MANAGING SUSTAINABILITY RISKS IN FASHION SUPPLY CHAINS

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INTRODUCTION

Much has been written about fashion supply chains in recent years pertaining to the offshoring of production and sourcing by UK retailers to other countries including inter alia Asia as well as the attendant risks to such activities. There is ample evidence suggesting that businesses can experience disruptions from sustainability issues that are pertaining in their supply chains. Also, there is an increasing focus on sustainability issues in global businesses and fashion supply chains are not immune to these issues, particularly when wider issues of corporate and social responsibility are included. And yet, the consideration of sustainability and its impact on risk pertaining to the fashion supply chains have not been actively pursued.

Moreover little is known about how sustainability issues manifest themselves as risks. Further, the lack of sustainability risk conceptualization hinders the development of sustainability risk management framework which is critical to all but specifically to the global fashion supply chains to survive and compete in a volatile and demand driven sector.

This paper presents a proposal for a PhD research study at the Logistics Institute, Hull University Business School investigating this interaction.

BACKGROUND THEORY

This paper aims to develop sustainability risk management framework which can help fashion supply chains to manage their sustainability risks. Therefore, the following three themes serve as background theory for this research.

FASHION SUPPLY CHAINS

In the last few years, fashion supply chains have received much interest from supply chain researchers (Barnes and Lea-Greenwood, 2010; Brun and Castelli, 2008) due to their increasingly dynamic, complex and volatile nature. According to Christopher et al. (2004, p. 367) *"fashion is a broad term that typically encompasses any product or market where there is the element of style that is likely to be short lived."* This definition further differentiates and highlights characteristics of fashion products on the grounds of short life cycle, high demand volatility, low predictability and high impulse buying and implies that fashion products must be available with minimum errors in terms of volume and product mix. Since product life cycles are short, unsold products will incur extra inventory costs for retailers. Further, proximity to market is key factor to identify popular designs and making changes during mid-season (Christopher et al. 2004). This in part requires strategies of agility, responsiveness and flexibility.

Due to the market's highly competitive nature, retail concentration and over capacity (Christopher et al. 2004; Brun and Castelli, 2008), the success of fashion retailer requires them to increase their market sensitivity by reducing cycle times and ensuring product availability. This in part can be achieved by designing market-oriented business strategy, increasing ability to respond to market signals and designing demand driven supply chain. These factors are necessary in any modern supply chain however vital in the fashion sector to survive (Christopher et al. 2004). However, fashion defies conventions, instead of long term relationships and cooperation, fashion supply chain

operating mechanisms are largely based upon current market need and what can generate highest margins by capturing demand on time (Christopher et al. 2004).
A study by Masson et al. (2007) highlighted the emergence of intermediaries and integrated service providers (ISPs) in the clothing and fashion supply chains to help fashion retailers to meet demanding requirements of short lead time, volatile and unpredictable demand, manage complexity and enhance the availability of fashion items at fashion retailers' shelf. Most importantly they highlighted the operating mechanisms of the intermediaries and ISPs, their use of sub-contractors and third parties which are un-known to the final retailer leading to potential sustainability and risks for the fashion retailers in the Europe. Although, they shed light on risk and sustainability issues in isolation in global fashion supply chains but their account highlights the vulnerability of fashion supply chains from sustainability and risk perspective.

Risk management

Outsourcing, globalization, improved infrastructure and information technology, cheap labour and raw material (Manuj and Mentzer, 2008) have extended supply chains to longer and complex networks. This has consequently increased supply chain vulnerability, fragility and frequent operational disruptions. To add this, are the factors such as, shorter product life cycles, reduction of supplier base, buffers and inventories, increased demand for on time deliveries, change in consumer tastes and preferences, technology shifts or supplier priorities. A heightened interest in supply chain risk management (SCRM) is attributed to the recent increase in high profile manmade and natural incidents such as, terrorist attacks, wars, earthquakes and economic crisis. Further, it has become nearly impossible to predict risks or assign probabilities due to changing profile of risk events. Recent examples are 2013's Bangladeshi factory collapse, the missing Malaysian airline, and the European horse meat scandal.

The aim of SCRM is to survive (Pujawan and Geraldin, 2009), avoid delays, reduce costs, improve customer service, avoid major disasters and operational disruptions, increase the chances of quick recovery and enhance resilience (Christopher and Peck, 2004). SCRM research has reported numerous risk sources (Harland et al. 2003; Tummala and Schoenherr, 2011). However, in demand-driven and volatile supply chains such as fashion supply chains, three primary types of risks: financial, chaos and market related have been specifically noted in the literature (Christopher et al. 2004; Masson et al. 2007).

