

Supply chain management systems in Africa: insights from Nigeria

Abstract

This chapter investigates the barriers and driving forces of supply chain collaboration in Nigeria as prior research has not adequately explored this issue in developing countries. Using an in-depth qualitative interviews conducted with purchasing and supply chain managers in the food and beverage manufacturing industry in Nigeria, our results reveal the fragmented nature of supply chain management systems. Our findings also show how supply chain collaborations struggle to flourish in a highly unpredictable market. Thus, this chapter offers insights into the different factors that act as barriers to effective collaboration between supply chain partners. We also show how IT infrastructure and digital technologies could be used as a springboard to promote collaboration in the African context. The barriers and drivers are segmented into three distinct levels such as external, internal, and supply chain level. The theoretical and practical implications of this research are highlighted.

Keywords: Nigeria, supply chain management, supply chain collaboration, food and beverage, manufacturing, developing country.

1. Introduction

Over the past two decades, firms have heavily relied on Supply Chain Collaboration (SCC) to gain competitive advantage and to develop internal and external opportunities (Cao & Zhang, 2011; Um & Kim, 2019). The strategic value of SCC has been recognised as firms try to enter new markets (Chen et al., 2017), and for higher efficiencies in their procurement, planning, manufacturing, and distribution (Soosay & Hyland, 2015). However, today's Supply Chains (SC) operate in more dynamic environments characterised by the intense level of competition, high level of uncertainty, demanding and unpredictable customers, globalisation, and fast developing technologies (Liu et al., 2020). As a result, there are increasing structural and non-

structural barriers which may influence SCC resulting in the need for more collaborative efforts (Busse et al., 2016).

Although several studies have investigated the concept of SCC (e.g. Fawcett et al., 2012; Liu et al., 2020), there are still a number of gaps which require scholarly attention. For instance, past studies on SCC have either tried to establish a solid definition of the concept, determine its benefits and outcomes, conduct a systematic review, or examine its performance impact, all from either a single (one-sided) or dyadic perspective (Nyaga et al., 2013; Panahifar et al., 2018). However, there is a dearth of research on the barriers and driving factors that impact SCC and some possible approaches for improvement (Soosay & Hyland, 2015). Second, the majority of the studies on SCC and general supply Chain Management (SCM) have mainly focused on developed countries often omitting developing economies and emerging markets. Third, past studies have rarely considered the impact of digital technologies on collaboration between SC partners in Africa. This is a crucial topic for academics and practitioners as it offers new and interesting insights regarding how supply chains can flourish with the aid of digital technologies in such settings. Responding to broader requests in the literature for knowledge development about SCC in context-specific settings (Ramanathan & Gunasekaran, 2014), this research focuses on Nigeria.

So far, only a few studies (e.g. Adebajo et al., 2013; Ojadi et al., 2017) have considered Nigeria in the examination of SC related subjects. This is rather surprising because the economy of Africa is constantly evolving, and Nigeria is playing an increasing role in Africa's evolving economy because of its role as a supplier of some major commodities (Muogboh & Ojadi, 2018). Nigeria is also the 7th most populous nation in the world (UN Projection, 2020), and the largest economy in Africa (IMF, 2019). Similar to other developing countries, it is difficult to manage SCs in Nigeria due to the level of complexity and various manufacturers, retailers, suppliers, and third-party providers responding to the demand of a

growing population of over 200 million people (Orji et al., 2019). Although the literature has stressed on the importance of SC collaborative activities for improving firm and SC performance (Nyaga et al., 2010), however, whether this is the case in a developing economy warrants an investigation. Thus, it is unclear whether the conceptual frameworks proposed in the pertinent literature are applicable in the Nigerian setting. It is also unclear how SCC in Nigeria can improve through the adoption of digital technology. Based on the gaps in the literature, we ask the following research questions:

RQ1. *What ways do barriers and driving forces impact SCC in the Nigerian context?*

RQ2. *How can the challenges associated with SCC in Nigeria be effectively managed?*

We contribute to the literature by providing new insights into the continuing challenges that supply chains face in developing countries like Nigeria. The attention on Nigeria is warranted considering that it is an emerging and increasingly globalised market (Muogboh & Ojadi, 2018), which depicts an area that is not well “understood” about the discourse on SCM (Ojadi et al., 2017). Thus, we provide an empirically rich and unique context to understand this subject matter. Specifically, the focus on SCC within the food and beverage (F&B) sector in Nigeria is because it plays a major role in the regional and global economy in Africa by meeting the needs of people (World Bank, 2018).

