose coupling • Loose coupling enabled new ventures to gain legitimacy from the environment, allowing them to continue pursuing their own agendas. • Entrepreneurs who wrote business plans never updated or rarely referred to their plans after writing them • Companies prefer for only symbolic adaptation of the business plan tool

Study	Research Focus	Theoretical Framework	Methodology	Study Variables	Findings related to Institutional Factors
Meyer et al. (2009)	The impact of market-supporting institutions on business strategies by analysing the entry strategies of foreign investors entering emerging economies	Institutional Theory; Resource-based View	***Sample*** 336 top-level managers based in Western Europe as well as in each of the four emerging economies: Egypt, India, South Africa, and Vietnam ***Method*** Questionnaire-based survey and Archival Data **Analysis** Correlation Analysis, Multinomial Logit Regression Model	**Institution-based:** Business freedom, Trade freedom, Property rights, Investment freedom, and Financial freedom **Resource-based:** Buildings and real estate, Brand names, Business network relationships, Distribution network, Equity, Innovation capabilities, Licences, Loans, Machinery and equipment, Managerial capabilities, Marketing capabilities, Networks with authorities, Patents, Sales outlets, Technological know-how, Trade contacts	• Strengthening the institutional environment directly encourages acquisition and greenfield entry at the expense of joint venture entry • Even when institutions are better developed, if foreign entrants need intangible local resources, they may still use joint venture as an entry mode • Conglomerate MNEs entering an emerging economy are more likely to choose joint venture entry
Hessels & Terjesen (2010)	SME owner/manager's perception of home market conditions and of the organisational field impact the decision to export and the mode of export	Institutional Perspective; Resource Dependency Theory	***Sample*** 871 SMEs headquartered in Netherlands ***Method*** Questionnaire-based Online Survey **Analysis** Binomial Logistic Regression	Export involvement, Export mode, Production industries, Trade industries, Business services, Other industries, Log firm age and size, Business owner education, Foreign experience, Foreign investors, Perceived favourability, Perceived internationalization	• SMEs operating in an organisation field that is perceived as being increasingly global are more likely to export • Domestic suppliers that increasingly operate abroad is also positively related to export activity • Firms that increasingly use foreign suppliers are more likely to export • While SME export when domestic competitors are perceived as increasingly global, there is no evidence that amplified foreign competition in the home market increases the odds of SME export
Escobar & Vredenburg (2011)	Institutional pressures on MNCs and their strategic response to these pressures through which corporations can increase their environmental and social performance while increasing their financial performance	Institutional Theory - DiMaggio and Powell's (1983) Institutional Perspective; Resource-based View	***Sample*** Four oil and gas MNCs (Royal Dutch/Shell, BP, ExxonMobil and Chevron) ***Method*** Panel data from the sustainable development/environmental and/or social reports from 2000 to 2005 **Analysis** Structured Content Analysis	**Sustainable Development Pressure:** Climate change, Biodiversity, Renewable energy, Social investment, Economic performance	• Due to lack of clear regulation and enforcement mechanisms, the decision to respond or not to sustainable development pressures may be left to host country managers • Different subsidiary locations may differently interpret the meaning of sustainable development, which reduces the likelihood of MNCs adopting similar initiatives across their subsidiary network and achieving certain economies of scale • While new model provide better financial fit for one MNC, it would be difficult for other MNCs to adopt because its adoption is fundamentally linked to process-innovation capabilities that are difficult to acquire and duplicate • Business-level strategies of reduced cost, green consumerism, reduced liability and reduced risk exposure could resolve sustainable development pressures

Study	Research Focus	Theoretical Framework	Methodology	Study Variables	Findings related to Institutional Factors
Yeung et al. (2011)	How organisational leaders might benefit from an already institutionalized environment, rather than how fashionable management techniques enable managers to gain external reputation and benefits	Institutional Perspective: Legitimacy	***Sample*** U.S. manufacturing industry from 1994 to 2006 ***Method*** Long-horizon event study **Analysis** Parametric Paired-sample t-test, Nonparametric Wilcoxon Signed-rank (WSR), Sign Tests.	CEO total cash compensation, CEO stock options, ROA, Total assets, Sales growth, Tobin's q, CEO tenure, Board size, Percentage of inside directors	• Adoption of an institutionalized rule is directly related to the personal interests of the CEO • Powerful institutions affect or control actors' beliefs and behaviours. • Actors also create, transform, and disrupt institutions, depending on their position and power • CEOs are likely to be the strategic actors who influence the board to obtain higher compensation. • If compliance is initiated by mimetic and normative pressures, the board would not provide extra compensation to the CEO for adopting a taken-for-granted practice • Organisation actors could align their interests with an established institution
Alexander (2012)	Examines the interaction between different regulative, normative and cultural-cognitive institutions on the level of innovation associated with the choice of alliance governance mechanism	Institutional Theory - Scott's Three Institutional Pillars	***Sample*** 314 Cellular telephone handset firms establishing technology alliances between 1983 and 2000 in Europe, North America and the Asia-Pacific region ***Method*** Panel Data from GSM Association, Global Mobile Suppliers Association (GSA), CDMA Development Group, Industry publications, Reports **Analysis** Correlation Analysis, Negative Binomial Regression Analyses	**Regulative pillar:** legal formalism **Normative pillar**: individualism-collectivism, **Cultural-cognitive pillar**: uncertainty avoidance; **Other Variables:** Contractual alliance portfolio, Equity alliance portfolio, Prior patents, Subsidiary operation, Host country, Partner experience, Age of firm in industry, Small firm, Country innovation, Industry regulation, IPR	• Normative and cultural-cognitive institutions do affect the performance outcomes of alliances. • Equity alliances provide supporting mechanisms contribute to better innovation performance. • Contractual alliances are associated with higher levels of innovation under normative contexts that value collectivism rather than individualism. • Interactions between legal, normative and cultural-cognitive institutions and alliance portfolios, intellectual property rights become more important for protecting knowledge generated through contractual alliance portfolios.
Deligonul et al. (2013)	How supplier relationships can support a firm's global strategy when they are exposed to a foreign constellation and different forces emanating from its indigenous institutional environment	Institutional Theory - Scott's Three Institutional Pillars	***Sample*** 51 IKEA executives and with suppliers in Russia and Poland ***Method*** Face-to-face Interviews **Analysis** Qualitative	**Cognitive Influences**: enhancing personal bonding, sharing values and resources horizontally, employing expertise as a means of affinity; **Regulative Influence:** ensuring goal alignment, building transparency of purpose; **Normative Influences:** building sensitivity to local values, developing forward-looking strategic fit; offering training programs, **Constitutive Dimension:** Instituting, and legitimizing influences that are cognitive, pragmatic, norm based	• Firm's performance will be better when an institutional base is established, and functionalities are adjusted to external markets and the realities of the constellation of partners. • Supplier network can be socially transformed into an idiosyncratic asset which is costly to imitate for rivals and thus offers a unique competitive advantage to the firm • Empowerment of managers and employees is also a crucial part of the institutionalization process • Firm's basic competitive strategy is to be logically integrated with the strategic supplier approach, it is necessary to ensure the consistency of social and economic elements. • To successfully drive the institutionalization process within the supplier network, the firm must match functional aspects and tangible incentives with constitutive and intangible elements.

Study	Research Focus	Theoretical Framework	Methodology	Study Variables	Findings related to Institutional Factors
Estrin et al. (2013)	Developing and testing a conceptual framework which analyses how a variety of different institutional arrangements impact the high-growth aspirations of new ventures.	Institutional Theory - Williamson's (2000) Concept of Hierarchy of Institutions	***Sample*** 42 countries Worldwide ***Method*** Panel Data from Global Entrepreneurship Monitor adult population surveys in 2001–2006 **Analysis** Multilevel Modelling	Heritage Foundation Index, Polity IV Measure, Employment Growth Aspirations (EGA) of Entrepreneurs	• Corruption represents an embedded pattern of informal behaviour norms that becomes institutionalised as part of a slow changing informal order. • Institutional deficiencies at the constitutional level create profound unpredictability in the environment • More active government, though it can also make the environment relatively less stable due to policy changes, is best seen as imposing additional, but predictable costs on businesses, which the entrepreneurs must take into account in shaping their aspirations • Both weak property rights and corruption do independently constrain entrepreneur's employment growth aspirations. • High growth entrepreneurship will be crowded out by government activism • Impact of macro level institutions, notably corruption and property rights, is weaker where local social ties are stronger
Jia & Wang (2013)	Impact of Chinese institutional environments on marketing channels	Institutional Theory - Scott's Three Institutional Pillars	Theoretical	Not Mentioned	**Proposition** • Chinese institutional environments where government intervention is high, government guanxi is important for channel members • Chinese institutional environments where legal protection is low, inter-firm guanxi is more important than formal contracts for channel members. • Chinese institutional environments where the norm of reciprocity often substitutes for formal institutional support, interpersonal guanxi is important for channel members • Channel members with significant cultural differences will likely have lower levels of trust. • Guanxi at both interpersonal and inter-firm levels help foster mutual trust and enhance channel performance • Chinese institutions where legal protection is weak, trust—particularly interpersonal trust—is important for channel members • Trust between channel members enhances channel performance • The reciprocity norm in guanxi generates a China specific power-dependence relationship mode: (a) Channel members in China are more likely to have a positive attitude toward dependence on the more powerful partners, especially those at significantly high positions in the guanxi network; (b) Channel members in China are less likely to use coercive control over less powerful channel members in their guanxi network.
Du & Boateng (2015)	Effects of state ownership and institutional influences on value creation through	Institutional Theory - Scott's Three Institutional Pillars	***Sample*** 468 Chinese cross-border mergers & acquisitions firms ***Method*** Event Study Data from Chinese Stock Market	Foreign Exchange Reforms; Sectors; Prior Experience; Cash Holding; Acquire Size & Relative Size; Deal size; Geographical Region; Relatedness; Bidder Control of the Firm; Method of Payment; Acquirer Return on Asset; Global Financial Crisis; **State**	• Equity markets react positively to acquisition announcements and that the Chinese acquisitions are perceived to create value for shareholders • Government and institutions play a huge role in value creation of emerging market firm internationalisation through cross-border mergers & acquisitions. • Specific reforms, such as easing restrictions on foreign exchange approval system for outward investments improve firm value

	cross-border mergers & acquisitions		Research (CSMAR) database from 1998-2011 **Analysis** Correlation Analysis, Multivariate Regression	**Ownership:** Percentage of equity ownership by the central government, local government, and its agencies; **Cultural Distance:** Hofstede (1980) culture dimensions; **Formal Institutional Distance:** International Country Risk Index	
Jones et al. (2015)	How the organisational power structure affects the response to external pressures that have the effect of altering the balance of power in organisations	Institutional Theory - Oliver's (1991) Institutional Pressure Framework	***Sample*** 141 New York Stock Exchange (NYSE) Firms ***Method*** Panel data from 1994-2003 **Analysis** Correlation Analysis, Ordered Logistic Regression, Cox Regression	Compensation committee; Industry return on asset; Market-to-book; Complexity; Munificence; Dynamism; Governance index, CEO power; Board power; CEO power relative to the board; Firm Performance; Firm Size; Nominating Committee	• Organisation's response to external pressures that threaten the internal balance of power would be importantly affected by the CEO's power relative to the board • Ease of responding to external pressures, in terms of the disruptiveness of the response, will importantly affect how firms respond as well as the speed of response. • Even though a committee is developed with the idea of improving governance, the directors who serve on the committee are likely to influence whether the firm will experience new levels of governance. • Directors who already serve on other board committees are more likely to be appointed to the inaugural governance committee.
Makhmadshoev et al. (2015)	Influence of national institutional environments on the internationalisation of SME exporters	Institutional Theory - North's (1990) Institutional Perspective	***Sample*** Exporting SMEs in the cotton and textile industry of Tajikistan and Kyrgyzstan ***Method*** *Primary Data*: 58 in-depth Face-to-face Interviews; *Secondary Data*: various reports and statistical series published by EBRD and the World Bank, national government reports and legal documents **Analysis** *Qualitative:* Matched-pair Case Study	**Formal institutions:** Business environment, Regulatory impediments, Taxation system, Tax inspection, Pressure and potential disagreements, Challenge of obtaining export related documentation, Export procedures, Nature and direction of reformation; **Informal Institutions:** Relationships and connections, Industry entry, Access to resources, Personal ties; **Enforcement Mechanism:** Effectiveness of law enforcement, Illegal raids and racketeering, Effectiveness of business rules and regulations in practice, Informal rules and practices	• Difference in reforming tax legislation indicates a divergence in the development of formal institutions and concomitant differing impact on SME exporters from both countries (Kyrgyzstan is more advanced in tax legislation reforms than Tajikistan) • Varied impact of formal institutions can be linked to differences in liberalisation policies and wider economic activity • Institutional environments in countries in early stages of transition tend to have a more constraining influence on entrepreneurship, whereas those in countries in later stages of transition tend to have a more supportive or enabling influence • An improved institutional environment can foster a better overall business environment and facilitate firms' export behaviour • Formal institutions not only reduce transaction costs for firms, but also signal an important progress in the process of institution building towards a market-based system • Institutions are considered complementary when the efficiency of one leads to increased returns of another (e.g., formal institutions and their enforcement mechanism as two complementary institutions) • Informal institutions tend to be more influential in countries with weak formal institutions • Informal arrangements play a particularly important role in organising economic activities and regulating transactions associated with the buying and selling • Informal arrangements restricts competition and creates imperfections in the market mechanism

Study	Research Focus	Theoretical Framework	Methodology	Study Variables	Findings related to Institutional Factors
Oparaocha (2015)	Influence of the use of institutional networks by SMEs in the context of international entrepreneurship	Institutional networks: Institutional Theory Perspective; Resource Dependence Theory	***Sample*** 6 SME's case firms in Environment technology, Construction, Waste management, IT/mobile technology, Geographic information system sector from Finland and Sweden ***Method*** Personal Interview **Analysis** Qualitative	Not Mentioned	• Institutional networks influence an SME's entrepreneurial internationalization process (e.g., market information, financial support, business contacts and partner searches) • Institutional network resources continuously influence an SME's institutional entrepreneurship activities, and this influence is intertwined in the different stages of internationalization process, which includes the speed of new entry, reduced risks and uncertainty associated with foreign market environments • Institutional network resources do not only help develop the internationalization process but also guide the acquisition of other key capabilities that are important for an SME's success in institutional entrepreneurship.
Choi et al. (2016)	Effect of general environmental institutions (GEI) and minority investor protection (MIP) on international investments	Institutional Theory - North's (1990) Institutional Perspective	***Sample*** 7492 observations of international mergers and acquisition investments made by U.S. firms in 38 host countries ***Method*** Secondary data from different database between 1981-2008 **Analysis** Factor Analysis, Correlation Analysis, Variance Inflation Factors (VIFs) Analysis, Multivariate Regressions	**Institutional Variables:** *GEI variables:* rule of law, efficiency of judicial system, contracts repudiation by government, risk of expropriation, & accounting standards; *MIP Variable:* percentage of share capital to call an extraordinary shareholders' meeting, percentage of secured creditors to approve reorganisation, anti-director rights, & creditor rights **Control Variables:** Cultural distance, Geographical distance, Shared border, Energy production, Patent applications, Annual GDP, Exchange rate stability, Regulatory restriction index, Size of firms, Same industry	• There is a significant qualitative difference between general environmental institutions (GEI) and minority investor protection institutions (MIP) • Better GEI in the host country attracts inflowing FDI, which means GEI institutions aim at serving the general societal interests by promoting a better • General environment for all investors. • Better MIP may discourage inflowing FDI, which means MIP institutions promote and protect the interests of specific investors at the expense of other corporate or overall societal interests • MIP reduces the potential gain an acquiring firm can earn from an international acquisition in that country.
Garcia-Sanchez et al. (2016)	The influence of the institutional environment on the voluntary corporate social responsibility information discloser	Institutional Theory - DiMaggio and Powell's (1983) Institutional Perspective	***Sample*** 7322 observations from 1598 largest international companies identified in the Forbes Global from 20 countries ***Method*** Panel data from 23 different industry from 2004-2014 **Analysis** Correlation Analysis, Tobit Regression	Compliance of CSR, Socio-economic characteristics, Cultural system, Legal System, Corporate system oriented to CSR, Institutional system, Return on Asset, Business Opportunities	• Companies operating in countries with similar institutions present similar patterns of Behaviour • Companies operating in countries with similar cultural systems adopt homogeneous forms of behaviour when publishing CSR information • Firms located in collectivist and feminist countries present greater interest in disclosing standardized CSR information • Sustainability is not derived from a greater or lesser degree of regulation or power stratification • Firms located in civil law countries show greater interest in disclosing standardized CSR information, thus facilitating decision-making by stakeholders.

					• The stronger the legal infrastructure, the less important the role of accountability practices, with other institutional mechanisms being much more significant • With weak legal systems, CSR disclosure provides a high value in facilitating private contracts by reducing the problems associated with information asymmetry. • Socio-economic status in a country determines the pressures exerted on companies to increase social transparency • In relation to ownership structure, blockholders have a stake in the long-term survival of the firm and moreover seek to maintain their own reputations, which are strongly linked to that of the firm and hence, are more likely to adopt decisions that maximize the firm's economic, social and environmental behaviour.
He et al. (2016)	Explores how three types of institutional pressure systematically impact on the safety climate of construction projects	Institutional Theory - DiMaggio and Powell's (1983) Institutional Perspective	***Sample*** 186 senior and professional individuals from 43 construction companies operating in Shanghai, China ***Method*** Self-administered email survey, Interviewer administered on-site survey, online survey **Analysis** ANOVA, Factor Analysis, Partial Least Squares (PLS)	Safety commitment and employee involvement, Applicability of safety procedures and work practices, Perception of responsibility for safety and health, Coercive pressures, Mimetic pressures, Normative pressure	• Each component of safety climate is associated with at least one component of institutional pressure • Mandatory regulations, peer pressure and instructive corporate guidelines can all influence safety awareness and safety attitude • Influence of coercive pressures on safety commitment and employee involvement is also much stronger than the influence of the two other types of institutional pressures. • National government's attitude toward safety has a great influence on an enterprise's safety attitude and its mandatory laws and regulations have a great effect on corporate safety performance. • Mimetic pressures exert a much stronger impact than coercive pressures on applicability of safety procedures and work practices, which indicate that both compelling pressures and industry competition can push organisations to establish appropriate safety procedures and safety practices. • Laws and regulations serve as guidelines rather than concrete protocols. In contrast, corporate seminars and safety competitions usually provide some insight into safety • No significant influence of normative pressures on the applicability of safety procedures and work practices • The perception of safety responsibility is significantly influenced by mimetic pressures only and hence, training and safety seminars delivered by safety associations are crucial in raising safety perceptions among organisation members, clarifying their safety responsibilities and regulating safety procedures