Risk management approaches largely depends upon the nature of market, industry, organizational structure and attitude, strategy, culture, leadership and geographic area in which organization is operating (Harland et al. 2003). Therefore, risk management should take into consideration all these factors while designing risk management strategies.

Supply chain structures and philosophies of lean, JIT and streamlining flows to eliminate buffers and redundancies have enabled global supply chains to be operationally efficient but at the same time have increased risks substantially. This is mainly attributed to the already designed supply chain structures and strategies under stable environmental assumptions. Therefore, some research suggested a move from dynamic to structural flexibility by designing adaptable supply chains where performance measurement integrates flexibility, adaptability, responsiveness and agility rather than traditional accounting measures for performance evaluation on the base of financial parameters (Christopher and Holweg, 2011).

Risk management research in the context of global supply chains in demand-driven, volatile and short product life cycle industries such as fashion is still lacking. Further, in a complex, unpredictable and unstable supply chain context risk management needs wider approaches than relatively stable environment quantitative and statistical tools and should be supported with qualitative approaches

and subjective assumptions. For such complex and unstable business environments heavy reliance on narrow and one-sided quantitative information will be imperfect for decision making which could also lead to unexpected chain of risks while trying to manage by applying these models (Gaudenzi and Borghesi, 2006). Further supply chain risk management literature suggested numerous risk management strategies and frameworks however according to the researchers' knowledge none of them has been suggested as sustainability risk management strategies and sustainability risk management frameworks in general and for the global fashion supply chains in particular.

Sustainability

The earliest articulation of sustainable development was captured in the 1987 Brundtland Report and defined as "development that meets the needs of the present world without compromising the ability of the future generations to meet their own" (Grant et al. 2013: 31). The application of sustainability concept in supply chain management led the researchers to coin different terminologies such as, sustainable, green and environmental supply chain management (Carter and Rogers, 2008). The application of sustainability in supply chain functional areas such as logistics and distribution, purchasing and sourcing is fairly well developed as compared to its holistic application in total and extended supply chain context (Grant et al. 2013).

A company is as sustainable as its suppliers (Grant et al. 2013). This has led supply chains to consider the holistic application of concept from end-to-end. Further, supply chains are under intense pressure from multiple stakeholders, to integrate sustainability into operations in order to avoid liabilities (Mollenkopf 2006). Legislation, such as end of life take-back directive and take-back regulation, REACH, WEEE and IPPC has further broadened the scope in supply chain management. Today, end purchasers such as retailers are responsible to ensure that suppliers and supply chain partners have decent working conditions, source products from ethical sources, manufacture products with least environmental impact and distribute with minimum pollution and emissions.

In order to integrate sustainability into supply chain different tools are in place such as life-cycle assessment and costing, design for remanufacturing and disassembly or modular design, design for recycling, energy recovery and life cycle extension. Further, the concept of closed loop supply chain design also gained interest lately. At the core of this concept, is the idea of designing, with supply chain partners, a circular economy where most of the used products, residual materials, scrapes and waste materials are collected recycled, conditioned and re-used to improve material efficiency and profitability (Neto et al. 2010).

Sustainability is becoming an interesting area of research in fashion supply chains. Fashion supply chains are increasingly global in nature, with manufacturing in fragmented small and medium plants mainly in Asia and retail concentration in Europe. This requires movement of products and materials around the globe, resulting high concerns and pressure from sustainability perspective. Caniato et al. (2012) argue that the sector's environmental impact is particularly high in relation to its global volume, accounting for 4% of world's exports and employees 9.3% workforce in the world.
The above discussion reflects that, risk (Christopher & Peck 2004; Masson et al. 2007) and sustainability (De Brito et al. 2008; Ashworth et al. 2006; Caniato et al. 2012) has been area of interest of fashion supply chain researchers but a unified discussion of sustainability risk in fashion supply chains is still missing. Next section will further shed light on the unified concept of sustainability risk.

Combining Sustainability and Risk: Sustainability risk

Risk and sustainability are widely discussed concepts in supply chain management discipline, however, in isolated and standalone fashion. Further, an integrated discussion of sustainability risk is missing in supply chain management literature. The combined discussion of both has only recently

gained coverage in the literature and yet there is no consensus on what it is. How it can be defined and what are its underlying principles? How it impacts the operational performance of supply chains and how it can be managed?

Sustainability and risk have been under discussion for a long time but not as a unified concept. Anderson and Anderson (2009) are considered first to provide a unified discussion on sustainability risk management. They maintain that risk based information should be an input for sustainability decision making while sustainability related information should be part of risk management process, to ensure the long term sustainability of a project. However, their account is subject to large number of criticisms. For example, their provided definition is vague and do not really explain if sustainability risk is something new or a re-name of sustainability issues. Further Hofmann et al. (2014) criticised that Anderson and Anderson (2009) aggregated various dissimilar and non-relevant risks in the category of sustainability risk. Foerstl et al. (2010) are considered as first to provide a framework for managing sustainability risks in supply chain. However, without providing definition of sustainability risk which is essential to conceptualize and operationalize it in supply chain context. Criticising their work, Hofmann et al. (2014: 163) argued that Foerstl et al. (2010) sustainability risk management framework 'not based on an analysis of how these risks materialize as losses'.