For theory, it contributes to the literature on SCM and SCC by revealing the barriers and drivers of SCC from the perspective of an emerging market. Second, it extends and tests the significance of supply chain collaborative activities in a different setting with structural and non-structural barriers. Thus, this study develops an integrated model which links three levels of barriers and driving forces of SCC together. Third, it contributes to the buyer-supplier collaboration literature by using the dyad as a unit of analysis and studying how different parties cope with SSC challenges.

For practice, it reveals new approaches to managing supply chains and developing a strong collaboration between supply chain partners in developing economies like Nigeria. This knowledge is vital for sustaining SCC in such contexts. Second, it helps practitioners categorise the different issues affecting SCC based on the integrative model proposed in this study. Thus, the insights from this study provide managers with clear evidence to develop approaches and invest in key areas that would enable them to compete globally, especially in a digitised market.

The next section presents a review of the literature and provides a background to the research context. After, the methodology of the research is described with the qualitative and quantitative studies. Next, we discuss the research findings and implications. Finally, we conclude the chapter with some suggestions for future research based on the limitations.

2. Literature review

2.1. Supply chain collaboration

Collaborative activities represent each party's willingness to give and take in the relationship this allows the relationship to adapt over time and creates an avenue for on-going administration of the exchange (Simatupang & Sridharan, 2008). Srinivasan & Brush (2006) stated that these activities promote cooperative behaviour and increase the potential value of the exchange relationship. We consider three types of collaborative activities in this study: information sharing, joint relationship effort, and dedicated investment as they represent value-adding relational norms. Each of these activities is defined below.

Information sharing has become an important aspect among organizations as the value creating factors are shifting from the physical and financial assets toward intangible assets (Koçoğlu et al., 2011). Information sharing refers to the extent that critical information is conveyed to a party's relationship partners (Kembro & Näslund, 2014). This may include involving other parties in early stages of product design, opening the books and sharing cost

information, discussing future product development plans, or jointly providing supply and demand forecast (Cannon & Perreault Jr, 1999). Information sharing is considered one of the five building blocks that characterize a solid SCC (Lalonde, 1998), and a critical factor to bring forth competitive advantage in the long run (Li & Lin, 2006).

Joint relationship effort is critical for SCC as SC partners need to work together to plan, coordinate activities, and resolve problems (Nyaga et al., 2010). Joint relationship effort consisting of joint decision-making and joint-problem-solving are perceived as a natural extension and largely dependent upon information sharing between SC partners (Min et al., 2005). Joint planning is essential in SC relationships to co-align operations and capacities which has a positive influence on relationship quality (Min et al., 2005). The importance of joint problem solving has also been recognized to result in mutually developed process improvement (Min et al., 2005). A Joint effort between SC partners such as planning, goal setting, performance measurement, and problem solving, is significant for a successful SCC (Soosay et al., 2008).

Dedicated investments refer to investments made that are dedicated to collaboration by SC partners (Heide & John, 1990). Dedicated investments are also critical for SCC as they offer tangible evidence that a partner can be believed, cares for the collaboration, and willing to go the extra mile with such investments (Ganesan, 1994). These investments have been recognized to communicate a strong commitment to the collaboration, because of the economic consequences that the other party will incur if the relationship ends (Nyaga et al., 2010).

2.2. Collaborative activities, supply chain relationship, and performance

Past studies recognised the benefits of collaborative activities between SC partners to include risk sharing, cost reduction, enhanced rapid learning capacity, knowledge transfer, and sustainable competitive advantage (Li et al., 2006). Dedicated investments offer tangible

evidence of a partner's commitment to a relationship, which will in turn increase the level of trust and greater satisfaction in the relationship (Jap & Ganesan, 2000). Kwon & Suh (2005) state that inter-firm communication is essential in the trust-building process since sharing of critical information and communication allows businesses to develop a mutual understanding of each other's routines and develop mechanisms for resolving conflicts, which indicates that the partner is trustworthy. The sharing of high-level information minimises uncertainty which results in improved levels of trust and commitment between SC partners in a relationship. Several studies suggest that joint relationship efforts enable partners to co-align their operations and processes, make joint decisions, which enhances the relationship by building trust (Nyaga et al., 2010), commitment to the relationship (Jap & Ganesan, 2000), and relationship satisfaction (Walter et al., 2003).