Study	Research Focus	Theoretical Framework	Methodology	Study Variables	Findings related to Institutional Factors
Lim et al. (2016)	Influence of individuals' household income and level of education on their engagement in entrepreneurship, as well as the interaction effects between these individual-level factors and country-level regulatory, cognitive, and normative institutions	Institutional Theory - Scott's Three Institutional Pillars	***Sample*** 36,687 observations from 22 countries ***Method*** Panel data on individual- and country-level data from multiple data sources from 2005–2008 **Analysis** Factor Analysis, Correlation Analysis, Multilevel Mixed-effects Linear Regression (Hierarchical linear model)	**Individual-level variables:** Engagement in entrepreneurship, Financial capital, Human capital, Age, Gender, Work status, Social ties **Country-level variables:** Regulatory condition, Cognitive condition, Normative condition, Level of economic development, Pace of economic development, Business ownership rate, Information infrastructure, Population growth, Foreign firm presence	• Direct positive effects of individual financial capital (household income) and human capital (education level) on engagement in entrepreneurship • Regulatory condition (i.e., government policy, support programs, and regulations pertaining to the creation, growth, and management of new businesses) has positive moderation effects on the relationship between individuals' human capital and their engagement in entrepreneurship. • Country's cognitive institution that pays greater attention to entrepreneurship can effectively channel better educated individuals toward entrepreneurship. • Normative condition of a country's institutional environment (i.e., the perceived desirability of an entrepreneurial career) positively moderates the relationship between individuals' level of education and engagement in entrepreneurship • Relationship between individual household income and people's engagement in entrepreneurship does not vary significantly across different regulatory, cognitive, and normative environments • A country's regulatory, cognitive, and normative conditions positively moderate the relationship between individuals' level of education and engagement in entrepreneurship
Lin & Ho (2016)	Why do firms in a common organisational field have different environment performance	Institutional Pressures	***Sample*** 74 Global Automakers ***Method*** Secondary data collected from ERRI and ASSET4 database on institutional pressure and environmental performance. Primary data collected through survey questionnaire on organisational ambidexterity **Analysis** Correlation Analysis, Dubin-Watson tests, Variance Inflation Factors (VIFs) Analysis, OLS regression	**Institutional Pressures:** Environmental Regulatory Regime Index (ERRI); **Environmental Performance:** ASSET4 Ratings; **Organisational Ambidexterity:** *Exploration*: introduction of new generations of products; extension of product range; opening new markets; entering new technological fields; *Exploitation*: improvement of existing products; improvement of production flexibility; reduction of manufacturing cost; enhancement of existing markets	• The institutional pressures positively affect organisational ambidexterity. • Higher level of ambidexterity of a firm has positive effect on achieving higher level environmental performance • Organisational ambidexterity - the simultaneous pursuit of exploitation and exploration - can mediate the relationship between institutional pressures and environmental performance.
Li & Sun (2017)	Impact of sub-national institutions on the	Institutional Perspective	***Sample*** Large-firm-level dataset of about 29,000 foreign	Return on sales, Firm Size, Firm Age, Joint Venture, Export oriented Firms, Hongkong, Macau or Taiwan based Firms, Sales Growth, Leverage Ratio, Market	• Large foreign firms can receive favourable treatments from local institutions due to their contribution to local economy and employment

	performance of foreign firms in China		firms in 120 cities in China ***Method*** Panel data from Survey of Foreign-invested Industrial Enterprises and Annual Census of Industrial Enterprises over the period 1999–2005 **Analysis** Hausman–Taylor method	Concentration, Firms Located in Costal Area, Average Wage, Road Mileage, Electricity Price, Country of Origin,	• Small firms are less likely to gain attention from the government and hence avoid institutional constraints but may take advantage of institutional voids. • Older foreign firms are able to gain necessary knowledge, experiences, and institutional relationships over time, which in turn creates a positive impact on firm performance. • Although Wholly foreign owned enterprises can enjoy advanced technologies and managerial know-how, their abilities are restricted in regions with a higher level of institutional constraints. • Exporting-oriented foreign firms perform better than local-market-orientation firms. • There is no significant relationship of subnational institutional constraints on the performance of exporting oriented firms
Yi et al. (2018)	Examine the effectiveness of formal institutions (as the macro-level mechanism) and external auditing (as the micro-level mechanism) in controlling multinational firms' engagement in bribery	Institutional Theory - North's (1990) Institutional Perspective	***Sample*** 38,673 firms from 18 sectors across 113 countries ***Method*** Cross-sectional dataset from World Enterprise Surveys, Business Freedom Index and Country Development Index between 2006-2014 **Analysis** t-test, Kolmogorov-Smirnov Test, Heckman Test, Hausman Test, VIF Analysis, Correlation Analysis, Tobit Regression Model	Bribery Intensity, Foreign Ownership, Business Freedom, External Auditing, Firm age, Firm Age, Manager's Experience, Export Orientation, Government Contract, Product Quality, Ownership Concentration, GDP Growth, FDI Inflows	• Foreign subsidiaries act as self-interested agent and may engage in bribery that is inconsistent with headquarters' ethics. • Formal aspect of the institutions (i.e. market freedom) affects the agency problem between a multinational firm headquarter and its foreign subsidiaries regarding bribery intensity • Substitute effects between formal institution as a macro-level governance mechanism and external auditing as a micro-level governance mechanism. • Host country's institutional setting signals ethical foreign investors to strengthen internal governance under an environment where external governance is weak.

Appendix B

Summary of Key Studies - Safety Climate

Table B.1: Summary of Key Studies from Safety Climate

Scholars	Study Focus	Sample Profile	Methodology	Factors	Findings
Zohar (1980)	Describe a specific organisational climate (i.e. safety climate) and to examine its implications	**Country** Israel **Industry** 20 factories from chemical, metal, food, textile industry	**Data collection:** Self-administered questionnaire developed for the study (40 items, 5-point scale) **Research design:** Cross-sectional research **Analysis** EFA; multiple range test; expert ranking; stepwise discriminant analysis	Safety training; management attitudes towards safety; safe conduct on promotion; risk in workplace; workplace safety; status of safety officer; safe conduct on social status; status of safety committee	• Management commitment → success of safety programs • Management commitment to safety → improve the safety level • Safety climate score should be used as common denominator for comparing safety in different factories
Brown & Holmes (1986)	Assesses the validity of a safety climate measure proposed by Zohar (1980)	**Country** U.S. **Industry** 10 different manufacturing companies **Sample** 425 Production workers	**Data collection:** Zohar's (1980) questionnaire **Research design:** Cross-sectional research **Analysis:** Exploratory factor analysis; Confirmatory factor analysis	Same as Zohar's (1980) instrument	• Climate structures did not differ between pre-& post traumatic groups • Climate scores differ between pre-& post traumatic groups • Some indication of the reliability and validity of such a safety climate model in needed before any assessments
Dedobbeleer & Béland (1991)	Assess Brown and Holmes' (1986) three-factor safety climate model	**Country** Baltimore, U.S. **Industry** 9 different non-residential construction sites **Sample** 384 Construction workers	**Data collection:** Items reflected Brown & Holme's (1986) factor model but measures were different (4-point rating scale) **Research design:** Cross- sectional research **Analysis:** Maximum Likelihood; Weight Least Squares	**Model 1:** Management concerns; management safety activities; employee risk perception **Model 2:** Management commitment; Worker involvement	• Two-factor model (i.e., management's commitment to safety, workers' involvement in safety) provided an overall better fit. • It is necessary to address concerns of this two-factor model in safety policies.
Niskanen (1994)	Determine the factors comprising the safety climate	**Country** Finland **Industry** Road maintenance, construction and repair **Sample** workers (n=1,890) and supervisors (n=562)	**Data collection:** Self-administered questionnaire developed for the study (for Workers 25 items and for supervisors 18 Items, 5-point scale) **Research design:** Cross- sectional research **Analysis:** Descriptive analyses; t-tests; Exploratory factor analysis.	**Five-Determinants (Supervisors):** Changes in job demands; attitudes towards safety in the Organisation; value of the work; safety as part of productive work **Four-Factors (workers):** Attitudes towards safety in Organisation; Changes in work demands; Appreciation of the work; Safety as part of productive work	• Organisational safety support → safety experience • Supervisor → changing the environment • Training →attributional processes and subsequent behaviour • Managerial Style → performance (productivity, quality, turnover, safety) • Safety management → personnel skills and workers' involvement • Workers' safety practices and safety training and instructions → workers' safety performance
Coyle et al. (1996)	Measurement of attitudes and perceptions toward occupational health and safety issues	**Country** Australia **Industry** Clerical and service organisations **Sample** 880 personnel; Organisation 1: (n=340), Organisation 2: (n=540)	**Data collection:** Self-administered questionnaire consisting 26 items (7-point Likert scale) **Research design:** Cross- sectional research **Analysis:** Exploratory factor analysis; Concurrent validity analysis	Maintenance and management issues; Company policy; Accountability; Training and management attitudes; Work environment; Policy/procedures; Personal authority	• Zohar's (1980) original theory lacks validity on Australian population • Glennon's (1982) proposition of universal nine safety climate factors are not supported • Brown and Holmes' (1986) claim of three stable factors will be recognised across organisations failed to gain support

Scholars	Study Focus	Sample Profile	Methodology	Factors	Findings
Hofmann & Stetzer (1996)	Analyse the relationship between role overload, work group process, and safety climate and two indices of safety performance	**Country** U.S. **Industry** Chemical processing plant **Sample** 204 individuals	**Data collection:** Questionnaire developed for the study based on published safety climate scale using 21 items (5-point Likert scale) **Research design:** Cross- sectional research **Analysis:** Regression (ordinary least squares); Correlations analysis	Role overload; Perceptions of work group processes; Approach intentions; Unsafe behaviours	• Role overload, group process, safety climate, and approach interventions → unsafe behaviour • Intensions mediate group process → unsafe behaviours • **Team-level assessment**: safety climate and unsafe behaviours are significantly → actual accidents • **Group-level assessment**: safety climate and unsafe behaviours are marginally → actual accidents
Díaz & Cabrera (1997)	Develop a set of evaluation measures for safety attitudes and safety climate	**Country** Spain **Industry** Aviation industry **Sample** 166 personnel from ground handling, fuel company and airport authority	**Data collection:** Self-administered questionnaire developed for the research using 45 items and 2-point scale **Research design:** Cross- sectional research **Analysis:** One-way ANOVA, Correlations analysis, Regression analysis	Company policies towards safety, Emphasis on productivity vs safety, Group attitudes towards safety, Specific strategies for prevention, Safety level perceived in the airport, Safety level perceived on the job	• Organisational policies/practices →global perceptions of workers practice • Policies acting through the safety climate → safe behaviour • Key dimensions: company policies towards safety, compliance with safety, feedback and performance, assignation of funds and resources to safety areas, safety training and management commitment to safety
Williamson et al. (1997)	Develop a measure of perception and attitudes about safety as an indicator of safety climate for use with working populations	**Country** Australia **Industry** Heavy and light manufacturing industry **Sample** 660 workers	**Data collection:** Self-administered questionnaire developed from literature and previous themes (62 items, 5-point Likert scale) **Research design:** Cross- sectional research **Analysis:** Exploratory factor analysis, One-way ANOVA	Safety awareness, Safety responsibility, Safety priority, Management safety commitment, Safety control, Safety motivation, safety activity, Safety evaluation	• Short and long versions of the scale to measure workplace perceptions and attitudes about safety, appears to have acceptable internal consistency and validity
Cheyne et al. (1998)	Examine the architecture of the relationships between components of organisational safety climate, including employee attitudes to safety issues and perceptions of the work environment, and related this to self-reported levels of safety activity	**Country** United Kingdom & France **Industry** Manufacturing organisation with factories **Sample** 915 Employees	**Data collection:** Self-administered questionnaire based on Cox & Cox (1991) and Tomas Oliver (1995) safety scale (30 items, 3 and 5-point Likert scale) **Research design:** Cross- sectional research **Analysis:** Structural Equation Modelling (SEM), MANOVA, ANOVA	Safety management, Communication, Individual responsibility, Safety standards and goals, Personal involvement	• Safety attitudes→ safety management and individual responsibility • Organisational variables, i.e. safety management and safety standards and goals → environmental variables, i.e. physical work environment and workplace hazards appraisal • Organisational variables, i.e. safety management and safety standards and goals → group process, i.e. communication and personal involvement → individual responsibility and safety activities • No relationships between workplace hazard appraisals and safety activities; between safety standards & goals and personal involvement; between physical work environment and workplace hazards, and workplace hazards and individual responsibility

Scholars	Study Focus	Sample Profile	Methodology	Factors	Findings
Brown et al. (2000)	Compare and contrast the three alternative hypotheses (system, person, system–person sequence to define more clearly the antecedents to safe and unsafe work behaviours in manufacturing settings	**Country** U.S. **Industry** High-performance alloy mill forms manufacturer **Sample** 551 Employees	**Data collection:** Questionnaire developed based on in-depth plant tours and interviews in several plants consisting 81 items (7-point Likert scale) **Research design:** Cross- sectional research **Analysis:** Correlation analysis, Confirmatory Factor Analysis, Covariance structure analysis	Safety climate, Pressure, Cavalier attitude, Safety efficacy, Safe work behaviour	• Safety hazards → employees' perceptions of safety climate, work pressure, unsafe behaviours and accidents • Hazards and safety climate → Perceptions of pressure • Managers → changes in perceived pressure through clear communication and keeping safety visibility • A positive safety climate should be characterized by an open-door policy for hazard and accident reporting, a sincere concern for employee well-being, and fairness in accident investigations
Flin et al. (2000)	Examination of safety climate scale	**Country** N/A **Industry** Energy, Chemical, Transport, Construction, Manufacturing **Sample** 18 Studies	**Data collection:** Systematic-review of the published literature **Research design:** Case Study **Analysis:** Thematic Analysis	Management attitudes and behaviours, Safety system, Risk, Work pressure, Competence, Safety procedures and rules	• The most commonly measured dimensions relate to management, safety systems, risk, followed by work pressure and competence (and rules/procedures may be worthy of more attention) • The actual item components of each theme are variable and are likely to be industry or even company specific, relating to particular work practices or policies
Griffin & Neal (2000)	Developing a framework for measuring employee perceptions of safety-related factors in the work environment	**Country** Australia **Industry** Manufacturing and mining organisations **Sample** 1,264 Employees	**Data collection:** Self-administered questionnaire consisting 81 items (5-point Likert scale) **Research design:** Cross- sectional research **Analysis:** Confirmatory factor analysis (CFA), Structural equation modelling (SEM)	Manager values, Safety inspection, Personnel training, Safety communication, Safety knowledge, Safety compliance, Safety participation	• Safety climate is a higher order factor comprising specific first-order factors • Safety climate → perceptions of workplace systems • Safety climate is different from self-reports of individual safety performance and from the motivational and knowledge determinants • Safety compliance and behaviours → overall safety participation
Neal et al. (2000)	Effects of general organisational climate on safety climate and safety performance	**Country** Australia **Industry** Hospitals **Sample** 525 employees from 32 work groups	**Data collection:** Questionnaire consisting 59 items (5-point Likert scale) **Research design:** Cross- sectional research **Analysis:** Correlation Analysis, Structural equation modelling (SEM)	Organisational climate, safety climate, Determinants of safety performance (knowledge, motivation), components of safety performance (compliance participation)	• Motivation exerted a weaker effect on participation than upon compliance, • Safety climate → workers participation ↑ general organisational climate • Specific climate for safety → safety performance than the general climate of the organisation • Knowledge and employee motivation →improvements in safety climate
Varonen & Mattila (2000)	Define the structure of safety climate as perceived by workers and the correlations between the safety climate, safety practices, the safety level of the work environment and occupational accidents	**Country** Finland **Industry** Wood-processing companies **Sample** 1,056 Workers	**Data collection:** Questionnaire has been developed based on Varonen (1997 consisting 22 items (4-point Likert scale) **Research design:** Cross- sectional research **Analysis:** Correlation Analysis; Exploratory factor analysis	Safety program; management involvement; safety committee; safety information; job hazard analysis; internal safety inspections; disruptions in production; near-accidents; anticipation of hazards; participation of safety authorities; up-to-date safety matters; safety training; plant safety rules; safety signs; system for familiarizing new employees with the workplace; extent to which new employees are familiarized with the workplace; housekeeping	• The safety climate → accident rates • Company's safety precautions → 'anticipation of hazards' and safety level of the work environment • Organisational responsibility → safety level of the work environment • No relation between Organisational responsibility → safety practices, • Organisational responsibility → safety activities of management and organisation and safety training

Scholars	Study Focus	Sample Profile	Methodology	Factors	Findings
Zohar (2000)	Presents and tests a group-level model of safety climate to supplement the available organisation-level model	**Country** Israel **Industry** Metal Processing plant **Sample** 534 production workers in 53 work groups	**Data collection:** Questionnaire based on critical incident technique and the Task Load Index (Hart & Steveland, 1988), supervisor and expert ratings of risk, consisting 23 items (5-point Likert scale) **Research design:** Cross- sectional research **Analysis:** Exploratory factor analysis; Correlation analysis; Within-group homogeneity; One-way ANOVA; Regression (ordinary least squares); Hierarchical Linear modelling	**Five-Determinants** Supervisory action, Supervisory expectation, Role overload, Expert ratings of subunit risk, Supervisor ratings of job risk.	• Managerial practice → accident records and industrial accidents • Supervisory discretion → policy implementation • Micro-accidents were shown to be an objective measure of behavioural safety • Employees perceptions → instituted procedures and supervisory practices • Supervisor who is minimally committed to safety might be highly rated on rewarding while being poorly rated on safety's action
Glendon & Litherland (2001)	Determines the factor structure of safety climate using a modified version of the safety climate questionnaire (SCQ)	**Country** Australia **Industry** Construction and maintenance of roads and bridges **Sample** 192 Employees	**Data collection:** Safety Climate Questionnaire (SCQ) developed by Glendon et al (1994) with some modification consisting 40 items (9-point Likert scale) **Research design:** Cross- sectional research **Analysis:** Exploratory factor analysis, MANOVA, Multiple regression	**Six-Determinants** Communication and support, Adequacy of procedures, Work pressure, Personal protective equipment relationships, Safety rules	• Although the same safety climate factors will not apply to all organisations, some safety climate factors may be stable across industries, organisations and national cultures • No relationship between safety climate → safety behaviour • No relationship between safety climate → safety performance
Mearns et al. (2001a)	Investigate the role of human and organisational factors in safe working behaviour and accident/near miss involvement	**Country** United Kingdom **Industry** 11 installations from Offshore oil and gas companies **Sample** 722 Production workers	**Data collection:** Questionnaire developed based on Offshore Safety Questionnaire (OSQ) consisting 95 items (5-point Likert scale) **Research design:** Cross- sectional research **Analysis:** Exploratory factor analysis, Correlation analysis, Step-wise regression analysis	**Five-Determinants** Your job, Risk perception, Satisfaction with safety measure, Safety attitudes, Accident history	• Unsafe behaviour → accident/near-misses incidents • Production pressure → unsafe behaviour • Internal factors i.e. supervisors, managers, and work-mates activities → perceived work pressure • Satisfaction with safety measures → feelings of safety • Perceived efficacy of safety measures → perception of occupational hazards • No relation between perceived work pressure, poor job communication and negative attitudes to rules and regulations does not contribute to unsafe' behaviour
Gillen et al. (2002)	Evaluates injured construction workers' perceptions of workplace safety climate, psychological job demands, decision latitude, and co-worker support, and the relationship of these variables to the injury severity sustained by the workers	**Country** U.S. **Industry** Construction **Sample** 255 injured workers	**Data collection:** Questionnaire developed based on Brown and Holmes (1986); Dedobbeleer and Beland (1991) and surveys of working conditions by the U.S. department of labour (USDOL) consisting 59 items (4-point Likert scale) **Research design:** Cross- sectional research **Analysis:** Descriptive; Reliability; Chi-square test; ANOVA; Hierarchical multiple regression analysis	Management commitment to safety; Employee risk perception; Decision latitude; Skill discretion; Decision authority; Physical and psychological job demands; Social support	• Union workers differed quite dramatically from non-union workers in their perception of safety climate, but were remarkably similar in their perceptions of job demands, decision-making ability, and social support • The relationship between perception of safety climate and injury severity was not fully explicated • Both union and non-union workers perceived their jobs as overwhelmingly satisfying, even though they had all recently been injured