A recent but more comprehensive account of 'Sustainability-Related Supply Chain Risks' is provided by Hofmann et al. (2014). They not only defined sustainability risk but also provided a supply chain sustainability risk management framework. However, there are some major limitations in their account. The first drawback is their conceptualization of sustainability concept on three elements social, ecological and ethics ignoring economic dimension of sustainability. As highlighted by Grant et al. (2013) one definition of sustainability, capable of being sustained and capable of being maintained, or green is green, i.e. "being green means, sustainable initiatives should be considered in conjunction with the economic case for the long-term corporate sustainability, i.e. green being the colour of money" (2013: 31). Second, their proposed definition of sustainability risk 'a condition or a potentially occurring event that may provoke harmful stakeholder reactions' (p. 168) is largely based upon cause and effect understanding of risk whereas risk is also referred as a subjective phenomenon (Mitchell 1999).

They further argued that ordinary supply chain risks triggered by disruptions while for a risk to be called sustainability risk it must be based upon critical stakeholder reactions. This argument again contradicts with the sustainability concept of longevity, continuity and viability conceptualization of sustainability by Grant et al. (2013) and Costanza & Patten (1995). Which means that it do not have to be based upon critical stakeholders' reactions rather anything in simple words ordinary risks can jeopardise continuity, longevity and viability of supply chains and thus have potential to manifest themselves as risk. Third, their proposed framework further questions its feasibility from implementation perspective as it demands two different implementation considerations, one from sustainability perspective (stakeholders) and the other from ordinary risk perspective (supply chain disruption).

Furthermore, there seems nothing new other than assembling already existing sustainability management guidelines in the sustainable supply chain management literature. However, it is not surprising as this trend has already noted by Pagell and Wu (2009). They argued that most of the research on sustainable supply chain management is regrouping or presenting it into another fashion rather than proposing something new. In context of this research is the fourth limitation, which is the nature of their selected case companies which are not operating in as volatile and unpredictable demand situation as fashion supply chains and further they directly asked from the respondents what the 'sustainability risk' is rather than letting it emerge from the data to claim it as a grounded concept.

However, along with all above limitations, their account has generated some valuable insights in order to provide a unified discussion on sustainability risk and more importantly in supply chain discipline but still there is a strong need to empirically investigate the phenomenon of sustainability

risk in context of volatile and unpredictable global supply chains such as fashion supply chain to provide a well-grounded conceptualization and materialization of sustainability risk leading to a framework of strategies which can enable fashion supply chains to manage their sustainability risks in order to survive and compete globally.
The above discussion reflects that fashion supply chains are highly complex, global and requires new supply chains strategies of agility, responsiveness and be demand driven. Although, risk and sustainability have been discussed in fashion supply chain contexts, existing accounts are very limited and isolated in their discussion of sustainability risk. Further, this review has not revealed any research on 'sustainability risk' in global fashion supply chains which led to a gap in our knowledge. Accordingly, the following research questions have been derived for this research:

1. How do fashion supply chains define sustainability risk in the context of their supply chains?
2. How do fashion supply chains manage sustainability and/or risk in their supply chains?
3. Why might fashion supply chains not be managing sustainability and/or risk in their supply chains?
4. How can fashion supply chains manage sustainability risks?

Proposal for Research: Research Methodology

Due to the exploratory nature of this research, an inductive multiple case-study research method is adapted to empirically investigate the complex phenomenon of sustainability risk in contemporary context of fashion supply chains (Yin 2009; Eisenhardt 1989).

Multiple case-study research method presents opportunity to explore a complex, unclear or new phenomenon with unclear boundaries whilst enabling researcher to study and understand whole supply chain (Yin 2009; Eisenhardt 1989; Miles and Huberman 1994). Studying a complex phenomenon in its natural or social settings further enhances the possibility to explore complex links and underlying meanings regarding the subject matter (Miles and Huberman 1994). Further, because of limited empirical evidence on what constitute 'sustainability risk' and how fashion supply chains are managing them, it is difficult to develop a testable hypothesis which led this research to follow multiple case-study investigation approach (Yin, 2009). Other benefits of multiple case-study are, greater possibility of building theories, substantial interpretative advantages, in-depth understanding of the phenomenon helps in answering how and why questions (Yin, 2009; Eisenhardt, 1989) and identification of patterns which link different variables of risk and sustainability in context of fashion supply chains.