Besides the benefits that collaborative activities offer to relationships between SC partners, collaborative activities also have significant advantages for performance (Cao & Zhang, 2011). Collaborative practices and long-term relationships with supply chain partners are also expected to yield organization-specific benefits and have a positive influence on a firm's market share, return on investment, and advance overall competitive position (Cai et al., 2013).

3. Industry background

3.1. The Nigerian setting

Putting this research into context, it is important to start by providing some background into the Nigerian context. Nigeria is the most populous black nation in the world with a fast-rising population that is rapidly reaching 200 million people. It is considered as the biggest economy in Africa with a GDP of US\$484.9 billion (IMF, 2015). In 2008, a report published by Goldman Sachs stated that Nigeria could become one of the largest 20 economies by 2025, which drove

the Nigerian government to inaugurate a strategic movement to enable Nigeria to consolidate its leadership role in Africa termed “‘Vision 2020’”. Observing Nigeria’s position now and its previous GDP positions over the past decade, this target may become a reality.

However, the commercial environment in Nigeria has also grown in the past decade to become highly uncertain for businesses to operate (Oyedijo, 2011; Oyedijo et al., 2011; Didia & Nwokah, 2015). Despite its solid resources, oil-rich Nigeria has been affected adversely by several detrimental factors such as gigantic corruption at all levels, feeble corporate governance, an inconsistent regulatory environment, restrictive trade policies, unreliable dispute resolution mechanisms, fragmented relationships between shareholders and stakeholders (Adams et al., 2019), devaluation of the Nigerian naira, drop in global oil price, weakened consumer confidence, and an insurgency in the Northern geographic area for almost a decade (CIA, 2016). These factors have impacted the Nigerian economy adversely which ultimately led to a decline in the business market and an economic recession in 2016 for the first time in almost three decades (IMF, 2019).

Likewise, the business environment in Nigeria could be highly unstructured and does not follow the distinct configurations utilized in the global industrialized settings (Adebanjo et al., 2013). These issues also include bad roads and transportation links, distorted electricity supply, and poor government support etc. Several manufacturing firms have also ceased to operate in Nigeria while those who stayed manufacture goods at costs relatively higher than other competitors in different countries (Ojadi et al., 2017). Some of these issues are also internal issues, partially because of fraudulent practices in purchasing and supply chains arrangements (Ugoani, 2019). Although several initiatives were developed to resolve these business issues in Nigeria (Okonjo-Iweala & Osafo-Kwaako, 2007), firms are still seeking opportunities to minimise operating costs, improving product and service quality, and developing continuous relationships with supply chain partners as mechanisms to remain

competitive (Oyedijo, 2011; Njoku, 2019). The Nigerian context is similar to several African countries that embarked on IMF economic reform programmes (Adams et al., 2014) to privatise state- owned supply chain enterprises to improve efficiency. In many ways, insights from Nigeria present a fairly accurate reflection of realities in other African countries, at least, in West Africa.

3.2. The food and beverage sector in Nigeria

The food and beverage (F&B) sector represent 22.5% of Nigeria’s manufacturing industry, 66% of total consumer expenditure, and an aggregate industry output valued at about \$20.55 billion equivalent to 4.6% of gross domestic product (GDP), SC costs are very high, negatively impacting performance (Adebayo, 2012). The persistent structural and policy challenges and a wide infrastructural gap have been highlighted as overarching issues (IMF, 2019). Different issues may influence SCC such as weak visibility, poor information sharing, insufficient joint relationship effort, and minimal dedicate investment between SC partners.

Likewise, heavy vehicular traffic, accidents and breakdowns on several intra and inter-city highways result in a lot of delays which affect lead times and product deliveries, and in turn, increasing costs of operations and minimizing efficiency and product delivery levels. Most manufacturers sell their final products only to businesses (3rd parties), who sell to other actors along with the SC such as, retailers, transporters/distributors, and end consumers. These distributors are referred to as “middlemen”, who stand in the gap between manufacturers and end consumers in the form of third-party providers (see. Figure. 1).

Insert Figure 1 about here

The top manufacturers in the industry include Guinness Nigeria Plc, Consolidated Breweries, Nigerian Bottling Company Ltd, Cadbury Plc, Nigerian Breweries, Fan Milk Plc, 7UP Bottling

Company Plc, and Coca-Cola Nigeria Plc. The manufacturers often outsource some of the core activities highlighted in Figure 1. The third parties often undertake the relationship management function which involves feeding back to manufacturers regarding customer needs and concerns about their products. The collaboration between the third parties and other actors in the SC is often fragmented. Thus, this study attempts to examine the challenges encountered in the food and beverage manufacturing SC in Nigeria, and how these challenges can be managed effectively.