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O'Toole (2002)	Examines the relationship between management's approach to safety, which largely defines the organisational culture, and employees' perceptions (attitudes) of how important safety is to the company	**Country** U.S. **Industry** Mining & Construction **Sample** 1,414 Employees	**Data collection:** Self-administered questionnaire developed based on Bailey (1988) & Peterson (1988) consisting 41 items (Dichotomous options: Yes/NO) **Research design:** Cross- sectional research **Analysis:** Factor analysis; Chi-square test	**Seven-Determinants** Management's commitment to safety; Education and knowledge; Drugs and alcohol; Safety supervisory process; Emergency response; Off-the job safety Employee involvement and commitment	• Employees' positive perception of management's commitment → incidents that lead to injury • There is a connection between management's approach to safety and employees' perception (attitude) of how important safety is to the management team
Zohar (2002a)	(a) Effect of leadership style on the level of concern for subordinate safety; (b) Effect of safety concern, operationalized with supervisory practices, on safety climate perceptions; and (c) safety priority as assigned by higher superiors influence supervisory safety practice independently of leadership style	**Country** Israel **Industry** Metal Processing **Sample** 411 production workers	**Data collection:** Questionnaire developed based on Zohar (2000), and Multifactor Leadership Questionnaire consisting 63 items (5-point Likert scale; frequency rating) **Research design:** Cross- sectional research **Analysis:** Descriptive; Correlation; Reliability; Nested ANOVA; Multiple-regression	Assigned safety priority; Risk level; Injuries; **Group-level Safety Climate** Preventive action (PA); Reactive action (RA); Prioritization (P) **Leadership** Idealized Influence (IIA); Idealized Influence (IIB); Inspirational Motivation (IM); Intellectual Stimulation (IS); Individual Consideration (IC); Contingent Reward (CR); Management-By-Exception Active (MBEA); Management-By-Exception Passive (MBEP); Laissez Faire (LF); Extra Effort (EE); Effectiveness (EFF); Satisfaction (SAT)	• Transformational and constructive (contingent-reward) leadership → injury indirectly rate mediated by climate PA • Safety priority → the leadership-climate relationship & interaction depending on leadership dimensions • Corrective(management-by-exception) and non-laissez faire leadership → injury records • Supervisory safety practices → safety climates, and safer behaviour • Transformational Leadership → Contingent Reward (CR) was mediated only by climate PA • Reactive action (RA) → Prioritization (P)
Hofmann et al. (2003)	Investigate the combined influence of leader-member exchange (LMX) and safety climate on subordinate safety role definitions and behaviour	**Country** U.S. **Industry** Military **Sample** 127 transportation team members	**Data collection:** Questionnaire developed based on Gerstner & Day (1997); Van Dyne et al. (1994); Van Dyne & LePine (1998) and revised and updated version of Zohar (1980) consisting 57 items (5-point Likert scale) **Research design:** Cross- sectional research **Analysis:** Descriptive; Correlation; Ordinary least squares regression; Hierarchical linear modelling	**Leader-member exchange** Performance rating; Satisfaction; Objective performance; Role perceptions; Organisational commitment; Turnover processes; Member competence; Leader-member agreement **Safety Climate** Management attitude toward safety; Effect of safe behaviour on social standing; Safety Reward **Safety citizenship** Helping; Voice; Civic virtue; Stewardship; Initiating safety related change; Whistleblowing;	• LMX → safety citizenship role definitions • LMX → safety citizenship role moderated by safety climate • Safety climate → safety behaviours • Safety climates → content-specific role expectations • LMX and safety citizenship role definitions jointly → safety citizenship behaviour • Front-line leaders, and safety climates → safety performance of their subordinates • LMX and safety climate → Organisational learning and innovation
Mearns et al. (2003)	To benchmark participating offshore installations on their safety climate, and to identify best safety management practices.	**Country** United Kingdom **Industry** 13 installations from Offshore oil and gas companies **Sample** Year 1: 682 Personnel Year 2: 806 Personnel	**Data collection:** Self-administered Offshore Safety Questionnaire (OSQ) based on Rundmo, 1994, 1997; Mearns et al., 1997, 1998 and Safety Management Questionnaire (3, 5 & 6-point scale) **Research design:** Longitudinal research **Analysis:** Exploratory factor analysis, Spearman correlation, One-way ANOVA, Discriminant function analysis (DFA)	**OSQ Dimensions** Satisfaction with safety Activities, Involvement in health and safety, Communication, Perceived supervisor competence, Perceived management commitment, Frequency of unsafe behaviour, Frequency of unsafe behaviour under incentives, Safety policy knowledge, Job satisfaction, Written rules and procedures **Safety Management Questionnaire (SMQ)** Health and safety policy Organizing for health and Safety, Management commitment, Workforce involvement, Health promotion and surveillance, Health and safety auditing *(Year 1 & Year 2 items are slightly different)*	• Communication → dangerous occurrences • Management commitment → dangerous occurrences • Commitment and that changes in management commitment were reactive rather than proactive • Health promotions and programmes → perceptions of company commitment ↑ safety behaviour • Health plans and health programmes → worker health and work-related injury • Commitment by senior onshore i.e. regular visits offsite to discuss safety and talk → workers safety performance.

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Cooper & Phillips (2004)	Empirical links between safety climate and actual safety behaviour.	**Country** U.S. **Industry** Packaging production plant **Sample** 540 Employees	**Data collection:** Self-administered Questionnaire based on modified version of Zohar's (1980) work consisting 50 items (5-point Likert scale) **Research design:** Longitudinal research **Analysis:** Exploratory factor analysis, Internal reliability, One-way ANOVA, Discriminant validity, Concurrent validity, Multiple regression	management attitudes towards safety, management actions towards safety, perceived level of risk at workplace, work pace on safety, safety training, safe conduct on social status & promotion, status of safety officer & safety committee.	• While different factor structures emerge from different research groups, some safety climate factors are stable across industries and cultures • Organisational demographics i.e. job function, divisions, and departments are likely to be a more fruitful route to discovering relationships between safety climate and other organisational variables • Perceptions about the importance of safety training → actual ongoing behaviour • Behavioural improvement programs → behaviour change without any noticeable change in attitudes
DeJoy et al. (2004)	To explore the factors that determine safety climate or to testing the hypothesized mediating role of safety climate with respect to safety-related outcomes	**Country** U.S. **Industry** Large national retail chain in 21 different locations **Sample** 2,208 Employees	**Data collection:** self-administered questionnaire based on previous literature and studies consisting 46 items (5-point Likert scale) **Research design:** Cross-sectional research **Analysis:** Descriptive Statistics, Reliability, Correlation analysis, Hierarchical, multiple regression analysis	organisational support, co-workers support, participation with others and with supervisors, communication, environmental conditions, safety policies and programs, safety climate based on NIOSH scale, perceived safety at work	• Environmental conditions, safety policies and programs, and Organisational climate each → safety climate • Safety policies and programs, communication, and Organisational support, respectively → employee perceptions of safety climate • Open and effective communication → positive safety climate • Employee perceptions of how safe they are at work extends beyond their perceptions of safety climate.
Seo et al. (2004)	Examines stability of a factor structure of safety climate scale developed through an extensive literature review using confirmatory factor analytic approach and cross-validation	**Country** U.S. **Industry** Grain Industry **Sample** 722 Floor Workers	**Data collection:** Survey questionnaire consisting 63 items (7-point Likert scale) **Research design:** Cross-sectional research **Analysis:** Descriptive Statistics, Reliability, Correlation analysis, Exploratory factor analysis, Confirmatory factor analysis	**Five-Determinants** Management commitment, supervisor support, co-worker support, employee participation, competence level	• More emphasis should be made on the role of management commitment and supervisor support among various aspects of accident prevention efforts, considering their substantial influence on other dimensions of safety
Siu et al. (2004)	Examine relations among safety climate (safety attitudes and communication), psychological strains (psychological distress and job satisfaction), and safety performance (self-reported accident rates and occupational injuries)	**Country** Hong Kong **Industry** 27 Construction sites **Sample** 374 Employees	**Data collection:** In-depth interview and survey questionnaire based on Safety Attitudes Questionnaire developed by Donald et. al (1993) consisting 33 items (7-point Likert scale) **Research design:** Cross-sectional research **Analysis:** Reliability, Path analysis, Correlation	Safety attitudes, communication, psychological distress, job satisfaction, accidental rates, occupational injuries	• Safety attitudes → occupational injuries • Workers' levels of psychological distress → accident rates • Psychological distress → accident rates • Job insecurity → perceived pressure → higher accident rates
Seo (2005)	Construct and test an explicative model of unsafe work behaviour to reveal the mechanisms by which the contributory factors to unsafe work behaviour influence safety behaviours of individuals at workplaces	**Country** U.S. **Industry** Grain Industry **Sample** 722 Floor Workers	**Data collection:** Survey questionnaire consisting 98 items (7-point Likert scale) **Research design:** Cross-sectional research **Analysis:** Structure equation Modelling	Perceived safety climate, perceived hazard level, perceived work pressure, perceived risk, perceived barriers, unsafe work behaviours	Perceived safety climate → unsafe work behaviours in three paths simultaneously: • Indirectly through the sequential influence of other mediating factors of perceived work pressure, perceived risk, and perceived barriers • Through direct influence on perceived barriers which, in turn, affects unsafe work behaviours • Direct influence on unsafe work behaviours

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Zohar & Luria (2005)	Test a multilevel model of safety climate, covering both organisation and subunit level analysis	**Country** Israel **Industry** 36 small-to-medium sized manufacturing plants in the metal, food, plastics, and chemical industries **Sample** 3,952 Production workers	**Data collection:** Survey questionnaire consisting 32 items (5-point Likert scale) **Research design:** Cross-sectional research **Analysis:** Descriptive Statistics, Correlation analysis, Exploratory factor analysis, Ordinary least squares regression	**Organisation-Level & Group-Level Safety Climate:** Active practices (monitoring, enforcing) proactive practices (promoting learning, development), declarative practices, (declaring, informing)	• Company policies and procedures → organisational climate perceptions → supervisory practices • Supervisory practices → group-level climates in individual subunits • Organisation climate → group climate level → role behaviours • Supervisory practice → the relationship between organisation and group climate strengths • Company coherent procedures composed of formal procedures ↓ supervisory discretion → organisation and group climate strengths • Supervisors practice → workers perception of safety priority even if managements emphasise top priority
Clarke (2006a)	Aim is to disaggregate the psychological constructs underlying measurements of 'safety climate' and 'safety culture' to investigate the predictive power of each type of model	**Country** N/A **Industry** N/A **Sample** 19 Studies	**Data collection:** Systematic-review of the published literature **Research design:** Case Study **Analysis:** Meta-analysis	**Selected articles must contain** • A measure of safety attitudes and/or safety perceptions • A criterion measure in terms of actual accidents or injuries	• Safety perceptions → work accidents than safety attitudes • Safety climate → the quality of an organisation's safety effort • No relationships between Safety attitude → work accidents • Perceptions of social norms and behavioural control → attitudes on behaviour • No relation between group safety climate → shared attitudes • Researchers should disaggregate psychological constructs within their models of 'safety climate' or 'safety culture'
Clarke (2006b)	Examine the criterion-related validity of the relationships between safety climate, safety performance (participation and compliance), and occupational accidents and injuries	**Country** N/A **Industry** N/A **Sample** 35 Studies	**Data collection:** Systematic-review of the published literature **Research design:** Case Study **Analysis:** Meta-analysis	**Selected articles must contain** • A measure of safety climate • A criterion measure in terms of occupational accidents, injuries, safety compliance, or safety participation • A measure of safety compliance, safety participation, or both • A measure of occupational accidents or injuries	• Positive safety climate → lower accident and injury rates • Positive safety climate → greater safety participation and, to a lesser extent, greater safety compliance • Safety performance (safety compliance and safety participation) → occupational accidents and injuries • The validity of the relationships between safety performance and occupational accidents and injuries are greater than that for the relationship between safety climate and accidents
Clarke & Ward (2006)	Explore the effect of leader influence tactics on employee safety participation	**Country** United Kingdom **Industry** Glassware manufacturing Organisation **Sample** 105 Participants	**Data collection:** Questionnaire has been developed based on modified version of group-level safety climate measure by Zohar (2000), measures of influence tactics by Kipnis et al. (1980) and Yukl et al. (1996) and safety performance scales by Neal et al. (2000), Mearns et al. (2003), and Silva et al. (2004) consisting 41 Items (5-point Likert scale) **Research design:** Cross-sectional research **Analysis:** Descriptive, Correlation, Confirmatory factor analysis, Structure equation Modelling	Safety climate, safety participation, pressure tactics, coalition tactics, rational persuasion, inspirational appeals, consultation	• Leader influence tactics (inspirational appeals, consultation, and rational persuasion) → safety participation that were partially mediated by safety climate • Leader influence tactics (coalition tactics) → safety participation • Managers → safety participation and extra effort to engage in safety activities • Transactional than transformational leadership → safety participation • Not all relationships with safety participation were fully mediated by safety climate • Level of trust in managers → Organisational performance and safety incidents, including near misses and minor injuries

Scholars	Study Focus	Sample Profile	Methodology	Factors	Findings
Huang et al. (2006)	Focus on the roles of safety climate and perceived safety control on safety outcomes	**Country** U.S. **Industry** Manufacturing, Construction, Service, and Transportation industry related organisations **Sample** 2,680 Participants	**Data collection:** Questionnaire has been developed based on Huang et al. (2003), Huang et al. (2004a), and Huang et al. (2004b), consisting 20 items (6-point scale) **Research design:** Cross-sectional research **Analysis:** Descriptive, Correlation, Confirmatory factor analysis, Structure equation Modelling	Management commitment to safety, return-to-work policies, post-injury administration, safety training, employee safety control, injury incidences	• Management commitment to safety and safety training → safety climate • Management commitment to safety → other safety climate factors at least, partially • attention return-to-work policies and treating injured workers fairly → injury reduction • Safety climate → self-reported occupational injury
Neal & Griffin (2006)	Measures perceptions of safety climate, motivation, and behaviours at 2-time points and linked them to prior and subsequent levels of accidents over a 5-year period	**Country** Australia **Industry** Hospital **Sample** Year 1: 460 Personnel Year 2: 490 Personnel Year 4: 301 Personnel	**Data collection:** Questionnaire based on Neal et al. (2000) (5-point Likert scale) **Research design:** Longitudinal research **Analysis:** Exploratory factor analysis, Correlation analysis, One-way ANOVA, Poisson regression analysis, Ordinary least squares regression analyses	Safety climate, safety motivation, safety compliance, safety participation, accident rates	• Employees safety perception → safety compliance • Motivation → contextual performance more than task performance • Act of participating in safety activities → safety motivation • Self-reports of safety compliance and safety participation are empirically distinct at the individual level of analysis and are differentially related to safety motivation over time • Groups that are composed of individuals who engage in safety behaviours experience a subsequent reduction in accident rates
Smith et al. (2006)	Extend our previous work that relied on self-reported data and to assess the association between company-level safety climate and three separate of measures injury risk	**Country** U.S. **Industry** Mineral, Construction, Paper and allied, Printing and publishing, Metal industry, Electrical and electronic equipment, wholesale trade, Retail, Finance insurance, Service **Sample** 41,678 Workers	**Data collection:** Questionnaire developed based previous safety climate studies consisting 14 safety climate items (6-point Likert scale) **Research design:** Cross-sectional research **Analysis:** Descriptive; Correlation analysis; Linear regression analysis	Workers' compensation; injury rates; industry-specific hazard adjustment; safety climate	• Safety climate → injury rates • Workers' perception of the hazard and risk → perception of safety climate, • company's safety record → workers perceptions of safety climate • The inherent hazards of an industry → injury rates
Wallace et al. (2006)	Examination of the effects of different climates on occupational accident	**Country** U.S. **Industry** Shipping and Transportation **Sample** 9,429 Transportation workers in 253 work groups	**Data collection:** Questionnaire has been developed based on the survey of perceived Organisational support by Eisenberger et al. (1986a), management–employee relations index by Lucias (1994) and safety climate scale of Zohar (2000) consisting 33 items (5-point scale) **Research design:** Cross-sectional research **Analysis:** Descriptive, Bivariate correlation, Chi-square difference test, Confirmatory factor analysis, Mediation test	Organisational support, management employee relations, safety climate, occupational accidents	• Higher the perceptions of management and the Organisation, the higher the safety climate and, ultimately, fewer the accidents • Safety climate fully mediated the relationships between management–employee relations and accidents and organisational support and accidents

Scholars	Study Focus	Sample Profile	Methodology	Factors	Findings
Evans et al. (2007)	Identify safety climate characteristics for the aviation sector and to develop and test a safety climate scale	**Country** Australia **Industry** Aviation industry **Sample** 940 Commercial pilots	**Data collection:** Questionnaire developed based on previous safety climate studies, consisting 27 items (5-point Likert scale) **Research design:** Cross-sectional research **Analysis:** Descriptive; Correlation analysis; Exploratory factor analysis; Confirmatory factor analysis; Concurrent validity	Management commitment to safety, safety communication, rules and procedures, shifts and schedules, safety training, equipment and maintenance	• The scale provides a measurement tool to assess the level of perceived safety climate, specifically of pilots, which with minor modifications, could also be used to assess other groups' safety climate perception within aviation or other transport modes.
Findley et al. (2007)	Investigate group differences in safety climate among job positions	**Country** U.S. **Industry** Nuclear decommissioning and demolition (D&D) industry **Sample** 1,587 Workers	**Data collection:** Questionnaire has been developed based on Health and Safety Climate Survey Tool (CST) published by the Health and Safety Executive (1997), the United Kingdom's government agency counterpart of the United States Department of Labour's Occupational Safety and Health Administration (OSHA), consisting 71 items (5-point Likert scale) **Research design:** Cross-sectional research **Analysis:** Reliability analysis; Principal-component factor analysis; MANOVA; Tukey's post hoc analysis	Organisational commitment and communication, line management commitment supervisor's role, personal role, co-worker's influence; competence, risk taking behaviour, obstacles to safe behaviour, permit-to-work; reporting of accidents and near-misses, job satisfaction	• Self-reported safety attitudes and perceptions of managers/support staffs → strong safety climate • Group differences in safety climate → organisational conflict, risk, and safety performance • Safety improvements that are not prioritized by job groups → safety attitudes and perceptions of groups • Communication and management's safety expectations → safety performance • Poor safety attitudes and perceptions by workers → filtered and distorted messages that undermine safety
Huang et al. (2007)	Evaluates the relationship between employees' work shift (i.e., day shift versus night shift) and perceptions of injury risk, and how the relationship is affected by company level safety climate and injury frequency	**Country** U.S. **Industry** Manufacturing, Retail, Construction, Real-estate, Service, and Transportation industries **Sample** 1,322 Workers	**Data collection:** Questionnaire has been developed based previous studies consisting 17 items (6-point scale) **Research design:** Cross-sectional research **Analysis:** Descriptive, Correlation, Multi-level modelling	Gender; age; part-/full-time work; tenure; prior injury experience; company injury frequency; company safety climate; work shift; interaction of work shift and company safety climate; interaction of work shift and company injury frequency	• Both safety climate and injury frequency →individual perception of injury risk • Frequencies of workplace injury → perceptions of injury risk • Different work shifts perceive → different levels of injury risk • Safety climate moderate the relationship of work shift → perception of injury risk
Johnson (2007)	Exploration of the ability of safety climate to predict safety-related outcomes	**Country** U.S. **Industry** Heavy manufacturing company **Sample** 292 Employees	**Data collection:** Questionnaire has been developed based on the safety climate scale of Zohar and Luria (2005) consisting 16 items (5-point scale) **Research design:** Cross-sectional research **Analysis:** Descriptive, Correlation, Exploratory factor analysis, Confirmatory factor analysis, Structure equation Modelling	Safety climate (Caring, Compliance and Coaching), Safety behaviour (unsafe and safe observation), Injury frequency (number of lost workday cases per 100 employees per year, total number of recordable cases per 100 employees per year)	• Safety climate consists of three factors including Active Practices (Monitoring–Controlling), Proactive Practices (Instructing–Guiding), and Declarative Practices (Declaring–Informing) • Managers, supervisors, and other personnel seeking to improve injury rates need to build supportive safety climates vested in Caring, Compliance, and Coaching • Safety climate → safe behaviours • Supervisory action → future accidents • Safety climate → Injury frequency rates and mediated by safe behaviours