Multiple case-studies are subject to criticisms due to lack of standardization, rigour and generalizability across the companies. However this research has followed guidelines and suggestions from various studies in order to enhance the validity and reliability of this research (Yin 2009; Eisenhardt, 1989; Miles and Huberman, 1994). Literature also suggests theoretical sampling, selecting more than one case, specifying case study procedure, developing case study protocol, and establishing study boundaries to ensure study criteria directly connected to the research objectives and questions, in order to overcome limitations and criticisms (Yin 2009; Eisenhardt, 1989; Miles and Huberman, 1994).

One of the issues in case-study is the selection of appropriate number of cases. In this regard, Eisenhardt (1989) maintains that there is no ideal number however recommended four to ten. Ellram (1996) maintains that six to ten cases should be enough to provide sound evidence. In context of this research, Ellram's (1996) minimum number six will be adapted. Further, her recommendation seems more appropriate due to the relevance to logistics and supply chain management.

Overall, six case companies are selected on the base of their presence and carrying out major operations in the UK from manufacturing, retail and distribution perspective. These selection criteria will further enable researchers to deeply explore the phenomenon of sustainability risk in context of

fashion supply chains. As fashion supply chains are global and require to select supply chain partners from around the globe for research purpose, however, our selection criteria will overcome this shortcoming.

Data Collection:
A semi-structured interview protocol is developed to collect primary data for this research, together with an analysis of secondary data sourced from the companies themselves and other sources. Three pilot interviews will be conducted to enhance the validity and reliability of the protocol. Interviewees are selected based upon purposive sampling, due to their direct relevance to the research topic, knowledge and ability to answer research question. Respondents included supply chain, purchasing or sourcing, risk management, sustainability, and design managers. Interviews will be recorded, transcribed and later verified by the interviewees.

Data Analysis:
Data analysis will be carried out in two phases, within-case and cross-case analysis. The main purpose of the within-case analysis is to define, structure, reduce and make sense of the all the available information, primary and secondary. Pagell and Wu's (2009) recommendations will be considered for within case analysis. Which are, first, try to make sense of the business model of the case companies and how sustainability risk affects the operational and financial performance. Second, we will then cross-reference the case company's activities in relation to sustainability, risk and fashion supply chains with what the literature demonstrate as important. Third, identify policies, practices and programmes that the companies will be involved in that aided sustainability risk management however not being investigated previously in literature on sustainability risk. Fourth, enablers and barriers in managing or integrating sustainability risk will be identified further we will also look for the evidences of barriers and enablers which are either enhancing or limiting performance. Finally we will synthesize the previous four in order to identify the policies, practices and programmes which are effective and truly important for the case companies. Furthermore, the final result of the within-case analysis will be a concise description of sustainability risk management practices at each of these six case companies.
We then move to the cross-case analysis. The main aim of the cross-case analysis is to identify patterns across the case companies. This can be done by reducing the amount of data and displaying it into a meaning full fashion to make final conclusions (Miles and Huberman, 1994; Yin 2009). Data reduction is primarily done by categorizing the factors from within-case analysis and by pattern matching whereas data display can be done by mapping and structuring of the data. The final step in the cross-case analysis will be conclusion which is the identification and interpretation of the patterns and themes within the data.
Findings from the case study are criticised that they are not robust, valid and largely based upon the subjective understanding and interpretation of the researchers. In order to answer these criticisms and to validate our findings we will conduct a focus group. If focus group will agree what we have found will then progress to discussion otherwise relationships are established with case companies to go back to them in case of any discrepancies.

Conclusion:

Fashion supply chains are increasingly global and complex in nature and operating a network of partners. Further, Sustainability is a growing debate particularly in the fashion and clothing industry which is global and highly fragmented. It has been blamed for its heavy use of chemicals, reliance upon natural resources, to name a few of the issues making the industry vulnerable to unforeseeable threats (Caniato et al. 2012). This can cause serious operational disruptions and the potential shut-down of business. Further, advancements in IT and the growing power of social and environmental organizations have increased consumer visibility of supply chain operations. Hence, the consumer of today is more aware of the environmental and social impacts of the products they

are buying and consuming (Anderson and Anderson 2009). Recent corporate scandals have exacerbated these issues putting supply chains under intense pressure to manage their sustainability risks.

However, literature demonstrates limited discussion on the unified concept of sustainability risk and further the absence of its definition, conceptualization and sustainability risk management framework in a volatile and unpredictable demand situation, such as global fashion supply chains, demands an empirical investigation which this research aims. Through multiple case studies of the six UK fashion companies this research aims to develop a framework of strategies which can help fashion supply chains to manage their sustainability risks in order to survive and compete.

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