4. Research method

4.1. Research design

To empirically explore the challenges associated with SCM systems in Nigeria, and identify how to improve the SCM system based on these current challenges, an exploratory research design was adopted based on its emphasis on detail, depth, and explanation (Patton, 2015). Thus, a qualitative method (Silverman, 2006) was used to develop a theory about barriers and driving forces that impact SCC and how to manage them effectively. This approach was selected to elaborate on the existing SCC theory (Lee et al., 1999), particularly because most studies on this subject have not been conducted in a developing country's context. Theoretically, this approach also helps in laying the groundwork that will lead to future research based on the results of this study since practically, it helps in gaining first-hand insights from practitioners about the subject.

4.2. Data collection

The target respondents are purchasing and SC managers in the F&B manufacturing supply chain across Nigeria. We collected the data for this phase using semi-structured interviews. We obtained a list of F&B manufacturers in Nigeria from the Nigerian Association of Chambers of Commerce, Industry, Mines and Agriculture (NACCIMA) and the Lagos Chamber of

Commerce and Industry (LCCI). We also established contact with the manufacturers through visits to their plants and offices in different parts of Nigeria. We established contact with these firms using an initial invitation letter which stated the aim and objectives of our research. We also had a few follow-up telephone calls to arrange interview dates. All interview respondents asked to be kept anonymous.

The interviews were held with twenty-two purchasing and supply executives and their positions are displayed in Table 1. All the interviews conducted lasted for more than forty-five minutes. We utilized a standard interview guide which was developed from a review of the relevant literature. The interview guide helped us develop questions which were divided into two main themes: *barriers and driving forces which impact SCC in Nigerian context; and how the challenges associated with SCC in Nigeria can be effectively managed*. We also pre-tested the interview guide with academics and practitioners in the industry familiar with the subject matter. The interview guide was semi-structured in nature to allow for flexibility during the interview to explore new issues introduced by the participants. All interviews began with general questions about the background information of the interviewee and their history of the dealings with their supply chain partners. The questions were kept broad as a deliberate act to give the respondents freedom in their answers (Glaser & Strauss, 2009).

We recorded and transcribed the interviews through an ethical procedure with anonymity promised to all the participants to allow for a detailed analysis (Patton, 2015). The transcribed interviews were validated with informants by asking for feedback, clarification of any points, and final approval (Yin, 2009). With qualitative data being difficult to analyse, the findings were cross-checked by an anonymous outsider with experience in analysing qualitative interviews, to help achieve reliability of data. The interviews provided an in-depth view of SCM in Nigeria and the challenges associated with SCC.

Ethical concerns are an important aspect of conducting research (Silverman, 2014). Ethical approval was obtained from the relevant University Ethics Committee before the data collection commenced. After each interview, it was explained that their insights would be transcribed and a copy would be sent back to them to validate, which gave the respondent a chance to edit the transcript (Yin, 2009).

Insert Table 1. Interview details and respondents' features

4.3. Data analysis

The interviews were analysed using the thematic analysis method and we presented all themes by categorizing emerging sub-themes (Easterby-Smith et al., 2012; Koukpaki et al., 2020). We followed three key steps endorsed by Miles & Huberman (1994); data reduction, data display, and conclusion. We deducted the data to quotes or sentences (first- order codes) that were found related to the research questions. After, we grouped all the first- order codes into second-order descriptive codes such as ‘self-interest seeking and unethical practices’, ‘rigid structure and governance’, and ‘Bad transport linkage’.

We were able to unravel specific details on the factors that impact SCM in general. Subsequently, we were able to divide and summarise the second-order codes, the challenges, into main aspects such as internal related issues, SC related issues, and external related issues, which formed the third-order codes.

5. Findings

The research findings show results from the interviews drawing out the main themes from the research questions: why SCCs encounter challenges, as well as how the challenges can be effectively managed.

5.1. *The challenges associated with SCC in Nigeria*

5.1.1. External level: governance support system

We found that the challenges that businesses face are numerous as managers highlighted a long list. Our interactions with managers revealed that many companies believe that their collaboration with SC partners could improve but due to many issues which are encountered, SC collaboration is difficult to actualize. The challenges encountered are structural and non-structural factors, which may be often out of their control. Many of the issues identified are sources of uncertainty and complexity in the manufacturing sector which have an adverse impact on the success of SCCs and reduces the prospects of high levels of relationship quality.