Scholars	Study Focus	Sample Profile	Methodology	Factors	Findings
Baek et al. (2008)	Explore safety climate practices (level of safety climate and the underlying problems)	**Country** Korea **Industry** Hazardous chemical treating plants **Sample** 195 Managers 173 Workers	**Data collection:** Questionnaires developed by health and safety executive (HSE) in the UK consisting 87 items (5-point scale) **Research design:** Cross-sectional research **Analysis:** Descriptive, Correlation, Reliability, Exploratory factor analysis	Management commitment to safety, Merits of the health and safety procedures, Instructions and rules, Accidents and near-misses, Training and competence, Job security and satisfaction, Pressure for production, Communications, Perceptions of personal involvement in H&S, Perceptions of organisational and management to H&S, Rule breaking, Workforce view on state of safety and culture	• Management commitment to safety scores the highest among managers and 'Merits of the H&S procedures, instructions, and rules' recorded the lowest • 'Rule breaking showed the highest, which was followed by pressure for production, job security and satisfaction, and workforce view on state of safety and culture • NO relationship between Plant → level of safety climate • Among workers pressure for production and rule breaking is more serious problems than other constructs • Pressure for production and rule breaking are closely inter-related
Hahn & Murphy (2008)	Measure the validity of 6-item safety climate scale in multiple organisations	**Country** U.S. **Industry** ***Study 1:*** Hospital ***Study 2:*** Nuclear Weapon **Sample** ***Study 1:*** 1,716 Healthcare workers ***Study 2:*** 888 Workers	**Data collection:** Questionnaire has been developed based on the study of DeJoy et al. (1995) and Grosch et al. (1999) (4 & 5-point Likert scale, 4-point categorical response scale) **Study 1:** Consisting 55 items **Study 2:** Consisting 39 items **Research design:** Two different Cross-sectional research **Analysis:** Correlation Analysis; One-way ANOVA; Exploratory factor analysis; Confirmatory factor analysis; Convergent and discriminant validity	**For Study 1** Safety climate, Clean workplace, Safety training, safety equipment availability, safety barrier, body fluid exposure. Safe work practice, Accidents, Employment status, Education, Negative mood, Trouble falling asleep **For Study 2** Safety climate, Environment stressor, Injury, Communication, Involvement, Feedback quality, Decision authority, Sleep problems, Negative mood	• Validity and reliability of a 6-item safety climate (management commitment, safety performance feedback, worker involvement, and safety behaviour norms) scale has been established • Safety climate scale correlates with safe workplace behaviour, measures of environmental stressors, and safety policies, but is unrelated or much less related to demographics, sleeping problems, and negative mood • Safety climate → self-reported accidents • Safety climate → effective communication and feedback • Safety climate → experiences, i.e. job involvement and decision making • If safety climate is restricted to assessments of perceptions about safety "policies in use" and is restricted to assessments of organisational factors, not personal beliefs (as distinct from perceptions), then a more unified picture seems to emerge
Hsu et al. (2008)	Attempts to compare cross-cultural differences of Organisational factors on safety, and identifies idiosyncrasies from those differences	**Country** Taiwan Japan **Industry** Oil refinery **Sample** ***Taiwan:*** 295 workers ***Japan:*** 256 workers	**Data collection:** Questionnaire has been adopted from a safety assessment system questionnaire developed by the Central Research Institute of Electric Power Industry (CRIEPI) in Japan, consisting 53 Items (5-point Likert scale) **Research design:** Cross-sectional research **Analysis:** Descriptive; Reliability; Correlation Analysis; Independent sample t-test, Exploratory factor analysis; Confirmatory factor analysis; Structure equation Modelling	Management commitment to safety; Employee empowerment; Continuous improvement; Safety management system; Interpersonal relationship; Safety activities; Reporting system; Reward system; Supervision; Teamwork; Safety self-efficacy; Safety awareness; Safety behaviour	• Management commitment to safety →supervisory activities • Supervision → employee safety awareness • Safety management in Taiwanese plant seems to be reactive • Taiwanese plants tend to be people-oriented • Safety management in Japanese plants tends to be "proactive" • Japanese plants tend to be "task-oriented" • Blame culture can negatively impact workers' willingness to report workplace safety problems • Employee empowerment affects safety awareness and safety behaviour through a reporting culture • Harmonious interpersonal relationship affects safety self-efficacy in Taiwanese samples through safety activities, and affects safety awareness through teamwork
Lin et al. (2008)	Develop a safety climate questionnaire for use in China, and examine its validity and reliability	**Country** China **Industry** Artificial board plant, Electrical construction, Oil refinery plant, Shoes manufacture, and Cement production **Sample** 1,026 Workers	**Data collection:** Questionnaire has been developed based on previous literature consisting 27 items (5-point scale) **Research design:** Cross-sectional research **Analysis:** Descriptive, Correlation, Reliability, Exploratory factor analysis, Discriminant validity	**Seven-Determinants** Safety awareness and competency, Safety communication, Organisational environment, Management support, Risk judgement, Safety precautions, Safety training	• Seven factors: safety awareness and competency, safety communication, organisational environment, management support, risk judgment, safety precautions, and safety training is validated for Chinese industrial settings • Chinese workers put more emphasis on safety awareness and competency, safety communication and safety precautions

Scholars	Study Focus	Sample Profile	Methodology	Factors	Findings
Lu & Tsai (2008)	Empirically evaluates the influence of safety climate on vessel accidents from a seafarer's perspective	**Country** Taiwan **Industry** 20 Global containers carrier companies **Sample** 291 Seafarers	**Data collection:** Questionnaire developed based on previous literature consisting 47 items (5-point scale) **Research design:** Cross-sectional research **Analysis:** Reliability analysis, Exploratory factor analysis, Logistic regression analysis	**Six-Determinants** Management safety practices, Supervisor safety practices, Safety attitude, Safety training, Job safety, Co-worker safety practices	• Six critical safety climate dimensions have been identified: "management safety practices," "supervisor safety practices," "safety attitude," "safety training," "job safety" and "co-workers' safety practices" • Job safety →crew fatality and vessel failure • Management safety practices (i.e. frequent inspection of equipment, better provision of safety information) →crew fatality frequency • Safety training →crew fatality frequency
Meliá et al. (2008)	Analyse the psychosocial chain of safety influences among the safety responses and the perceived probability of accidents	**Country** UK, Spain, China **Industry** Construction, Production, Cleaning, Service, Driving, Warehouse, Clerical, Repairing, Selling **Sample** ***General Samples:*** UK = 869 Spain = 113 ***Construction samples:*** China = 99 Spain = 374	**Data collection:** The Valencia PREVACC Battery has been applied to measure which has quantitative and qualitative part. Quantitative part consists 43 items (6-point scale) **Research design:** Cross-sectional research **Analysis:** Descriptive; Reliability; Correlation; Multiple regressions	Organisational safety response (OSR); Supervisors' safety response (SSR); Co-workers' safety response (CSR); Worker safety response (WSR); Perceived risk of accident (PRA)	• There is a close relationship between OSR and SSR in both the general and construction samples • There is a close relationship between CSR and WSR in both the general and construction samples • OSR →CSR in only the Spanish construction sample • OSR →WSR in both Spanish and Chinese sample • SSR →CSR in all the samples • SSR →WSR in only the Spanish construction sample • In the English general sample, PRA is predicted negatively and significantly by all the safety response indicators. • Organisational and supervisor safety responses →PRA • In the Chinese construction sample, none of the safety responses appears significantly related to PRA. • In the Spanish general sample, WSR and CSR predict PRA negatively and significantly
Nielsen et al. (2008)	Examine if between-plant differences in safety climate are reflected in corresponding differences in accident rates, and if subsequent changes in safety climate are paralleled by changes in accident rates	**Country** Denmark **Industry** Manufacturer of blades for wind turbines **Sample** ***Plant A:*** N1 = 388 N2 = 443 ***Plant B:*** N1 = 364 N2 = 293	**Data collection:** Danish Safety Culture Questionnaire (DSCQ) consisting 138 items (5-point scale) **Research design:** Longitudinal research **Analysis:** Independent sample t-tests, Confirmatory factor analysis, Poisson regression	**Six-Determinants** Immediate supervisor general leadership, Immediate supervisor safety leadership, Safety instruction, Convenience violations, Safety oversight commitment to the workplace	• Significant relationship found between safety climate and self-reported injuries and reported accidents • Links between safety climate, safety behaviour and accidents are not as clear-cut as is often assumed
Pousette et al. (2008)	Investigate the dimensionality of safety climate, tests a hypothesis of sharedness as a characteristic of safety climate and tests the predictive validity of safety climate regarding safety behaviour	**Country** Sweden **Industry** Construction company **Sample** N1 = 242 N2 = 275 N3 = 284	**Data collection:** Questionnaire has been developed based on Cheyne et al. (1998) and Neal et al., (2000) study consisting 27 items (5-point scale) **Research design:** Cross-sectional and Longitudinal research **Analysis:** Correlation, One-way ANOVA, Confirmatory factor analysis, Hierarchical regression analysis	Management safety priority, Safety management, Safety Communication, Workgroup safety involvement, Safety motivation, Personal safety Behaviour, Interactional safety behaviour, Structural safety behaviour	• Factor structure of safety climate found by Cheyne et al. (1998) has been successfully replicated in the three different, but partly dependent samples • Members of a social unit (workgroup, department or work site) agree about their perceptions of their social environment than about how they value safety as individuals • Safety climate →self-reported safety behaviour

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Probst et al. (2008)	Assess the extent to which construction industry workplace injuries and illness are underreported, and determine whether safety climate predicts the extent of such underreporting	**Country** U.S. **Industry** Construction **Sample** 1,390 Employees	**Data collection:** Questionnaire has been developed as part of a larger project being funded by the National Institute for Occupational Safety and Health consisting 8 safety climate items (4-point scale) **Research design:** Cross-sectional **Analysis:** Correlation; Reliability; ANOVA; Regression analysis	Experienced injury rate; Recordable injury rate; Unreported injury rate; Safety climate	• The rate of experienced injuries occurring within Organisations often surpasses the injury rate that Organisations report to OSHA • Those organisations with a poor safety climate might be more likely than others to engage in underreporting • Organisations that have a lower commitment to safety are more likely to inadvertently or otherwise skew their injury data such that they appear to have similar safety outcomes as Organisations with a positive safety climate
Tharaldsen et al. (2008)	Examine the psychometric qualities of a Norwegian offshore risk and safety climate inventory questionnaire and whether employee perceptions of safety climate changed over time	**Country** Norway **Industry** Offshore oil company **Sample** N1 = 3,310 N2 = 8,567	**Data collection:** Norwegian Offshore Risk and Safety Climate Inventory (NORSCI) consisting 32 items (5-point Likert scale) **Research design:** Longitudinal research **Analysis:** Correlation, Principal component analysis, MANOVA, Confirmatory factor analysis, Discriminant and criterion validity, Structure equation modelling	Safety prioritisation, Safety management and involvement, Safety versus production, Individual motivation, System comprehension	• NORSCI measures important aspects regarding safety climate and risk at work • Safety climate →risk perception and accident rates • Risk perception and accident rates →safety prioritisation
Wu et al. (2008)	Investigate the potential correlation among safety leadership, safety climate and safety performance	**Country** Taiwan **Industry** University Laboratories **Sample** 465 Faculty and staff	**Data collection:** The questionnaire has been devised based on Wu (2005), Kang et al. (2001), Wu & Lee (2003) and adapted from Coyle et al. (1995), Díaz & Cabrera (1997), Cooper (1998 etc. consisting 132 items (5-point Likert scale) **Research design:** Cross-sectional research **Analysis:** Reliability analysis, Canonical correlation analysis, Path analysis	**Safety Climate Scale** CEO's safety commitment, Managers' safety commitment, Employees' safety commitment, Emergency response, Perceived risk **Safety Leadership Scale** Safety caring, Safety coaching, Safety controlling **Safety Performance Scale** Safety organisation and management, Safety equipment and measures, Accident statistics, Safety training evaluation, Accident investigations, Safety training practice	• Safety climate ↧ safety leadership →safety performance • Safety climate ↧ safety leadership →injuries • Safety leadership →safety climate • Safety controlling, such as using safety authority can enforce safety regulations, and manipulate safety tactics • Safety climate →safety performance • Safety controlling →safety organisation and management, safety equipment and measures, and accident investigations
Cavazza & Serpe (2009)	Examines the potential mediating effect of employees' attitudinal ambivalence toward safety practices on the relationship between Organisational safety climate and unsafe behaviours	**Country** Italy **Industry** Mechanic industry related to electrical energy, water, and gas **Sample** 345 Workers	**Data collection:** Questionnaire developed based on previous literature on safety, consisting 25 items (4-point scale) **Research design:** Cross-sectional research **Analysis:** Descriptive, Correlation, Reliability, Structural equation modelling	Unsafe behaviour, Company safety concern, Senior managers' safety concern, Workgroups safety involvement, Work pressure, Safety Communication, Ambivalence	• Attitudinal ambivalence →workers' tendency to use personal protective equipment (PPE) • Company safety concern, Senior managers' safety concern, and Supervisors' attitudes → individual ambivalence and work pressure • Workers perception of Organisational safety →level of ambivalence toward using PPE • Levels of ambivalence → tendency to break the safety norms • perception of safety climate →unsafe behaviours

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Christian et al. (2009)	Building on theoretical models of worker performance and work climate, the study quantitatively integrates the safety literature by meta-analytically examining person- and situation-based antecedents of safety performance behaviours and safety outcomes	**Country** N/A **Industry** N/A **Sample** 90 Studies	**Data collection:** Systematic-review of the published literature **Research design:** Case Study **Analysis:** Meta-analysis	Safety knowledge, Safety motivation, Conscientiousness, Neuroticism, Extraversion, Locus of control, Risk taking, Job attitudes, Psychological safety climate, Management commitment, HRM practices, Safety systems, Supervisor support Internal group processes, Perceived job risk, Work pressure, Group-level safety climate, Management commitment, HRM practices Safety systems, Supervisor support, Perceived job risk, Work pressure, Leadership, Criterion measure, Accidents and injuries, Safety compliance, Safety participation	• Both the person and the situation are important factors related to workplace safety • Positive safety climate →safety motivation, safety knowledge, safe behaviours and fewer accidents and injuries • Interventions for management commitment to safety →safety performance and accidents • Conscientiousness →safety motivation • Safety motivation →safety knowledge • Safety motivation, safety knowledge → safety performance • Safety performance →accidents and injuries • Safety climate → safety participation more than safety compliance • Leaders → workers' safety participation more than safety compliance • Group and organisational safety → safety performance more than psychological safety climate
Ma & Yuan (2009)	Examine the differences in safety climate between large enterprises and small and medium-sized enterprises (SMEs)	**Country** China **Industry** Food, Steel, Paper, Electronic and Electrical Engineering, Petrochemicals, Chemicals etc manufacturing industry **Sample** 760 Employees	**Data collection:** The questionnaire has been devised based on climate scale of Lin et al., (2008) consisting 121 items (5-point Likert scale) **Research design:** Cross-sectional research **Analysis:** One-way ANOVA, Confirmatory factor analysis	Employees safety commitment, Management support, Risk judgement, Safety communication, Employees safety competency, Safety training	• Employees in large enterprises exhibited stronger perception of safety and better safety climate than those in SMEs • Safety training → employees' quality, skills and the knowledge of safety, safety commitment, attitude to management, and perception of management support • SMEs usually ignored safety training due to that the benefits of safety training were neither clear nor immediate, moreover, the employers in SMEs were in keen for the production instead of the safety
Vinodkumar & Bhasi (2009)	To determine the structure of safety climate in major accident hazard chemical industry and investigate the relationship between the safety climate factors and the personal attributes of participants	**Country** India **Industry** Chemical **Sample** 2,536 employees	**Data collection:** Questionnaire has been developed from a review of related literature and theory, consisting 62 items (5-point Likert scale) **Research design:** Cross-sectional research **Analysis:** Descriptive; Reliability; Correlation Analysis; Exploratory factor analysis; One-way ANOVA; Confirmatory factor analysis; Structure equation Modelling	**Safety Climate** Management commitment and actions for safety; Workers' knowledge and compliance to safety; Workers' attitudes towards safety; Workers' participation and commitment to safety; Safeness of work environment; Emergency preparedness in the Organisation; Priority for safety over production; Risk justification	• Some generic safety climate factors exist • Higher qualifications are more receptive to safety rules and regulations • Lower qualifications not only need to be trained to work safely but also need to be educated about the various processes, associated hazards and their consequences • Younger employees, and those with shorter length of service, begin on a relatively positive note in respect of the safety attitudes/perceptions, and then converge to the plant norms for their job type and age group • The safety improvement seen in the older group come as a contribution by virtue of experience • Supervisors play a decisive role in the safety of workmen by enforcing safety rules and procedures
Beus et al. (2010a)	Examines the relationship between the Organisational tenure of employees at a given worksite and safety climate strength	**Country** Israel **Industry** Chemical processing and manufacturing **Sample** 8,790 Employees and Contractors	**Data collection:** Questionnaire adapted from Zohar and Luria (2005), consisting 9 items (5-point Likert scale) **Research design:** Cross-sectional research **Analysis:** Descriptive, Correlation, Regression	Safety Climate scale, Tenure	• Average worksite tenure was related to safety climate strength such that higher average tenure was associated with stronger safety climates • There is a curvilinear relationship between mean worksite tenure and safety climate strength, such that at higher levels of worksite tenure, smaller increases in the group's average tenure improved climate strength to a greater extent than at lower levels of worksite tenure

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Beus et al. (2010b)	Meta-analytically address several theoretical and empirical issues regarding the relationships between safety climate and injuries	**Country** N/A **Industry** N/A **Sample** 53 Studies	**Data collection:** Systematic-review of the published literature **Research design:** Case Study **Analysis:** Meta-analysis	**Injury to psychological safety climate** Management commitment to safety, Management safety, Management safety, Specific safety policies, Co-worker safety, Safety communication, Safety training, Housekeeping, Personal safety attitudes, Job safety/risk **Injury to Organisational safety climate** Management commitment to safety, General safety policy, Safety procedures, Safety communication, Safety reporting, Safety behaviour, Personal safety attitudes, Job safety/risk, Supervisor competence **Psychological safety climate and Organisational safety climate to injury** Management commitment to safety, Management safety practices, Safety procedures, Safety communication, Safety reporting, Safety behaviour	• Predictive effects of injuries on Organisational safety climate are slightly stronger than those of organisational safety climate on injuries • Injuries that occur within a group have a greater impact on the group's safety climate than individual injuries have on the injured person's psychological safety climate • Injuries within a group may predict Organisational safety climate better than individual injuries predict psychological safety climate • Safety climate assessments appear to lose their ability to predict injuries over time • Inherent job risk is a useful variable to predict workplace injuries • Perceptions of job risk can be influenced by co-worker or supervisor actions • Safety-related policies, procedures, and practices →employees' safety climate perceptions
Fogarty & Shaw (2010)	Using Theory of Planned Behaviour to examine the human factors that contribute to violations in aviation maintenance	**Country** Australia **Industry** Aviation **Sample** 308 participants from Australian Defence Force or civilian contractors working for the force	**Data collection:** Questionnaire consisting 40 items (5-point Likert scale) **Research design:** Cross-sectional research **Analysis:** Reliability, Correlation, Path analysis	Management attitude to safety, Own attitude to violation, Group norms, Workplace pressures, intention to violate, Violation	• Perceptions of management attitudes →worker's own attitudes, group norms and work pressure. • Group norms →individual attitudes, violation intentions, and actual violation • Work pressure does not have a direct link to violation
Hsu et al. (2010)	Attempts to investigate relationships between Organisational factors and safety awareness and practices in greater China areas	**Country** Taiwan **Industry** chemical processing plants and semiconductor and steel foundries **Sample** 690 Workers	**Data collection:** Survey questionnaire, adapted from a safety climate tool developed by Takano et al. (2001) and Takano et al. (2004), consisting 36 items (5-point Likert scale) **Research design:** Cross-sectional research **Analysis:** Descriptive; Reliability; Correlation Analysis; Exploratory factor analysis; Confirmatory factor analysis; Convergent & discriminant validity; Structure equation Modelling	Management commitment to safety; Blame culture; Harmonious relationship; Safety supervisors; Safety reporting; Team collaboration; Risk awareness; Safety practice	• Management commitment to safety → safety supervision line managers, the willing of safety reporting, and team collaboration, safety awareness and employee safety practices • Companies with more harmonious relationships → safety reporting and team collaboration, safety awareness and employee safety practices • Tendency to blame or punish workers for their mistakes → safety supervision, safety awareness and employee safety practices
Jiang et al. (2010)	Examine the cross-level (the individual perceived colleagues' safety knowledge/ behaviour (PCSK/B) and unit-level safety climate) effect on safety performance	**Country** China **Industry** Petroleum and Chemical **Sample** 631 Employees	**Data collection:** Questionnaire has been developed based on Evans et al. (2007) and (Glendon & Evans, 2007) consisting 26 items (7-point Likert scale) **Research design:** Cross-sectional research **Analysis:** Descriptive; Reliability; Correlation Analysis; Exploratory factor analysis; Confirmatory factor analyses; Hierarchical linear modelling	Safety climate; Perceived colleagues' safety knowledge/behaviour, Safety behaviour; Self-report injuries; Self-report near misses	• The unit-level safety climate cannot effectively predict individuals' safety behaviour independently • Unit-level climate, and perception of colleagues' safety knowledge and behaviour →safety performance • Perceptions about others' beliefs and observation of others' behaviour → employee's safety behaviours • Safety behaviour ↧ perceived colleagues' safety knowledge/behaviour → injuries