Some of the results derived also confirm the results of a study by Simangunsong *et al.* (2012) which identified sources of uncertainty in the SC. One main issue that was highlighted by the interviewees is the current structure and governance in the industry. For SC, governance and control play a key role in effectively managing businesses involved both at the SC level and industrial level. Individual firms need to have an element of governance and structure in place to achieve the objectives of the SC. Likewise, the arm of government in charge of business developments needs to be able to oversee the affairs of the industry and businesses involved which would increase aspects such as fair competition, business support etc, with significant effects on the wider economy.

An example of a critical challenge was highlighted by Procurement Manager A, who stated:

“The structures are somewhat fragmented, to be honest, and this affects efficiency. I worked in Europe for several years where the structures on governance are very rigid. So, I think there’s a need for a stronger structure that aims to attain high performance for the industry and the economy at large”

Likewise, Commercial Manager C also emphasised the point by stating:

“We need to set up mechanisms that can improve how we operate currently. This new implementation needs to have a long-term vision to develop the manufacturing sector and grow businesses with potentials. Many businesses struggle because of the lack of structure and rigid governance in place to control and oversee the affairs of the industry effectively”

Based on the above evidence, the structure and governance in the industry need to be re-evaluated because of the impact on SC. All stakeholders in the SC need to divert adequate resources for reducing this challenge.

5.1.2. External: weak infrastructure

It is a common understanding that poor infrastructural has been a major challenge for the development of Nigeria. Our findings reveal key factors which influence the SCM such as poor transport links and networks, security and safety issues, poor power and electricity supply, and weak government support and investment. These points were highlighted by Supply Chain Manager I who stated that:

“The transport links can be a big issue. There are also a lot of road accidents that occur every time which cause heavy road traffic impacting our delivery schedules. We also spend a lot of money on insurance costs due to the high probability of road accident or vehicle breakdown”

There were also concerns about the high costs incurred by regular repairs and maintenance of trucks due to bad roads. Likewise, interviewees complained that the poor transport systems make it difficult to meet the requirements of the SC partner which affects the relationship quality between them. The weak infrastructural and facilities in Nigeria were also highlighted by Sales and Distribution Manager H and Logistics Manager J who stated that:

“Our roads are very bad. We spent a lot of money on vehicular repairs and maintenance. I feel this element also affects our ability to meet some of the demands agreed with our supplier”

“A major challenge for our supply chain is the poor transport network. It costs us a fortune to manage the logistics aspect due to bad roads, regular traffic jams, and severe auto crash sometimes where people even die. But this is mainly because the roads need fixing and the transport links need to be upgraded”

5.1.3. Internal level: human behaviour and people

We also found that behavioural issues and lack of accountability on the individual level have a negative impact on the prospects of having a successful SCC. These findings endorse the point that human behaviour is critical in SCM and has the potential of disrupting the SCC process. This was also indicated by Merchandise Manager D who stated that:

“We also have people who just make things very complicated and often affect the management aspect of the collaborations”

Likewise, Purchasing Director E also mentioned how human behavioural factors can influence collaboration in the SC:

“Many of the personnel we deal with regularly who clearly need a lot of training and knowledge on how to deal with SC members. Some people act as if they are not willing to collaborate or we are forcing them to partner with us”

These findings above emphasis the significance and role of people and human behaviour in SCCs. Firm representatives in the F&B manufacturing SCs in Nigeria need to improve their technical know-how for their SC collaborations to become effective. This point was emphasised by Supply Executive F:

“The relationship often becomes difficult to handle due to some of the unrealistic demands that our suppliers give. Some people act and behave in a very irrational way especially when making critical decisions on the relationship”

5.1.4. Supply chain level: weak digital technology

Likewise, technology advancement was highlighted as a major issue that impacts the collaboration between SC partners and SCM. Respondents stressed the need for a digitalised technological landscape which promotes the use of advanced systems to improve supply chain collaborative activities such as information sharing, communication, and to improve dedicated investments to the SCC. The lack of advanced digital technology weakens the process of undertaking other key activities related to fulfilling the requirements of end consumers such as forecasting and inventory management and also slows down the overall decision-making process. These points were highlighted by Supply Director S who stated that:

“There are no optimization systems available to share critical information on-time with our supply chain members on critical aspects such as product modification and changes to orders. So, we spend a lot on purchasing internet Wi-Fi and telephone minutes to enable communication via email and telephone”

The importance of digital technology was also emphasised by Inventory Manager R who stated that:

“We lack advanced ICT systems that can support our decision making on aspects of the supply chain management process such as forecasting, planning and control, distribution, and inventory management”

5.1.5. Supply chain level: ethical issues

In addition, we also found that current ethical culture is a restraining factor or barrier that impacts SCC in Nigeria. We particularly identified factors such as corruption, bribery, fraud, insider abuse, and negative use of bargaining and purchasing power as key elements that impact effective collaboration between SC partners. Some SC partners portray behaviours that are unethical and socially unsustainable. This seems to be a big issue in developing economies and in Nigeria in particular. The following illustrative quote by Supply Chain Project Manager K explains this:

“Corruption, bribery, and other fraudulent practices are also factors that affect our ability to perform well. Some companies bribe to get specific favours and superiority from manufacturing firms which produces unfair competition”

Other challenges associated with managing F&B manufacturing SCs in Nigeria are divided into three categories: internal, supply chain, and external level.

5.2. Managing the challenges associated with SCC in Nigeria

5.2.1. External: government support, investment, and reforms

Managers also shared some possible solutions to the identified challenges. Most managers stated that many challenges that affect their SC are out of their control as individual businesses. Thus, there is a need for stronger governmental support to resolve some of these challenges. The government is encouraged to introduce reforms that will improve the business environment. These reforms should tackle issues relating to poor governance, poor infrastructure, investment in technology, and security issues. These recommendations were emphasised by Commercial Manager C who stated that:

“The weak corporate SC governance can be dealt with by introducing rules and regulations that industry professionals and companies can abide by. We have some

structures in place, but they are too weak in my opinion and they create avenues for different practices that are on the long-run damaging to the longevity of collaborations''

Other managers stressed that these government level investments should focus on enabling business collaboration and inter-firm trade by concentrating on important aspects such as involving stakeholders in the reformation process, industry level engagement, and resolving issues of power failure, which would foster technology expansion. For example, Sales and Distribution Manager H stated that:

“There needs to be an environment that enables collaboration through investments in people, industry, technology, power, security, infrastructure, and regulatory bodies’’

By implementing reforms, policies and increasing support leve, the government has the potential to reduce some of the unethical, corrupt, fraudulent acts, negative use of power, and other security issues in the business environment.

5.2.2. Internal: investment in training and development

To manage the highlighted challenges, managers also referred to factors categorised as internal to the focal firms and their SCs. These factors include investing in the training and development of SC personnel to improve their relationship management approach and behaviour. For example, Supply Executive F explained in the following illustrative quote:

“I feel a lot of training and knowledge is needed on how SC collaborations can benefit individual businesses but also the economy at large. When businesses are doing well in a growing economy such as Nigeria, this also benefits the government and living standards’’

SC professionals in Nigeria are urged to undertake regular assessment measures to improve their existing technical know-how on the value of collaboration, and how to deliver value through the entire SC. Thus, focal manufacturing firms should invest in developing their firm SC practitioners (boundary spanners) and their third-party providers through methods such as supplier evaluation, selection, and supplier development programmes. This would promote collaboration between F&B manufacturers and their SC members. The following illustrative quote by Logistics Sales Manager M explains this point:

“Collaboration is often difficult to carry out due to some SC members hoard critical information in order to gain a competitive advantage over supply chain partners whom they see as competitors instead of partners. So, a lot of investment needs to be made on training and development”

Similarly, firms are encouraged to focus on collaborative activities to overcome some of the challenges faced. For example, managers mentioned that a higher collaborative effort towards information sharing between the F&B manufacturers and third-party providers is crucial. Other activities such as joint- relationship effort between chain members which can help in managing unforeseen challenges, dedicated investments to the SC (e.g. innovation), and joint meetings which would help in formulating beneficial terms of trade and increase in flexibility between chain partners. For example, the following illustrative quote by Procurement Manager A and Logistics Manager J highlights the points:

“Uncertainties also arise as a result of the supplier’s inability to meet its initial promises. Cases as such require some form of flexibility on our part and some joint problem solving but stricter supplier selection process for future suppliers”

“I think we also need to invest together in technology and innovation and development for our SC collaborations to succeed. Many firms in the SC rarely invest in people which affects the overall quality because people are not well trained”