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Kath et al. (2010)	Use dominance analysis to provide an initial examination of which dimensions of safety climate were most predictive of upward safety communication in a sample of employees where safety is a major concern	**Country** Canada **Industry** Railway **Sample** 636 Participants	**Data collection:** Questionnaire has been developed based on previous literatures, consisting 42 items (5-point Likert scale) **Research design:** Cross-sectional research **Analysis:** Descriptive; Reliability; Correlation Analysis; Hierarchical multiple regression analysis; Dominance analysis	Upward safety communication; Leader–member exchange; Perceived Organisational support; **Safety climate** Management safety attitudes, Safety peer pressure, Job demands	• Higher employees and supervisors' relationships →safety communication • Management attitudes toward safety is the better predictor of upward safety communication • Managers →employee safety habits • Tension between work and safety →safety communication • with their supervisors • Safety peer pressure is not predicted to be related to upward safety communication
Luria (2010)	Examines the contribution of trust between leaders and subordinates to safety	**Country** Israel **Industry** Defence Forces **Sample** 2024 Infantry and 500 Armoured-brigade soldiers	**Data collection:** Questionnaire developed based on previous literature on safety, consisting 35 items (5-point Likert scale) **Research design:** Cross-sectional research **Analysis:** Descriptive; Reliability; Correlation Analysis; Multilevel modelling	Trust, Group-level safety climate; Leadership; Injuries	• Trust between leaders and subordinates →safety environment • Trust →employees believe about the information communicated and change safety climate • Trust ↓injury rate • Trust ↑ safety-climate strength • Safety-climate ↧ trust → injury rate
Luria & Yagil (2010)	Explore the significant referents of safety perceptions among permanent and temporary employees in order to identify the boundaries of safety climate in a heterogeneous workforce	**Country** Israel **Industry** Manufacturing organisations **Sample** 90 Employees	**Data collection:** Semi-structured interview and survey **Research design:** Cross-sectional research **Analysis:** Frequency analysis, Cluster analysis, Chi-square analysis	Relationship between employees; Transactional leadership; People-oriented leadership; Task-oriented leadership; Overall leadership evaluation; Safety training; Rewards and sanctions; Safety discipline; Safety resources; Safety importance in the organisation, Stress at work; Safety importance in the group; Personal safety orientation and knowledge; Differences in safety among employee sub-group; Safety perception of employee sub-groups; Accidents, incidents and injuries; Communication in the organisation; Safety implementation by employee sub-groups, Social relationships in the organisation	• Organisation's safety environment → employees safety behaviour • Employment status → safety perceptions • Employees with different employment status focus on different elements when forming safety perceptions, and consequently will have different overall safety related notions
Olsen (2010)	Explore the possibility of identifying general safety climate concepts in health care and petroleum sectors, as well as develop and test the possibility of a common cross-industrial structural model	**Country** Norway **Industry** Hospital and Petroleum companies **Sample** **Hospital:** 1,919 **Petroleum:** 1,806	**Data Collection:** At the hospital, the instrument Hospital Survey on Patient Safety Culture (HSOPSC) has been used for both industry, which consists of 35 items (5-point Likert scale) **Research Design:** Cross-Sectional Research **Analysis:** Descriptive; Correlation; Reliability; Exploratory factor analysis; Confirmatory factor analyses; Structure equation modelling	Organisational management support for safety; Transitions and teamwork across units; Supervisor/manager expectations and actions promoting safety; Learning, feedback, and improvement; Teamwork within units; Stop working in dangerous situations	• Cross-industrial structural model can be generalised between health care and petroleum sectors, but it is limited to offshore workers in the petroleum sample • Organisational management's support for safety and supervisor/manager expectations and actions promoting safety → safety climate and safety behaviour • Upper level management significantly influences organisations by integrating safety into policies and practice, and ensuring that lower level management and supervisors execute these in practice • High-level management and lower level supervisors → transitions and teamwork across units • Safety climate → workers stopping their work in dangerous situations

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Lu & Yang (2011)	Evaluates safety climate and safety behaviour in the passenger ferry context	**Country** Taiwan **Industry** Ferry companies **Sample** 155 Workers	**Data Collection:** Questionnaire developed based on previous literature on safety, consisting 24 items (5-point Likert scale) **Research Design:** Cross-Sectional Research **Analysis:** Descriptive; Correlation; Reliability; Exploratory factor analysis; Confirmatory factor analyses; Hierarchical regression analysis; One-way ANOVA	**Safety Climate** Safety policy; Safety motivation; emergency preparedness; Safety training; Safety communication **Safety Behaviour** Safety compliance; Safety participation	• Safety policy is not related to safety compliance • Safety policy → safety participation • Safety motivation does not have any relation with safety compliance • Safety motivation is not related to safety participation • Emergency preparedness → safety compliance • Emergency preparedness is not related to safety participation • Safety training →safety compliance. • Safety training does not affect safety participation • Safety communication does not affect safety compliance • Safety communication does not affect safety participation
Wu et al. (2011)	Examines the relationship among three latent variables: safety leadership, safety climate, and safety performance.	**Country** Taiwan **Industry** Petrochemical company **Sample** 521 workers	**Data Collection:** Questionnaire developed based on Wu et al. (2007) and Wu et al. (2008) on previous literature on safety, consisting 45 items (5-point Likert scale) **Research Design:** Cross-Sectional Research **Analysis:** Descriptive; Correlation; Reliability; Exploratory factor analysis; Confirmatory factor analyses; Structural equation modelling	**Safety Climate** Commitment to safety, Perceived risk, Emergency response **Safety Leadership** Safety coaching, Safety caring, Safety controlling **Safety Performance** Safety inspection, Accident investigation, Safety training, Safety motivation	• Safety leadership →safety climate and safety performance • Safety climate ↧ safety leadership → safety performance • Safety leadership on safety performance is one in which the direct effect is greater than the indirect effect
Brondino et al. (2012)	Test a model on the relationships between organisational and group safety climate and safety performance, that highlights the importance of co-workers as a safety climate agent side by side supervisors at group level	**Country** Italy **Industry** Metal and Mechanical manufacturing **Sample** 991 Blue collar workers	**Data Collection:** Questionnaire developed based on previous literature on safety, consisting 42 items (7-point Likert scale) **Research Design:** Cross-Sectional Research **Analysis:** Descriptive, Correlation, Reliability, Exploratory factor analysis, Confirmatory factor analyses, Multilevel structural equation modelling	Safety communication, Safety training, Safety values, Safety systems, Supervisor's effort to improve safety, Supervisor's reactions to workers behaviours, Safety mentoring, Safety values, Safety systems, safety participation, Safety compliance	• Organisational safety climate →co-worker and supervisor safety at the individual and group level • Co-worker safety climate had a stronger mediating role than did supervisor safety at the individual and group level • Both co-worker and supervisor safety climate have no mediation role at the group level and at the individual level • Individual level co-worker safety climate ↧ Organisational safety climate → safety behaviours, & between supervisor's safety climate → safety behaviours • Supervisor safety climate only partially ↧ Organisational safety → co-worker safety • Safety climate → safety participation better than safety compliance • Safety communication among colleagues, or co-workers' →safety performance • Safety training →group norms for safety
Fernández-Muñiz et al. (2012)	Analyse the safety climate in OHSAS 18001-certified firms and its relationship with three measures of performance: safety performance, employee satisfaction, and firm competitiveness	**Country** Spain **Industry** OHSAS 18001-certified firms **Sample** 131 Agriculture, Mining, Industrial Sector, Construction, Service Firms	**Data Collection:** Questionnaire developed based on previous literature on safety, consisting 22 items (5-point Likert scale) **Research Design:** Cross-Sectional Research **Analysis:** Descriptive; Correlation; Reliability; Exploratory factor analysis; Confirmatory factor analyses; Content, convergent and discriminant validity; Structure equation modelling	Management's commitment, Incentives, Work pressure Communication, Safety behaviour (Safety compliance and Safety participation), and Firm performance (Safety performance, Employee satisfaction, and Firm Competitiveness)	• Management's commitment ↓work pressure • Management's commitment ↑ incentives and communication. • Work pressure has no effect on safety behaviour • Incentives or rewards have no effect on safety behaviour • Communication and the transmission of information → safety behaviour • Firm's competitiveness → level of satisfaction • OHSAS 18001 standard alone is not sufficient; firms must have a favourable safety climate in place to be able to use this tool to achieve the objective of zero accidents in the workplace and improved competitiveness

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Fugas et al. (2012)	Explore the cognitive and social mechanisms that mediate the relationship between Organisational safety climate and compliance and proactive safety behaviours by using safety climate literature and theory of planned behaviour	**Country** Portugal **Industry** Transportation Organisation **Sample** 356 workers from	**Data Collection:** Questionnaire developed based on modified version of Zohar & Luria (2005), Fugas et al. (2011), Davis et al. (2002), Burke et al. (2002), Hofmann et al. (2003) and Conner & McMillan (1999) study consisting 30 Items (7-Point Likert Scale) **Research Design:** Cross-Sectional Research **Analysis:** Descriptive; Correlation, Reliability; Exploratory factor analysis; Confirmatory factor analyses; Structure equation modelling	Organisational safety climate; Supervisors' descriptive safety norms; Supervisors' injunctive safety norms; Co-workers' descriptive safety norms; Co-workers' injunctive safety norms; Attitudes toward safety; Perceived control; Proactive safety behaviour; Compliance safety behaviour	• Co-workers' descriptive norms and safety attitudes ↧ organisational safety climate → proactive safety behaviour • Supervisors' injunctive safety norms and perceived behavioural control ↧ organisational safety climate → safety compliance • Employees' self-reported proactive safety behaviour → peers' safety practices • Supervisors' injunctive safety norms and perceived behavioural control → safety compliance • Formal systems established by the Organisation → compliance behaviours • Top management directives → supervisory interaction with subordinates and implementation of situation-specific action directives • Supervisors → workers' safety compliance more than safety participation • Employees perception of necessary resources to work safely → employees' behaviour at work • Safety compliance → control and rigid implementation of rules • Safety participation allows workers to use their discretion about the safety of their work behaviour
Kapp (2012)	Evaluates the differential influence of these two leadership styles on the safety compliance and safety participation behaviour of employees under conditions of high and low group safety climate	**Country** U.S. **Industry** Construction **Sample** 555 Hourly employees	**Data Collection:** Questionnaire developed based on Multifactor Leadership Questionnaire (MLQ) and Zohar (2000) study, consisting 34 Items (5-Point Likert Scale) **Research Design:** Cross-Sectional Research **Analysis:** Moderated multiple regression (MMR)	Leadership practices of supervisors; Group safety climate; Safety behaviours	• Positive group safety climate → safety compliance behaviour of employees through higher levels of supervisory leadership • Positive group safety has no influence on the relationship between the supervisor's leadership practices and employee safety participation • Both contingent reward leadership practices and transformational leadership practices → safety compliance • Group safety climate had no such moderating influence on the leadership practices and employee safety participation • Both the transformational and contingent reward leadership →safety participation behaviour
Agnew et al. (2013)	Explore which dimensions of hospital safety climate are associated with patient and worker safety outcome measures	**Country** Scotland **Industry** Hospital **Sample** 1866 Clinical staff	**Data Collection:** Scottish Hospital Safety Questionnaire (SHSQ) Consisting 44 Items (5-Point Likert Scale) **Research Design:** Cross-Sectional Research **Analysis:** Descriptive, Correlation, Reliability, Step-wise regression analysis, Hierarchical regression analysis	**Safety Climate Dimensions (Unit level)** Supervisors' expectations and actions, Organisational learning-improvement, Teamwork within hospital units, Communication openness, Feedback and communication about error, Non-punitive response to error, Staffing **Safety Climate Dimensions (Hospital level)** Hospital management support for patient safety, Teamwork across hospital units, Hospital handovers **HSOPSC Outcome Measures** Frequency of incident reporting, Overall perceptions of safety	• Strength of supervisory practices, improvement efforts at the unit level, and teamwork were significantly higher than the rest of the sub-scales • Overall safety compliance received higher scores compared to safety participation scale • Climate dimensions of staffing and hospital management's support were significantly related to every outcome measure • When the staffing levels were perceived favourable, safety participation has decreased, as respondents who are experiencing higher workload may take short cuts and comply less with the safety protocols • Furthermore, favourable staffing levels might contribute to diffusion of responsibility within the workgroups; leading to workers failing to take individual action and therefore reporting decreased voluntary safety activities • Patient-specific safety climate was related to both worker and patient related outcomes, whereas generic safety climate scores only had an impact on worker safety compliance behaviours and worker injury rates

Scholars	Study Focus	Sample Profile	Methodology	Factors	Findings
Bahari & Clarke (2013)	Cross-validation of a safety climate model in the non-Western industrial context	**Country** Malaysia **Industry** Electric and electronic manufacturing plant. **Sample** 325 Production workers	**Data Collection:** Questionnaire has been developed based on Cheyne et al. (1998) study consisting 27 items (5-point scale) **Research Design:** Cross-Sectional Research **Analysis:** Descriptive, Correlation, Reliability, Exploratory factor analysis, Confirmatory factor analysis	Safety management, personal involvement, communication, individual responsibility, safety standards and goals	• Safety climate model reported by Cheyne et al. (1998) was not successfully replicated in the Malaysian sample • Factors relating to the role of management in safety such as management actions, including communication, and management support for improving organisational safety • Safety priority by management is important for organisational goals, such as productivity, which emphasize company responsibility, such as the adequacy of safety training and company interest in health and safety
Bosak et al. (2013)	Examines the interactive relationship between three dimensions of safety climate and their impact on risk behaviour reported by employees	**Country** South Africa **Industry** Chemical manufacturing **Sample** 623 Employees	**Data Collection:** Questionnaire developed based on Offshore Safety Questionnaire (OSQ), consisting 31 items (5-point Likert scale) **Research Design:** Cross-Sectional Research **Analysis:** Descriptive, Correlation, Reliability, Confirmatory factor analyses, Hierarchical regression analysis	Management commitment to safety, Priority of safety on plant, Pressure for production, Risk behaviour	• Employees' risk behaviour ↓ management commitment to safety and priority of safety • Employees' risk behaviour ↑ pressure for production • When pressure for production is high, management commitment to safety ↓ risk behaviour, regardless of level of priority of safety on plant • When pressure for production is low, the effect of management commitment to safety on risk behaviour is nullified under conditions of high, as compared to low priority of safety on plant • Employees perception of safety policies, procedures, management systems and given priority over competing demands → risk behaviour • There is a moderating effect of safety priority on the relationship between management commitment to safety and safety outcomes
Cigularov et al. (2013)	Examine the measurement equivalence of a multidimensional safety climate scale	**Country** Scotland **Industry** Construction **Sample** 5268 Workers	**Data Collection:** Questionnaire based on safety climate surveys available in the literature consisting 19 items (6-point Likert scale) **Research Design:** Cross-Sectional Research **Analysis:** Descriptive, Correlation and Reliability analysis, Multi-group confirmatory factor analysis	Management commitment to safety, Supervisor support for safety, Safety practices, Work pressure	• Four-factor model of safety climate provided a good fit to the data in each of the three demographic groups. • There are equivalent factor loadings across groups, showing that the items are calibrated equivalently to the true scores in each of the three populations • Different frame of reference or values between workers born in the US and Hispanic immigrant workers would influence expectations for their managers, or that there may be cultural differences between these groups in one's willingness to be perceived as criticizing an authority figure.
Colley et al. (2013)	To examine the impact that different patterns of perceived organisational values have on perceptions of safety climate and safety incidents.	**Country** Australia **Industry** High Risk Industries: Construction, Mining, Engineering, Power/electrical etc. **Sample** 368 Workers	**Data Collection:** Questionnaire based on previous literature consisting 39 items (7-point Likert scale) **Research Design:** Cross-Sectional Research **Analysis:** Descriptive, Correlation and Reliability analysis, Modal Profile Analysis, One-way MANOVA	**Perceived Organisational values** Character of the workplace, Workplace managers, Workplace cohesion, Workplace emphasis, Workplace rewards **Perceived safety climate** Perceptions of management values, Safety communication, Physical work environment, Personnel safety training and Safety systems **Incidents** Report the number of incidents in last 2 years that involved first aid treatment, minor equipment damage and major equipment damage	**Individuals who perceived that their Organisation strongly emphasizes either:** (a) employee well-being (a human relations profile) (b) employee well-being in conjunction with goal attainment (a joint human relation–rational goal profile); reported higher levels of safety climate and fewer safety incidents. **Individuals who perceived that their Organisation strongly emphasizes either:** (a) formal processes and procedures (an internal process profile); (b) formal processes and procedures in conjunction with goal attainment (a joint internal process–rational goal profile) (c) reported lower levels of safety climate and more safety incidents.