5.2.3. Supply chain level: investment in supply chain collaborative activities

Our findings reveal the importance of collaborative activities in the SC regardless of the challenging context which they operate in. Thus, firms are encouraged to focus on collaborative activities to overcome some of the challenges faced. These collaborative activities (e.g. information sharing could improve visibility by sharing forecast, order information, shipping notes, maintenance plans, or even pursue CPFR) can help them resolve issues quickly and manage each other’s expectations. The following illustrative quote by Distribution Manager U illustrates this point:

“We often lack coordination which is due to lack of timely communication. But we also lack systems that would facilitate communication. So, for now, we are trying our best to ensure we have regular meetings with our key supply chain partners especially the members close to the end-consumers”

Our findings also reveal that commitment and dedication between the two parties can lead to more willingness to share information, work closely, and solve problems. This can improve trust levels in the long run and develop a strong relationship. The following illustrative quote by a Supply Chain Manager V explains this point:

“Our collaboration can also benefit a lot from commitment and dedication that the collaboration can benefit all. More trusting other parties to carry out their duties without any thoughts that we will be cheated in some way can help the collaboration”

Our data indicate that to manage such challenges associated with SCC in Nigeria, SC partners need to pay attention to joint investment and invest in the joint initiative that will improve other

aspects of their collaboration. The following illustrative quote by a Procurement Manager A explains this point:

“Uncertainties also arise as a result of the supplier’s inability to meet its initial promises. Cases as such require some form of flexibility on our part and some joint problem solving but stricter supplier selection process for future suppliers”

Some other solutions to the challenges associated with managing F&B manufacturing SCs in Nigeria are highlighted in the findings and discussion section.

6. Discussion of findings and conclusion

This study attempted to investigate the ways barriers and driving forces impact SCC in the Nigerian context, and how the challenges associated with SCC in Nigeria can be effectively managed. This research is important as it considers a neglected context (Nigeria) and adds to the literature on barriers and drivers of SCC (Fawcett et al., 2008; Fawcett et al., 2015). Thus, interesting findings were revealed about the nature of SCM in general and how factors which act as barriers of SCC in Nigeria (see. Figure. 2 for a summary of research findings). The findings also suggest possible strategies that could be implemented as driving forces of SCC in Nigeria and similar developing contexts. Thus, the following contributions are made to the relevant literature.

Insert Figure 2 about here

Our research demonstrates that supply chains in Nigeria operate in a highly volatile environment, and SCCs are regularly encountering several structural and non-structural challenges. These challenges were classified into three main levels; external, internal, and supply chain level. *At the external level*, supply chain partners have to deal with issues that are

often out of their control as individual entities or as a supply chain. These issues are mostly related to the nature of the environment and business market in Nigeria which comprises of numerous structural barriers which affect the potential for effective inter-organisational collaboration.

At the internal level, our findings reveal that factors within the control of individual firms also serve as barriers to SCC. For example, issues such as human behaviour, ethical concerns, and the role of people, all play a key role in fostering SCC. Extending the current knowledge on SCM in Africa and the associated challenges, our research shows that people and their behavioural issues influence the prospects of a solid collaboration between supply chain partners. This is in support of the existing literature which has recognized the role of people and human behaviour in SCM (Schorsch et al., 2017; Gligor et al., 2019). However, this issue is pertinent in a setting like Nigeria considering the different cultures and individual beliefs held by people (Aluko, 2003; Oyedijo, 2011).

At the supply chain level, our findings show that supply chain members in Nigeria lack adequate digital technologies and IT infrastructure as well as the training to support their collaborative activities such as data exchange and communication. This is a generic issue with SCM in developing countries which impacts the effectiveness of SCC due to the lack of technology to perform activities such as collaborative planning etc. The literature (e.g. Gunasekaran & Ngai, 2004; Prajogo & Olhager, 2012; Gunasekaran et al., 2017) has also stressed the importance of IT systems and big data analytics in integrating and developing SCC. Thus, our research suggests the need for investment in digital technology at the focal firm and supply chain level to improve aspects such as optimization of SC processes, joint forecasting, joint planning, inventory management, and risk management. Although, the value of technology in building sustainable SCM has been revealed (DeGroot & Max, 2013; Saberi et al., 2019), however, our findings show that SCs in Nigeria are still struggling with digital

technological advancements like blockchain technology which can improve issues pertinent to the Nigerian context such as transparency, traceability, and security (Kimani et al, 2020). Our data further suggest that fraudulent activities at the SC level such as bribery, corruption, and insider abuse etc, have a negative influence on SCC. This is another unique finding which is specific to the Nigerian context but has not appeared repeatedly in the pertinent literature on SCM. Though past studies (e.g. Svensson & Bååth, 2008; Eriksson & Svensson, 2016) have considered ethical issues and social responsibility in supply chains, they neglected issues such as fraud in the SC context.