Scholars	Study Focus	Sample Profile	Methodology	Factors	Findings
Cui et al. (2013)	Developing an integrative model of safety management based on social cognitive theory and the total safety culture triadic framework	**Country** China **Industry** Mining industry **Sample** 209 front-line coal workers	**Data Collection:** Questionnaire based on previous literature consisting 16 items **Research Design:** Cross-Sectional Research **Analysis:** Descriptive; Correlation; Reliability; Confirmatory factor analysis; Discriminate validity; Structure equation modelling	Hazardous environment, Employee's beliefs towards safety, Management commitment in safety, Employee safety-specific behaviour, Employee safety involvement	• Hazardous environment → management commitment to safety • Management commitment to safety → employee's individual beliefs towards safety • Individual beliefs towards safety → employee's safety-specific behaviour and safety involvement • No direct relationship between hazardous environment and employees' beliefs about safety but the relationship is mediated by management commitment • No direct relationship between management commitment to safety and employee's safety behaviour, rather the relationship was mediated by the employee's beliefs towards safety
Huang et al. (2013)	Develop and test the reliability and validity of a new scale designed for measuring safety climate among mobile remote workers	**Country** U.S. **Industry** Utility companies **Sample** 861 Utility/electrical workers	**Data Collection:** Questionnaire based on 15-day field observations, and 38 in-depth individual interviews with subject matter experts, consisting 48 items (5-point Likert scale) **Research Design:** Cross-Sectional Research **Analysis:** Descriptive; Correlation; Reliability; Exploratory factor analysis; Confirmatory factor analysis; Discriminate validity; Ordinary least square regression; Hierarchical linear modelling	**Organisation-level safety climate** Safety pro-activity; General training; Trucks and equipment; Field orientation; Financial investment; Schedule flexibility **Group-level safety climate** Supervisory care; Participation encouragement; Safety straight talk	• Reliable and valid six dimensions for the Organisation-level safety climate and three dimensions for the group-level safety climate have been identified specifically for mobile remote workers • Safety climate, pertaining to Organisational and managerial aspects, can be a strong indicator of safe driving behaviour and safety outcomes in the utility/electric power industry
Hon et al. (2014)	Determine the relationships between safety climate and safety performance of repair, maintenance, minor alteration, and addition (RMAA) works, offering recommendations on improving RMAA safety	**Country** Hong Kong **Industry** Building construction **Sample** 396 workers	**Data Collection:** Questionnaire based on Safety Climate Index survey of the Occupational Safety and Health Council (OSHC) of Hong Kong; Neal & Griffin (2006) and Mohamed (2002) consisting 26 items (5-point scale) **Research Design:** Cross-Sectional Research **Analysis:** Descriptive; Correlation, Reliability; Structure equation modelling	Management commitment; Safety rules; Safety responsibility; Near misses and injuries; Safety participation; Safety compliance	• Safety climate of RMAA works only exert a small influence on the level of safety participation, but a much stronger influence on the level of safety compliance • Self-motivation → safety participation more than safety compliance • Applicability of safety rules and practices → safety compliance • Deficiencies in management procedures and safety system can be detected in the measurement of safety climate • Applicability of safety rules and work practices →safety performance • Safety rules and work practices → potential risks and hazards
Zohar et al. (2014)	Test the effect of safety climate on safety behaviour among lone employees whose work environment promotes individual rather than consensual or shared climate perceptions	**Country** U.S. **Industry** Trucking company **Sample** 3,578 long-haul truck drivers	**Data Collection:** Questionnaire has been developed from Trucking Safety Climate (TSC) scale by Huang et al. (2013); and Huang et al. (2005) and LMX-7scale, consisting 57 items (5 Point Likert Scale) **Research Design:** Cross-Sectional Research **Analysis:** Descriptive, Correlation, Reliability, Simple linear regression	Work Ownership; Driving safety; Hard-breaking frequency; Leadership **Trucking Safety Climate (TSC)** Safety pro-activity; General training; Trucks and equipment; Field orientation; Financial investment; Schedule flexibility; Company policies and procedures; Supervisory practices; Safety behaviour	• Work ownership, promoted by increased autonomy and control over work characterizing lone working, offered incremental prediction of safety climate perceptions over that accounted for by LMX • Safety climate →driving safety behaviour • Distant leaders → safety climate perceptions and role behaviour in their work group • High-LMX exchanges →safety climate perceptions, leading to safer driving behaviour and reduced frequency of hard-braking • Dispatcher leadership and work ownership as predictors of safety climate perceptions and driving safety offer some new ideas regarding the management of lone employees

Scholars	Study Focus	Sample Profile	Methodology	Factors	Findings
Barbaranelli et al. (2015)	Examine the Neal et al. (2000) measurement equivalence by testing whether their model of safety climate predicting safety performance is tenable in both English speaking and non-English speaking countries	**Country** U.S. and Italy **Industry** **U.S. sample from**: Hospitality, health care, manufacturing, food-processing, mining, pulp and paper milling, and transportation **Italy sample from:** Transportation, Agriculture, Energy, Health care, Manufacturing, Construction, The military, Hospitality, Wholesale/Retail operations **Sample** **U.S. –** 616 Employees **Italy –** 738 Employees	**Data Collection:** Neal et al. (2000) Questionnaire consisting 24 items (7-point scale) **Research Design:** Cross-Sectional Research **Analysis:** Descriptive, Correlation, Exploratory factor analysis, Multi-group confirmatory factor analysis, Structure equation modelling	Management values, Communication, Training, Safety systems, Knowledge about safety practices and procedures, Safety motivation, Safety compliance, Safety participation	• In spite of sociocultural differences between Italy and the US, employees in the two countries share the same fundamental view of safety climate and of safety performance • Direction and strength of relationships within the safety climate model are comparable in Italy and the US • Relationship between safety climate and compliance is twice as strong in Italy than in the US
Kouabenan et al. (2015)	Examines the relationship between safety climate, risk perception and involvement in safety management by first-line managers (FLM)	**Country** France **Industry** Nuclear plants **Sample** 63 First-line managers	**Data Collection:** Questionnaire has been developed based on Zohar and Luria (2004) study consists of 196 items (5 & 6-Point Likert Scale) **Research Design:** Cross-Sectional Research **Analysis:** Descriptive, Correlation, Reliability, Simple linear regression	Perceived risk; Perceived probability of risks for operators; Perceived seriousness of risks for operators **Safety climate** Upper management attitude toward safety; Feeling of being encouraged by immediate Supervisor; Feeling of being called upon by subordinates on safety issues; Involvement in safety management	• Perceived workplace risk → FLMs involvement in safety management • Perception of a good safety climate → FLM involvement in safety management • Attitude of upper management toward safety had a lesser effect than did perceived encouragement from immediate supervisor • Perceived encouragement from immediate supervisors motivated FLMs to get involved in safety-related actions more than did the simple fact that upper management had a positive attitude toward safety • Safety climate seems to be more important than perceived risk in terms of motivating FLM involvement in safety-related actions
Liu et al. (2015)	Examines whether the association between safety climate, safety behaviour, and occupational injuries found in Western countries also exists in Chinese manufacturing enterprises	**Country** China **Industry** Lighting processing, Metal, Shoes, Electronics, and Toys manufacturing industry **Sample** 3,375 Workers	**Data Collection:** Questionnaire has been developed based on previous occupational safety climate scales, which consists of 22 items (5-Point Likert Scale) **Research Design:** Cross-Sectional Research **Analysis:** Descriptive; Correlation; Reliability; Exploratory factor analysis; Path analysis	Work-related injury experience **Safety Climate** Co-worker's support; Management commitment; Safety supervision; Safety training **Safety Behaviour** Personal protective equipment; Safety compliance; Safety initiatives;	• Safety climate predicts safety behaviour, and that safety behaviour mediates the relationship between safety climate and occupational injury • Safety supervision and management commitment → safety behaviour • Safety supervision is the most proximal antecedent of safety initiative behaviour → use of PPE and employees' safety compliance • In Chinese manufacturing groups, the mutual influence between colleagues (co-worker support) is not sufficient to encourage workers to participate in active safety behaviour • Management commitment → safety behaviour • Safety training doesn't significantly alter safety behaviour encourage employees to comply with safety procedures • Personal protective equipment, safety compliance, and initiative behaviour → rates of self-reported occupational injury

Scholars	Study Focus	Sample Profile	Methodology	Factors	Findings
Cheng et al. (2016)	Conceptualize recreation safety climate and develop a set of tools to measure the degree of recreationist perception of the safety level in a recreation place	**Country** Taiwan **Industry** Outdoor recreations: Mountaineering, Diving, Kayaking, Golfing, Paragliding, Bungee jumping, Surfing, and River trekking **Sample** 479 Participants	**Data Collection:** Questionnaire has been developed based on in-depth interviews and focus group analysed by content analysis, which consists of 55 items (5-Point Likert Scale) **Research Design:** Cross-Sectional Research **Analysis:** Descriptive; Correlation; Reliability; Exploratory factor analysis; Confirmatory factor analysis; Discriminant validity; Criterion-related validity	Management commitment to safety, Perception of recreation safety rules, Fit between recreational environment and safety, Safety training for visitors, Responsible manager, Emergency facility, Caring, Altruistic safety behaviour	• Management commitment →perception of safety • Management commitment to follow and enforce regulations, help recreationists to understand recreation activity rules and procedures, which can ultimately reduce accidents • Sufficient recreation safety information → awareness to potential hazards and reduce the occurrence of accidents • Pre-activity education and training → response to various safety issue • Accountable behaviour by the manger → safety climate • Participation by a companion, encouragement and support from an instructor or companion, and concern and assistance, all of which can heighten the recreationist's perception of safety through psychological support • Recreationists act altruistically, alerting others to danger, strictly preventing others from engaging in unsafe behaviour, or notifying the related units when warnings go unheeded, it not only can help others avoid danger, but also have a self-help effect
Kvalheim & Dahl (2016)	Perform multiple tests of the causal relationship between safety climate and safety compliance	**Country** Norway **Industry** Oil & Gas industry **Sample** **Period 1:** 8,193 **Period 2:** 7,425 **Period 3:** 8,086 **Period 4:** 7,646	**Data Collection:** Questionnaire has been developed based on existing safety climate literature consisting 150 Items (5-Point Likert Scale) **Research Design:** Cross-Sectional Research **Analysis:** Descriptive; Correlation; Reliability; Discriminant validity; Hierarchical regression analysis	Safety system; Safety supervision; Work pressure; Safety compliance	• Workers with leadership responsibilities were found to be more compliant than subordinates, and male workers were found to be less compliant than their female colleagues. • Efforts to ensure knowledge of HSE procedures and to focus on proper training in safety and working environment is important in enhancing compliant work practices • A well-organized safety system where procedures are easy to access, and where the relevant procedures are readily available, facilitates safety compliance • There is a significant positive contribution of supervisors to enhancing safety compliance is rooted in their ability to include workers in safety-related discussions and value workers' input in safety-related matters • Imbalanced priorities between production and safety (work pressure) ↓ safety compliance
(2016))	Explore the relationships between safety-specific leadership, safety climate and safety behaviours within the fire service	**Country** U.S. **Industry** Firefighting **Sample** 398 Firefighters	**Data Collection:** Questionnaire has been developed existing valid and reliable scales, which consists of 25 items (5-Point Likert Scale) **Research Design:** Cross-Sectional Research **Analysis:** Descriptive; Correlation; Reliability; Confirmatory factor analysis; Structural equation modelling	Safety-specific transformational leadership; Safety-specific passive leadership; Safety climate; Safety compliance behaviour; Safety participation behaviour	• Safety-specific transformational leadership → safety climate perceptions • Transformational leadership → safety compliance and safety participation behaviours • Passive leaders can have detrimental effects on firefighter perceptions of safety climate, particularly when they fail to make decisions important to firefighter safety, when they fail to intervene in safety issues and when they do not act until something goes wrong • Firefighter safety climate perceptions and ultimately firefighter safety behaviours can be enhanced through safety-specific transformational leadership tactics • Leadership could intervene, and address deficiencies commonly associated with firefighter injuries and fatalities such as under-resourcing, inadequate preparation and ineffective adoption and use of incident command procedures, while also ensuring personnel readiness
Zarei et al. (2016)	Investigate and establish a relationship between safety climate and occupational burnout	**Country** Iran **Industry** Hospital **Sample** 295 Nurses	**Data Collection:** Questionnaire has been developed by using Job and Socio-Demographic Characteristics (JSDC), Maslach Burnout Inventory (MBI), and Safety Climate of Nurses (SCN), which consists of 74 items (5-Point Likert Scale; 6-point frequency rating) **Research Design:** Cross-Sectional Research **Analysis:** Descriptive; Correlation; Reliability; ANOVA; Path analysis	Emotional exhaustion; Depersonalization; Lack of personal accomplishment **Safety Climate** Accumulative fatigue; Training of nurse; Communication with physicians; Nurses' relationships; Attitude of supervisors; Reporting of errors	• Neither socio-demographic variables such as age, gender, educational degree, and marital status nor job variables such as working shift, job experience, over time, and hospital type have significant correlation with safety climate, in agreement with previous work in this domain • Type of work units → safety climate • Total safety climate ↓ all dimensions of occupational burnout • Communication or error reporting ↓ burnout • Relationship among nurses and attitude of supervisors, as two dimensions of safety climate, are negatively correlated with all the three dimensions of job burnout • Communication between nurses and physicians, relationships between nurses, attitude of supervisors, training and fatigue may encompass broader areas affecting work satisfaction than safety climate alone

Scholars	Study Focus	Sample Profile	Methodology	Factors	Findings
Ajslev et al. (2017)	To measure the risk of accidents and injuries at work through safety climate	**Country** Denmark **Industry** **Grp 1:** Construction and other craft (e.g. Jewel crafting and furniture making) work **Grp 2:** Health, social work and child care work **Grp 3:** Transport/alone work **Grp 4:** Manufacturing work **Grp 5:** Service, retail and kitchen work **Grp 6:** Military and rescue work **Grp 7:** Office and educational work (reference category). **Sample** 15,144 respondents	**Data Collection:** Nordic Occupational Safety Climate Questionnaire (NOSACQ-50) consisting 50 Items (4-Point Likert Scale) **Research Design:** Cross-Sectional Research **Analysis:** Descriptive; Logistic regression analysis	Management safety priority, commitment and competence, Management safety empowerment, Management safety justice, Workers' safety commitment, Workers' safety priority and risk non-acceptance, Safety communication, learning, and trust in co-worker safety competence, Workers' trust in the efficacy of safety systems, Safety motivation, Safety violations	• The number of safety climate problems have been progressively associated with higher odds of accidents at work • Young workers were more likely to experience safety climate problems and accidents at work • While women had lower odds for accidents than men, women are also slightly more likely to experience problems with the safety climate • Transport, construction, manufacturing and service workers are more likely to experience problems with safety climate and have higher odds for accidents than office and education related employees.
Chan et al. (2017)	Investigate the Ethnic minorities' (EM) perceptions of safety climate in construction industry	**Country** Hong Kong **Industry** Construction **Sample** 320 Ethnic minority (Nepalese and Pakistani construction workers)	**Data Collection:** Questionnaire developed by Occupational Safety and Health Council (2008) consisting 38 Items (5-Point Likert Scale) **Research Design:** Cross-Sectional Research **Analysis:** Descriptive, Correlation, Reliability, ANOVA, MANOVA, t-test, Exploratory factor analysis, Confirmatory factor analysis	Perception of safety regulation, rules, and safety practice, Safety management commitment, Workers' involvement, Safety attitude, Safety resources, Supervisor's and workmate's influences, Safety communication, Risk taking behaviours, Work pressure, Competence, Relationships, Responsibility for health and safety	• Three SC factors were identified, namely: (a) safety management commitment, safety resources, and safety communication; (b) employee's involvement and workmate's influence; and (c) perception of safety rules, procedures and risks • EM workers are highly concerned about management's commitment to safety, availability of safety resources, as well as communication • Employee's involvement includes following the procedures or rules and reporting the accidents and potential risky conditions at construction sites • EM construction workers are unwilling to report unsafe conditions, or potential risk as they feared retaliation • Many Ems are engaged in more risky tasks than local workers as the risk perceptions of EMs may be shaped by the norm and practices in their home countries • Employees in a more collective and higher uncertainty avoidance environment tend to have better safety awareness and beliefs • The employees who are married or support more family members and do not drink, tend to have better perceptions of safety climate
Chen et al. (2017)	Examine the role of safety climate and individual resilience in safety performance and job stress	**Country** Canada **Industry** Construction **Sample** 837 construction workers	**Data Collection:** Self-administered questionnaire adapted from previous research consisting 31 Items (5-Point Likert Scale) **Research Design:** Cross-Sectional Research **Analysis:** Descriptive; Correlation; Reliability; Exploratory factor analysis; Confirmatory factor analysis; Structural equation modelling	Management commitment to safety; Supervisors safety perception; Co-worker safety perception; Wok pressure; Role overload; Safety knowledge, Individual resilience	• Six factors (i.e., management commitment to safety, supervisor safety perception, co-worker safety perception, work pressure, role overload, and safety knowledge) are significant and important components of safety climate • Safety climate is a critical factor predicting the occurrence of physical safety outcomes in the construction industry • Work pressure had the strongest negative correlation with safety climate • Management commitment to safety and the balance between safety and production are essential aspects of workplace safety climate • There is a strong relation between job stress and physical safety outcomes • Safety climate has the potential to decrease workers' job stress • Individual resilience had a significantly negative impact on psychological stress

Scholars	Study Focus	Sample Profile	Methodology	Factors	Findings
Fogarty et al. (2017)	Measure selected human factors that might contribute to explosive ordnance (EO) incidents, and to model their associations with safety behaviours.	**Country** Australia **Industry** Explosive Ordnance **Sample** 272 EO workers	**Data Collection:** Self-administered questionnaire has been developed from focus group discussion consisting 108 items (7 & 5-Point Likert Scale) **Research Design:** Cross-Sectional Research **Analysis:** Descriptive; Correlation; Reliability; Exploratory structural equation modelling (ESEM); Confirmatory factor analysis; Construct validity; Bootstrapping; Structural model	Management commitment safety; Safety communication; Quality of supervision; Safety awareness; Adequacy of resources; Training standards; Manageable workload; Quality of documentation; Use of documentation; Audits; Culture; Individual compliance; Organisational compliance; Willingness to report; Errors; Fatigue; Distress; Topical safety issues	• Explosive ordnance safety scale (EOSS) are internally consistent and possess structural and criterion-related validity • Safety climate and safety compliance ↑ willingness to report incidents • General health is an important mediator of the safety climate-errors relationship • The effects of safety climate on the individual's physical and mental state cannot be confirmed
Huang et al. (2017)	Address existing gaps by examining the relationships between truck drivers' (as an example of lone workers) perceptions of Organisation-level safety climate (OSC) and group-level safety climate (GSC), both potential linear and non-linear relationships, and how these predict important safety outcomes	**Country** U.S. **Industry** Truck companies **Sample** 8,095 Truck drivers	**Data Collection:** Questionnaire has been developed from Trucking Safety Climate (TSC) scale by Huang et al. (2013) and Huang et al. (2005) consisting 46 items (5-Point Likert Scale) **Research Design:** Cross-Sectional Research **Analysis:** Descriptive; Correlation; Reliability; Polynomial regression	**Trucking Safety Climate (TSC)** Safety pro-activity; General training; Trucks and equipment; Field orientation; Financial investment; Schedule flexibility; Company policies and procedures; Supervisory practices; Safety behaviour	• Truck drivers' perceptions of Organisation-level safety climate and group-level safety climate are positively and strongly related • While many supervisors directly transmit Organisation-level safety policies, some supervisors' enactment of safety policies may differ substantially from Organisational policy or they may be imposing their own beliefs on their subordinates, thus leading to differences in perceptions • Organisation-level safety climate and group-level safety climate both predictive of employee safety behaviour and hence truck drivers are able to simultaneously take into account both Organisation and supervisor expectations • Optimal (most safe) conditions occur when both Organisation-level safety climate and group-level safety climate are high
Petitta et al. (2017)	Briefly describe the theoretical differences between safety climate and safety culture and empirically test their relationships with and purported effects on employee safety compliance	**Country** Italy **Industry** Manufacturing, Construction, Transportation, Military, Energy, Health care and Distribution/service companies **Sample** 1,342 employees	**Data Collection:** Questionnaire has been developed from Barbaranelli et al., (2015), Probst and Brubaker (2000) and Job Safety sub-scale of the Intensity & Strength Organisational Culture Questionnaire (JS-I&SOCQ) consisting 44 items (4 & 7-Point Scale) **Research Design:** Cross-Sectional Research **Analysis:** Descriptive; Correlation; Reliability; Confirmatory factor analysis; Hierarchical linear modelling	Safety Compliance; Supervisor Enforcement **Safety Climate** Management values; Safety communication; Safety training; Safety systems **Safety Culture** Autocratic Culture; Bureaucratic Culture; Clan-Patronage Culture; Technocratic Culture; Cooperative Culture	• Supervisor enforcement → employee safety compliance • Safety climate → employee compliance under each of the five-different safety cultural dimensions • Knowledge of the Organisational safety culture can provide significant incremental information regarding employee safety compliance, over and above supervisor enforcement behaviours and the safety climate • Certain cultural dimensions (i.e., autocratic and bureaucratic) appear to suppress the effect of safety climate and to attenuate the relationship between supervisor enforcement and employee compliance • Certain types of beliefs, attitudes, and values are more likely to be associated with a positive safety climate (e.g., cooperative, bureaucratic, and autocratic); others with a negative safety climate (technocratic); and yet others (e.g., clan-patronage) are not associated with a positive or negative safety climate

Appendix C

Research Qestionnaire and its Review Form

Research Questionnaire Review Form

Dear Reviewers,

I am Fahad Ibrahim, a PhD student in Management at the University of Hull, UK. I am working on institutional structure and institutional quality regarding the ways it helps to improve organisational safety management in Bangladeshi RMG manufacturing sector.

In the process of my research, I will collect substantial amount of data from the workers in the garments industry. Prior to main survey, it is necessary to validate the questionnaire to collect reliable and comprehensive data from the sample group. Hence, I'm trying to accumulate the knowledge of people with relevant experience and contribution in the area of workplace safety in Bangladesh to further develop my questionnaire. In this process, it would be very helpful, if you could give me your expert view regarding the following aspects of the questionnaire. Please find the attached form of remark along with the main questionnaire. If you need further information, please do not hesitate to contact.

Thank you for your kind cooperation and consideration.

Best regards,
Fahad Ibrahim
PhD in Management
University of Hull

No.	Comment
1.	Do you think 45-60 minutes time is sufficient for workers to fill out the questionnaire? If no, please comment.
2.	Do you think the structure and layout of the questionnaire is straightforward? If no, please comment.
3.	Do you think the questionnaire provides enough guideline on how to fill out the questionnaire? If no, please comment.
4.	Do your think questions are unclear and confusing? If yes, please comment and indicate the number of the question.
5.	Does the questionnaire contain any vague word and statement? If yes, please indicate.
6.	Do you think the questions are suitable to measure the research constructs? If no, please comment.
7.	Do you think the questions are too lengthy? If yes, please comment and indicate the number of the question.
8.	Other Comments, please indicate it.

Research Questionnaire

Hull University Business School
The University of Hull
Hull HU6 7RX
United Kingdom

03 May, 2016

Dear Participants,

I am Fahad Ibrahim, a research student from The University of Hull, UK. I am conducting a study that explores relationships between institutional structure, good governance practice, organisational safety climate, employee safety performance, and employee wellbeing issues. I would like to provide you with more information about this project and what your involvement would entail if you decide to take part.

In Bangladesh, despite of social institutional rule and regulations, the safe working condition has not been improved and ensured. Hence, the question lies whether the social institutions are actually influencing the process of ensuring organisational safety environment? Furthermore, this study considers that, along with the institutional structure, good governance practice may influences the implementation process of organisational safety issues, which ultimately may improve the employee safety performance and wellbeing issues. Hence, the study intends to explore the impact of institutional settings on the organisational safety climate through good governance practice and its impact on employee safety performance and wellbeing issue. Therefore, to identify the link between the abovementioned variables, current study intends to include your company as one of several companies to be involved in this study process. We believe that because you are actively involved in the supervision and operation of your organisation, you are best suited to speak to the various issues related to abovementioned issues. If you agree to participate in this study, you will be asked to complete a five-part survey concerning your perception regarding governmental rules, regulations and norms of the RMG industry safety practices and current experience of your working and health conditions.

Participation in this study is voluntary. It will only take a short period of your time to complete this questionnaire. You may decline to answer any of the interview questions if you so wish. Furthermore, you may decide to withdraw from this study at any time without any negative consequences by advising the researcher. ***All information you provide is considered strictly confidential and anonymous at any stage of this study***. ***Your name and your organisation's name will not appear in any thesis or report resulting from this study***. Data collected during this study will be retained for 1 year in a locked office at the University of Hull. Only researchers associated with this project will have access. Please be informed that the summary of this study's results will be shared with you upon request. There are no known or anticipated risks to you as a participant in this study.

Should you have any concerns about this study, please do not hesitate to contact. We hope that the results of our study will be of benefit to government, organisations, and directly workers in RMG and different industries, as well as to the broader research community. We appreciate your support in completing this questionnaire. Thank you in anticipation.

Yours Sincerely,
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SECTION A

Please complete the following demographic information. Please choose only one answer **(the most appropriate by ticking on the right option).**

Gender

Male ❒ Female ❒

Age

Juvenile (14-17 Years Old) ❒ 18-24 Years Old ❒ 25-34 Years Old ❒ 35-44 Years Old ❒

45 Years Old and Older ❒

Education

No Schooling ❒ Primary School (Class 1 to 5)❒ Junior School (Class 6 to 8) ❒

Secondary School (Class 9 to 10) ❒ Above HSC Level ❒ Vocational School ❒

Marital Status

Single ❒ Married ❒ Widowed ❒ Divorced ❒ Separated ❒

Work Experience

Less than 2 year ❒ 2-3 Years ❒ 4-5 Years ❒ More than 5 years ❒

Working position

Line workers ❒ Supervisors ❒ Technicians ❒

Working position

Sewing ❒ Cutting ❒ Finishing ❒ Embroidery ❒ Quality Control ❒ Washing ❒

Storage ❒ Packaging ❒ Ironing ❒ Others ❒

Size of workforce

< 100 Workers ❒ ≥ 100 to < 300 ❒ ≥ 300 to < 500 ❒ ≥ 500 to < 1000 ❒

≥ 1000 to < 2000 ❒ ≥ 2000 ❒

Factory Type

Compliant ❒ Non-Compliant ❒

Working Hour

8 hours a day ❒ 9-10 hours a day ❒ 11-12 hours a day ❒ 13-14 hours a day ❒

15 hours a day and more ❒

Overtime Hour

2 hours a day ❒ 3-4 hours a day ❒ 5-6 hours a day ❒ 7-8 hours a day ❒

9 hours a day and more ❒

SECTION B

The following statements are related to **regulative aspects of the government**: your perception and experience on governmental rules and regulation on implementing safety issues within the RMG industry. Please indicate the extent to which you agree or disagree with the statements using the response scale provided **(1= Strongly Agree, 2= Disagree, 3= Do not Know, 4= Agree, 5= Strongly Disagree).**

ITEM	Strongly Agree				Strongly Disagree
1. Government officials inspect whether the electrical wirings are adequately secured in my factory	1	2	3	4	5
2. Government officials inspect whether the factory's building structure is strong enough to support heavy equipment	1	2	3	4	5
3. Government officials inspect whether the gas lines are adequately secured in my factory	1	2	3	4	5
4. Government officials review fire safety maintained by our company	1	2	3	4	5
5. Government officials review that our company's fire inspection certificates are up to date	1	2	3	4	5
6. Government officials review whether the fire exits in my factory are designed properly	1	2	3	4	5
7. Government officials ensure that the operating machines are covered and well-fenced	1	2	3	4	5
8. Government officials inspect whether the firefighting equipment are installed properly (e.g., fire alarms, automatic fire sprinklers, and hand-held fire extinguishers)	1	2	3	4	5
9. The government closes factories if they do not comply with the recommended standards and guidelines for maintaining good workplace conditions	1	2	3	4	5
10. Government officials review whether my company conducts evacuation drills every 3 months	1	2	3	4	5
11. Government ensures that our company implement maximum eight working hours a day (without the overtime)	1	2	3	4	5
12. Government officials inspect whether all floors, stairs and pathways are sufficiently wide (e.g., the width of an exit corridor should be 3.6ft)	1	2	3	4	5
13. Government officials review the appropriateness of our factory's production layout (e.g., 3ft space between one machine to another machine)	1	2	3	4	5
14. The government punishes factory owners in the case of any disaster that happens due to negligence	1	2	3	4	5
15. Government officials ensure that our factory has good housekeeping storage	1	2	3	4	5

The following statements are related to **normative aspects of the Government**: your perception and awareness regarding the safety norms and standards set up by the government within the RMG industry. Please indicate the extent to which you agree or disagree with the statements using the response scale provided **(1= Strongly Agree, 2= Disagree, 3= Do not Know, 4= Agree, 5= Strongly Disagree).**

ITEM	Strongly Agree				Strongly Disagree
1. The government/BGMEA/international association requires my company to follow the labour standard suggested by the them	1	2	3	4	5
2. The government/BGMEA/international association requires my company to implement employee health and safety practices	1	2	3	4	5
3. The government/BGMEA/international association officials visit our factory to monitor safety and health practices maintained by our company	1	2	3	4	5
4. The government/BGMEA/international association requires my company to make sure that the factory is not over-crowded	1	2	3	4	5
5. The government/BGMEA/international association requires my company to eliminate sources of ignition	1	2	3	4	5
6. The government/BGMEA/international association requires my company to control the storage of flammable and combustible materials	1	2	3	4	5
7. The government/BGMEA/international association requires my company to make sure that all floors, stairs and pathways always remain free from any blockade	1	2	3	4	5
8. The government/BGMEA/international association requires my company to make sure that the entrance doors are always open	1	2	3	4	5
9. The government/BGMEA/international association requires my company to ensure that the workers are allowed to one-hour rest and meal in a day	1	2	3	4	5
10. The government/BGMEA/international association requires my company to ensure that workers are entitled to sick leave and annual leave	1	2	3	4	5

11. The government/BGMEA/international association requires my company to ensure an equipped dispensary, doctor, and nursing staff for employees	1	2	3	4	5
12. The government/BGMEA/international association requires my company to ensure separate toilets for male and female workers	1	2	3	4	5
13. The government/BGMEA/international association requires that employees should not be harassed if any workers want to join a trade union	1	2	3	4	5
14. The government/BGMEA/international association requires my company to have an in-house canteen for every 100 workers	1	2	3	4	5
15. The government/BGMEA/international association requires worker's right to collective bargaining with an owner	1	2	3	4	5
16. The government/BGMEA/international association requires my company to guarantee that the workroom is not stressful	1	2	3	4	5
17. The government/BGMEA/international association requires my company to provide personal protective equipment to its employees (e.g., mask, gloves, aprons etc.)	1	2	3	4	5

The following statements are related to **Cultural-cognitive aspects of the Government**: your observation and awareness regarding the safety culture developed by the government within the RMG industry. Please indicate the extent to which you agree or disagree with the statements using the response scale provided **(1= Strongly Agree, 2= Disagree, 3= Do not Know, 4= Agree, 5= Strongly Disagree).**

ITEM	Strongly Agree				Strongly Disagree
1. The government/BGMEA/international associations attach great importance to safety initiatives to improve working conditions	1	2	3	4	5
2. The government/BGMEA/international associations attach great importance to safety training for owners/employees to minimise safety risks	1	2	3	4	5
3. The government/BGMEA/international associations attach great importance to raising awareness of labour rights	1	2	3	4	5
4. The government/BGMEA/international associations attach great importance to promoting different programmes to ensure employee welfare	1	2	3	4	5
5. The government/BGMEA/international associations encourage imitating the safety guidelines that most successful companies are practising	1	2	3	4	5
6. The government/BGMEA/international associations think that ensuring workers health and safety is a moral obligation for my company	1	2	3	4	5
7. The government/BGMEA/international associations attach great importance to promoting workers' right to form/join a trade union	1	2	3	4	5
8. The government/BGMEA/international associations focus on the collective dialogue between factory owners and worker's for the resolution of any conflict	1	2	3	4	5
9. The government/BGMEA/international associations focus on registering trade unions to assure labour rights	1	2	3	4	5
10. The government/BGMEA/international associations believe that employee health and safety is equally important as production	1	2	3	4	5
11. The government/BGMEA/international association endorses that to continue in the business, factory owners should ensure good working conditions for the workers	1	2	3	4	5
12. The government/BGMEA/international association endorses that to continue in the business, factory owners should ensure labour rights	1	2	3	4	5
13. The government/BGMEA/international associations attach great importance to providing free medical treatment for workers who get injured in workplace incidents	1	2	3	4	5
14. The government/BGMEA/international associations ensure that families of workers who are killed or permanently disabled from workplace accident get compensation from the factory owners	1	2	3	4	5

SECTION C

The following statements are related to **accountability**: your observation and understanding on your company's level of responsibility or answerability towards the safety rules, regulations, norms and guidelines. Please indicate the extent to which you agree or disagree with the statements using the response scale provided **(1= Strongly Agree, 2= Disagree, 3= Do not Know, 4= Agree, 5= Strongly Disagree).**

ITEM	Strongly Agree				Strongly Disagree
1. My company is accountable to government for periodical inspection of all fire protection equipment's	1	2	3	4	5
2. My company is accountable to the government for regular supervision of building structural safety	1	2	3	4	5

3. My company is accountable for a regular audit of electrical wiring safety	1	2	3	4	5
4. My company promotes active involvement of staff in safety meetings.	1	2	3	4	5
5. My company regularly arranges employer-employee dialogue about safety performance	1	2	3	4	5
6. My company organises an awareness programmes to communicate safety and security issues	1	2	3	4	5
7. My company offer compensation to workers for a work-related injury, disability, or death	1	2	3	4	5
8. My company has established a health and safety committee	1	2	3	4	5
9. My company has allocated a full-time safety representative on site	1	2	3	4	5
10. My company has a resting place for employees	1	2	3	4	5
11. My company provides pure drinking water facilities	1	2	3	4	5
12. My company has hygienic sanitary facilities	1	2	3	4	5
13. My company has effective waste disposal systems	1	2	3	4	5
14. My company allows four months maternity leave	1	2	3	4	5
15. My company provides equal employment opportunity	1	2	3	4	5
16. My company shows empathy on personal issues	1	2	3	4	5

The following statements are related to the **mistreatment of employee rights**: your opinion and experience on your company's level of treatment of your rights, safety and health issues. Please indicate the extent to which you agree or disagree with the statements using the response scale provided **(1= Strongly Disagree, 2= Disagree, 3= Do not Know, 4= Agree, 5= Strongly Agree).**

ITEM	Strongly Disagree				Strongly Agree
1. My company does not force us to hide any safety problem with the factory	1	2	3	4	5
2. My company does not threaten or attack us if we want to join a trade union	1	2	3	4	5
3. My company involves all workers when forming any committee	1	2	3	4	5
4. My company provides appointment letters and pay-slips	1	2	3	4	5
5. My company does not conceal child labour by issuing fake certificates from factory doctors	1	2	3	4	5
6. My company gives us the right to refuse unsaf e work	1	2	3	4	5
7. I think, my company gets inspection certificates with proper investigation and audit	1	2	3	4	5
8. I think, my company does not pay money to officials/police not to take legal action against any violation	1	2	3	4	5
9. I think, my company does not pay money to auditors to ignore any compliance disputes	1	2	3	4	5
10. I think, my company does not illegally give sub-contracts to other non-compliant factories	1	2	3	4	5

The following statements are related to **Rule of Law**: your thoughts and awareness on your company's degree of ensuing public law regarding your working rights and safety policies. Please indicate the extent to which you agree or disagree with the statements using the response scale provided **(1= Strongly Agree, 2= Disagree, 3= Do not Know, 4= Agree, 5= Strongly Disagree).**

ITEM	Strongly Agree				Strongly Disagree
1. My company will be penalised if any accident happens in our factory	1	2	3	4	5
2. My company will be punished in case of violation of labour rights	1	2	3	4	5
3. My company will be fined if they set up factories without following the appropriate building and fire safety codes	1	2	3	4	5
4. My company does not force employees to sign dismissal letters without any proper reason	1	2	3	4	5
5. My company does not force pregnant women to be dismissed	1	2	3	4	5
6. My company applies a maximum eight working hours a day	1	2	3	4	5
7. My company pays us the minimum wage (5300 takas) for our job	1	2	3	4	5

8. My company pays employees' salary every month	1	2	3	4	5
9. My company does not force us to work more than 2 hours of overtime each day	1	2	3	4	5
10. My company has group insurance for the employees	1	2	3	4	5
11. My company has a minimum age of employment	1	2	3	4	5
12. Labour law of our country protects employee interests and rights	1	2	3	4	5

SECTION D

The following statements are related to **Management Commitment**: your perception and experience on your employees' level of commitment and responsibility towards your safety and working conditions. Please indicate the extent to which you agree or disagree with the statements using the response scale provided **(1= Strongly Agree, 2= Disagree, 3= Do not Know, 4= Agree, 5= Strongly Disagree).**

ITEM	Strongly agree				Strongly disagree
1. My company monitors that the electrical wirings are not exposed and adequately secured	1	2	3	4	5
2. My company monitors that the building structure is strong enough to support heavy equipment	1	2	3	4	5
3. My company ensures that the all firefighting equipment is installed properly (e.g., fire alarms, automatic fire sprinklers, and hand-held fire extinguishers)	1	2	3	4	5
4. My company ensures that emergency and evacuation procedures are rehearsed every 3 months	1	2	3	4	5
5. My company communicates how to work safely to its employees	1	2	3	4	5
6. My company acts quickly to eliminate sources of ignition	1	2	3	4	5
7. My company appreciates my ability to identify hazards in the factory	1	2	3	4	5
8. My company considers employees' suggestions to improve working conditions	1	2	3	4	5
9. My company ensures we have properly designed fire exits	1	2	3	4	5
10. My company makes sure that the exit doors remain free from any blockage	1	2	3	4	5
11. My company makes sure that the exit doors are not locked	1	2	3	4	5
12. My company ensures that the factory is not over-crowded	1	2	3	4	5
13. My company ensures a factory's production layout is well organised	1	2	3	4	5
14. My company is committed to providing safety training to its employees	1	2	3	4	5
15. My company makes sure to control flammable materials storage	1	2	3	4	5
16. My company acts quickly to repair cracks in beams, columns, or walls	1	2	3	4	5

The following statements are related to **Supervisor's Safety Support:** your perception and experience on your supervisors' safety involvement, encouragement and actions. Please indicate the extent to which you agree or disagree with the statements using the response scale provided **(1= Strongly Agree, 2= Disagree, 3= Do not Know, 4= Agree, 5= Strongly Disagree).**

ITEM	**Strongly agree**				**Strongly disagree**
1. My supervisor encourages employees to attend safety training programmes	1	2	3	4	5
2. My supervisor inspects hazards in our workplace	1	2	3	4	5
3. My supervisor considers safety to be as important as production	1	2	3	4	5
4. My supervisor treats us fairly in case of an injury in the workplace	1	2	3	4	5
5. My supervisor punishes us for taking a risk in the workplace	1	2	3	4	5
6. My supervisor takes account of our ability to identify hazards for increment/promotion	1	2	3	4	5
7. We can share any safety problem regarding the workplace with our supervisor	1	2	3	4	5
8. My supervisor does not behave aggressively in the workplace	1	2	3	4	5
9. My supervisor does not threaten or harass us if anyone wants to join a labour union	1	2	3	4	5

10. My supervisor ensures that individuals are not working under risky or hazardous conditions	1	2	3	4	5
11. My supervisor talks to the management on behalf of the team regarding any safety problem	1	2	3	4	5
12. My supervisor does not force us to work more than 8 hours in a day	1	2	3	4	5

The following statements are related to **Safety Communication:** your experience on your company's communication on employee safety and health issues. Please indicate the extent to which you agree or disagree with the statements using the response scale provided **(1= Strongly Agree, 2= Disagree, 3= Do not Know, 4= Agree, 5= Strongly Disagree).**

ITEM	**Strongly agree**				**Strongly disagree**
1. My company communicates what to do in case of a fire emergency	1	2	3	4	5
2. My company communicates to always clear up the aisles	1	2	3	4	5
3. My company always informs us about changes in safe working procedures	1	2	3	4	5
4. My company cautions us about any breakdown in the workplace	1	2	3	4	5
5. My company always brings safety information to my attention	1	2	3	4	5
6. My company always reminds us to use safety equipment or protective clothing	1	2	3	4	5
7. My company sets signs for emergency exits on every floor	1	2	3	4	5
8. My company sets signs of fire hazards on every floor	1	2	3	4	5
9. My company sets signs of electrical hazards on every floor	1	2	3	4	5
10. My company informs us about correct and incorrect safety actions	1	2	3	4	5
11. My company communicates about the possible work hazards	1	2	3	4	5
12. My company sets signs for non-smoking zones	1	2	3	4	5
13. My company takes account of previous accidents to communicate safety improvement measures	1	2	3	4	5
14. My company listens to and acts upon safety feedback from the employees	1	2	3	4	5

The following statements are related to **Risk Assessment:** your perception on the level of risk associated with your job and working conditions. Please indicate the extent to which you agree or disagree with the statements using the response scale provided **(1= Strongly Agree, 2= Disagree, 3= Do not Know, 4= Agree, 5= Strongly Disagree).**

ITEM	**Strongly agree**				**Strongly disagree**
1. In my workplace, fire hazards are identified properly	1	2	3	4	5
2. The temperature in our workplace is comfortable	1	2	3	4	5
3. The humidity in our workplace is appropriate	1	2	3	4	5
4. I do not stand in one position for a long period of time	1	2	3	4	5
5. In my workplace, the operating machines are covered and secured	1	2	3	4	5
6. The lighting system in our workplace is sufficient	1	2	3	4	5
7. The noise control system in our workplace is sufficient	1	2	3	4	5
8. The ventilation system in our workplace is adequate	1	2	3	4	5
9. In my workplace, the chances of being involved in an accident are quite low	1	2	3	4	5
10. I can leave this building very quickly in case of a fire emergency	1	2	3	4	5
11. The working space and floors in our workplace are sufficiently wide	1	2	3	4	5
12. The stairs and pathways in our workplace are adequately spacious	1	2	3	4	5
13. In my workplace, all the aisles and exit doors remain free from any obstacles	1	2	3	4	5
14. In my workplace, we have a good housekeeping storage	1	2	3	4	5
15. I am not afraid that someone in the factory could harm me	1	2	3	4	5

The following statements are related to **Safety Training:** your judgement and familiarity with your company's safety training process. Please indicate the extent to which you agree or disagree with the statements using the response scale provided **(1= Strongly Agree, 2= Disagree, 3= Do not Know, 4= Agree, 5= Strongly Disagree).**

ITEM	Strongly agree				Strongly disagree
1. I was provided with safety training during my first day in the factory	1	2	3	4	5
2. I participate in emergency and evacuation drills every 3 months	1	2	3	4	5
3. I receive related training when new procedures or equipment are introduced	1	2	3	4	5
4. I have been trained to assess hazards in my workplace	1	2	3	4	5
5. I have been trained to know about the basic components of fire	1	2	3	4	5
6, I have been trained to report any blocked aisles and exit doors during factory operations	1	2	3	4	5
7. I am aware of the location of emergency switches of the machines that I operate	1	2	3	4	5
8. I have been given necessary training to avoid injury and accidents	1	2	3	4	5
9. I have been trained to report any near-miss incidents	1	2	3	4	5
10. I have been trained to report any locked doors at any point during factory operations	1	2	3	4	5

SECTION E

The following statements are related to **Workplace Security:** your involvement and experience of workplace injuries or accidents. Please indicate the extent to which you agree or disagree with the statements using the response scale provided **(1= Strongly Agree, 2= Disagree, 3= Do not Know, 4= Agree, 5= Strongly Disagree).**

ITEM	Strongly Agree				Strongly Disagree
1. I have not been injured in the workplace within the past 12 months	1	2	3	4	5
2. I have been injured in the workplace but did not require absence from work	1	2	3	4	5
3. I have not been injured in the workplace, which required absence from work not exceeding 3 consecutive days	1	2	3	4	5
4. I have not been injured in the workplace, which required absence from work exceeding 3 consecutive days	1	2	3	4	5
5. My clothes or loose hair do not get caught in the machine	1	2	3	4	5
6. I have not tripped/slipped/fallen on the floor	1	2	3	4	5
7. I have not been exposed to chemicals (e.g., dyes, enzymes, solvents, cleaning solutions, etc.) without proper ventilation	1	2	3	4	5
8. I have not witnessed or experienced a fire explosion	1	2	3	4	5
9. I have not witnessed or experienced on an electrical short-circuit accident	1	2	3	4	5

The following statements are related to **Safety Participation:** your level of pro-active safety behaviour. Please indicate the extent to which you agree or disagree with the statements using the response scale provided **(1= Strongly Agree, 2= Disagree, 3= Do not Know, 4= Agree, 5= Strongly Disagree).**

ITEM	Strongly Agree				Strongly Disagree
1. I use appropriate personal protective equipment as indicated by the site health and safety plan	1	2	3	4	5
2. I assist my co-workers to make sure they perform their work safely	1	2	3	4	5
3. I encourage my co-workers to report any safety violations	1	2	3	4	5
4. I try to change the way the job is done to make it safer	1	2	3	4	5
5. I try to discuss safety problems with my supervisors	1	2	3	4	5
6. I encourage others to get involved in safety issues	1	2	3	4	5
7. I act to stop safety violations to protect the well-being of co-workers	1	2	3	4	5
8. I attend non-mandatory safety meetings	1	2	3	4	5

The following statements are related to **Safety Compliance:** your own level of commitment towards safety behaviour. Please indicate the extent to which you agree or disagree with the statements using the response scale provided **(1= Strongly Agree, 2= Disagree, 3= Do not Know, 4= Agree, 5= Strongly Disagree).**

ITEM	Strongly Agree				Strongly Disagree
1. I follow the appropriate work practices to reduce exposures to hazards	1	2	3	4	5
2. I follow standard operating procedures relating to production to minimize safety risk	1	2	3	4	5
3. I ensure the highest level of safety while doing my job	1	2	3	4	5
4. I do not neglect safety, even when in a rush	1	2	3	4	5
5. I always report injuries, accidents, or illnesses	1	2	3	4	5

Thank you very much for your time to completing this questionnaire. Your effort is highly appreciated.

Appendix D

Pilot Study Exploratory Factor Analysis and Reliability Results

Table D.1: Pilot Study Factor Loadings and Reliability for Institutional Perspective

Variables	Descriptive Statistics		Factor Loadings				Reliability		KMO	*Bartlett test*	*Overall* α
	M	S.D	1	2	3	4	CITC	α			
Regulative											
Reg_14	1.9	1.2	**.785**				.756	**.872**	.760	822.878 with df 120, ***sig***=0.00	**.898**
Reg_12	1.9	1.3	**.708**				.617				
Reg_2	2.2	1.3	**.704**				.816				
Reg_3	2.2	1.1	**.703**				.623				
Reg_1	1.9	1.0	**.624**				.665				
Reg_13	1.7	1.0	**.601**				.585				
Reg_5	2.4	1.3		**.779**			.676	**.724**			
Reg_11	2.8	1.5		**.723**			.525				
Reg_16	1.7	1.0		**.635**			.482				
Reg_9	2.7	1.5			**.788**		.655	**.804**			
Reg_7	2.6	1.4			**.705**		.589				
Reg_8	2.9	1.3			**.609**		.589				
Reg_6	2.0	1.3			**.602**		.645				
Normative											
Norm_11	1.8	1.3	**.804**				.785	**.894**	***.765***	1365.345 with df 123, ***sig***=0.00	***.873***
Norm_15	2.3	1.7	**.788**				.813				
Norm_21	1.6	1.0	**.771**				.599				
Norm_3	2.4	1.4	**.753**				.780				
Norm_2	2.0	1.3	**.702**				.764				
Norm_18	2.3	1.2		**.837**			.756	**.826**			
Norm_17	2.4	1.2		**.791**			.661				
Norm_20	2.5	1.6		**.715**			.657				
Norm_8	1.9	1.2		**.650**			.570				
Norm_9	1.3	0.7			**.902**		.609	**.766**			
Norm_14	1.3	0.7			**.765**		.676				
Norm_10	1.8	0.9			**.649**		.551				
Norm_6	1.9	1.0				**.857**	.538	**.737**			
Norm_4	1.8	1.1				**.756**	.568				
Norm_5	1.9	1.1				**.647**	.586				
Cultural Cognitive											
Cul_Cog_1	1.9	1.2	**.823**				.694	**.848**	.672	624.641 with df 105, **sig**=0.00	**.849**
Cul_Cog_3	2.3	1.3	**.820**				.745				
Cul_Cog_2	2.1	1.3	**.671**				.642				
Cul_Cog_8	2.1	1.5	**.646**				.639				
Cul_Cog_14	2.4	1.5	**.583**				.599				
Cul_Cog_7	3.2	1.6		**.759**			.625	**.753**			
Cul_Cog_6	3.3	1.6		**.743**			.545				
Cul_Cog_9	2.8	1.5		**.641**			.577				

Table D.2: Pilot Study Factor Loadings and Reliability for Governance

Variables	Descriptive Statistics		Factor Loadings		Reliability		KMO	Bartlett test	Overall α
	M	S.D	1	2	CITC	α			
Accountability									
Accou_5	2.5	1.4	**.876**		.772	**.839**	.691	846.491 with df 136, **sig**=0.00	**.878**
Accou_4	2.3	1.4	**.858**		.806				
Accou_3	2.1	0.9	**.713**		.599				
Accou_11	2.4	1.4	**.637**		.569				
Accou_6	2.1	1.2		**.829**	.681	**.841**			
Accou_8	2.1	1.4		**.772**	.643				
Accou_7	2.1	1.4		**.713**	.667				
Accou_9	2.2	1.5		**.653**	.718				
Anti-Corruption									
Corr_11	2.6	1.4	**.803**		.729	**.833**	.770	382.670 with df 66, **sig**=0.00	**.831**
Corr_10	2.9	1.2	**.721**		.566				
Corr_7	3.7	1.5	**.693**		.693				
Corr_12	2.7	1.4	**.693**		.574				
Corr_9	2.8	1.3	**.652**		.544				

Corr_6	3.3	1.7	**.620**		.561				
Corr_2	2.8	1.2		**.852**	.674				
Corr_3	2.5	1.3		**.789**	.589	**.789**			
Corr_1	2.3	1.4		**.772**	.635				
Rule of Law									
Rol_5	2.5	1.4	**.898**		.807				
Rol_4	2.3	1.4	**.841**		.782				
Rol_3	2.1	0.9	**.744**		.637	**.844**			
Rol_1	1.8	1.0	**.652**		.544				
Rol_11	2.4	1.4	**.648**		.549		.718	636.165 with df 78, **sig**=0.00	**.884**
Rol_6	2.1	1.2		**.805**	.681				
Rol_7	2.1	1.4		**.780**	.667	**.841**			
Rol_8	2.1	1.4		**.734**	.643				
Rol_9	2.2	1.5		**.608**	.718				

Table D.3: Pilot Study Factor Loadings and Reliability for Safety Climate

Variables	Descriptive Statistics		Factor Loadings			Reliability		KMO	Bartlett test	Overall α
	M	S.D	1	2	3	CITC	α			
Management Commitment										
MC_9	1.9	1.4	**.905**			.801				
MC_5	2.0	1.5	**.849**			.727				
MC_7	1.8	1.1	**.742**			.613	**.844**			
MC_4	2.4	1.4	**.738**			.702				
MC_16	2.2	1.3	**.624**			.551		.662	929.709 with df 171, **sig**=0.00	**.777**
MC_3	2.1	1.3		**.840**		.657				
MC_2	2.2	1.2		**.828**		.683				
MC_6	2.4	1.4		**.664**		.498	**.841**			
MC_12	2.1	1.2		**.638**		.513				
MC_18	2.4	1.4		**.603**		.475				
Supervisor's Safety Support										
SL_3	2.3	1.4	**.809**			.635				
SL_4	2.4	1.3	**.722**			.567	**.702**			
SL_6	2.4	1.2	**.626**			.458				
SL_7	2.2	1.4	**.610**			.313		.564	630.016 with df 105, **sig**=0.00	**.746**
SL_13	2.4	1.4		**.845**		.627				
SL_10	2.2	1.3		**.753**		.659	**.787**			
SL_5	2.3	1.4		**.690**		.601				
Safety Communication										
SC_5	2.4	1.5	**.843**			.835				
SC_13	2.1	1.4	**.836**			.684	**.859**			
SC_6	2.0	1.4	**.701**			.687				
SC_9	1.7	1.0		**.814**		.638				
SC_7	1.8	1.2		**.790**		.799	**.877**			
SC_8	1.7	1.2		**.763**		.808		.805	786.541 with df 91, ***sig***=0.00	**.885**
SC_10	1.8	1.2		**.635**		.709				
SC_12	1.7	1.2			**.905**	.606				
SC_11	2.2	1.4			**.789**	.767	**.830**			
SC_14	2.3	1.5			**.771**	.715				
Safety Risk Assessment										
SRA_9	2.2	1.2	**.777**			.730				
SRA_3	1.5	0.8	**.722**			.653				
SRA_1	1.5	1.0	**.714**			.680	**.820**	**.655**	440.904 with df 105, ***sig***=0.00	**.820**
SRA_10	1.4	0.8	**.672**			.502				
SRA_7	1.9	1.2	**.639**			.545				
Safety Training										
ST_4	2.6	1.8	**.919**			.878				
ST_3	2.5	1.5	**.876**			.816				
ST_2	2.9	1.6	**.853**			.775	**.913**			
ST_5	2.3	1.5	**.825**			.802				
ST_6	2.5	1.5	**.657**			.635		**.766**	572.090 with df 45, ***sig***=0.00	**.885**
ST_10	2.0	1.5		**.881**		.784				
ST_8	1.7	1.1		**.807**		.522	**.777**			
ST_9	1.9	1.4		**.662**		.573				

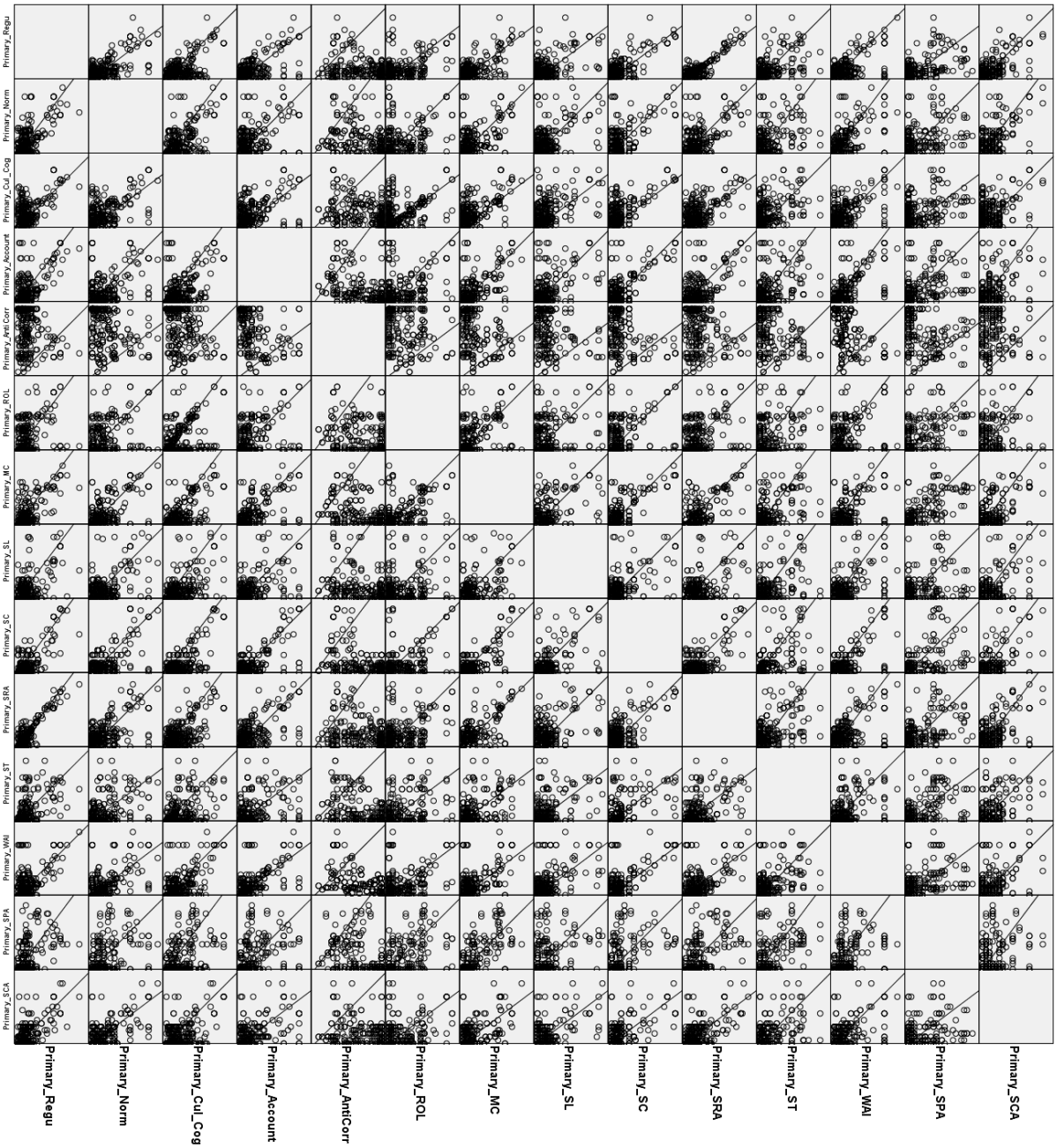
Table D.4: Pilot Study Factor Loadings and Reliability for Safety Performance

Variables	Descriptive Statistics		Factor Loadings	Reliability		KMO	Bartlett test	Overall α
	M	S.D	1	CITC	α			
Workplace Accidents & Incidents								
WAI_6	3.8	1.7	**.915**	.846	**.897**	.659	395.361 with df 36, **sig**=0.00	**.897**
WAI_9	3.7	1.7	**.833**	.787				
WAI_7	3.5	1.7	**.802**	.754				
WAI_8	3.5	1.7	**.782**	.738				
WAI_5	4.1	1.5	**.753**	.609				
Safety Participation								
SPA_7	2.6	1.5	**.831**	.642	**.802**	.623	252.439 with df 28, **sig**=0.00	**.802**
SPA_5	1.9	1.0	**.823**	.713				
SPA_3	1.9	1.2	**.756**	.660				
SPA_8	3.4	1.8	**.691**	.458				
SPA_6	2.1	1.1	**.653**	.613				
Safety Compliance								
SCA_4	1.4	0.9	**.858**	.687	**.707**	.719	94.949 with df 10, ***sig***=0.00	**.707**
SCA_2	1.6	1.1	**.684**	.464				
SCA_5	1.6	0.9	**.650**	.432				
SCA_3	1.3	0.7	**.645**	.468				
SCA_1	1.1	0.3	**.645**	.444				

Appendix E

Normal Q-Q Plot Matrix for Normality Assessment

Figure E.1 – Normal Q-Q Plot Matrix for Normality Assessment



Appendix F

Correlation Matrix

Table E.1: Correlation Matrix

Correlations														
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**
1. Regulative Perspective	1	.525**	.297**	.378**	.216**	.182**	.439**	.399**	.460**	.532**	.349**	.309**	.318**	.526**
2. Normative Perspective	.525**	1	.425**	.384**	.340**	.208**	.435**	.470**	.577**	.464**	.365**	.510**	.314**	.542**
3. Cultural-Cognitive perspective	.297**	.425**	1	.252**	.205**	0.118	.462**	.431**	.478**	.410**	.227**	.317**	.173**	.279**
4. Accountability	.378**	.384**	.252**	1	.495**	.282**	.453**	.409**	.532**	.470**	.343**	.621**	.395**	.352**
5. Anti-Corruption	.216**	.340**	.205**	.495**	1	.383**	.385**	.323**	.383**	.272**	.287**	.637**	.565**	.163**
6. Rule-of-Law	.182**	.208**	0.118	.282**	.383**	1	.264**	.229**	.342**	.319**	.196**	.250**	.522**	.154*
7. Management Commitment	.439**	.435**	.462**	.453**	.385**	.264**	1	.496**	.625**	.441**	.459**	.457**	.371**	.483**
8. Supervisors Support	.399**	.470**	.431**	.409**	.323**	.229**	.496**	1	.484**	.454**	.426**	.476**	.304**	.435**
9. Safety Communication	.460**	.577**	.478**	.532**	.383**	.342**	.625**	.484**	1	.584**	.388**	.486**	.515**	.488**
10. Risk Assessment	.532**	.464**	.410**	.470**	.272**	.319**	.441**	.454**	.584**	1	.357**	.333**	.413**	.436**
11. Safety training	.349**	.365**	.227**	.343**	.287**	.196**	.459**	.426**	.388**	.357**	1	.380**	.262**	.421**
12. Workplace Security	.309**	.510**	.317**	.621**	.637**	.250**	.457**	.476**	.486**	.333**	.380**	1	.371**	.315**
13. Safety Participation	.318**	.314**	.173**	.395**	.565**	.522**	.371**	.304**	.515**	.413**	.262**	.371**	1	.236**
14. Safety Compliance	.526**	.542**	.279**	.352**	.163**	.154*	.483**	.435**	.488**	.436**	.421**	.315**	.236**	1

**. Correlation is significant at the 0.01 level (2-tailed).
*. Correlation is significant at the 0.05 level (2-tailed).