This study demonstrates that the identified challenges associated with managing SCs in Nigeria can be addressed from the three related levels: internal, supply chain, and external. *At the external level*, our findings indicate that government support, investment and reforms can help the general environment and SCs function effectively and efficiently. This issue is important since many businesses require a suitable environment to function. This finding is also unique because government support initiatives are not often included in the SCM debate. Thus, this insight adds to the on-going debate in the literature (e.g. Herczeg et al., 2018; Pakdeechoho & Sukhotu, 2018) concerning the critical role that governments play in creating a suitable business environment. *At the internal level*, our findings suggest that focal firms need to pay close attention to internal activities and practices that can develop firm representatives in the supply chain to reduce behavioural issues and issues related to unethical practice. Individual firms in the SC need to take some responsibility in managing their own processes by undertaking regular process evaluations and investing in training and development to improve the effectiveness of the SCC. *At the supply chain level*, our findings indicate that SC partners need to pay close attention to their collaborative activities such as joint meetings, commitment to the relationship, dedicated investment to the relationship, to improve their SCC. Such collaborative activities were revealed to improve the relationship quality between supply

chain partners through improved trust levels, high commitment and dedication to the SCC, and overall satisfaction in the SCC. Overall, the findings of this research may also apply to similar developing countries especially in Africa (Hamisi, 2011; Amber and Badenhorst-Weiss, 2012).

7. Avenues for future research

Issues that may have an impact on the relationship between SC partners in the F&B manufacturing sector in Nigeria have not been captured in this chapter. However, future research may consider the factors that play a significant role within the upstream and downstream side of the supply chain. Whilst this chapter critically explores the F&B manufacturing industry in Nigeria, we do not suggest that the findings are universally applicable across different sectors in various countries or regions, aside similar markets such as Sub-Saharan Africa. Unlike the oil and gas industry that exports largely, the F&B manufacturing industry in Nigeria is still a growing sector. As a result, there is a possibility that different sectors might have different factors such as industry features, culture, and institutional norms that may influence the SCC. Future studies may consider how African governments could improve SCC by investing in training and development for supply chain professionals. Finally, it is crucial for future studies to examine how blockchain and digital technology can improve SCC in Africa.

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Table 1. Interview details and respondents' features

Position of the interviewee	Interview length (minutes)	Classification	Educational level	Location	Year of experience
Procurement Manager A	50	Food	Master's degree	Lagos State	9
Sales Manager B	60	Dairy	Master's degree	Lagos State	11
Commercial Manager C	45	Food	Master's degree	Lagos State	14
Merchandise Manager D	45	Food	Master's degree	Ogun State	8
Purchasing Director E	50	Beverage	Master's degree	Lagos State	9
Supply Executive F	60	Beverage	First degree	Ogun State	6
General Manager G	65	Beverage	Master's degree	Lagos State	17
Sales and Distribution Manager H	50	Beverage	Master's degree	Oyo State	10
Supply Chain Manager I	45	Dairy	Master's degree	Lagos State	8
Logistics Manager J	45	Food	First degree	Abuja FCT	12
Supply Chain Project Manager K	50	Beverage	Master's degree	Osun State	7
Project Manager L	45	Food	First degree	Lagos State	6
Logistics Manager M	60	Dairy	First degree	Ogun State	13
Supply and Delivery Manager N	45	Dairy	Master's degree	Kano State	8
Product Delivery Manager O	50	Beverage	Master's degree	Osun State	6
Warehouse Manager P	48	Beverage	First degree	Lagos State	5
Logistics Operations Manager Q	52	Food	First degree	Edo state	4
Inventory Manager R	45	Food	First degree	Anambra State	7
Supply Director S	50	Food	Master's degree	Lagos State	14
Plant Manager T	40	Beverage	Master's degree	Kwara State	10
Distribution Manager U	45	Beverage	First degree	Osun State	7
Supply Chain Manager V	45	Food	Master's degree	Benue State	9

Figure 1. Supply chain in Nigeria’s food and beverage sector

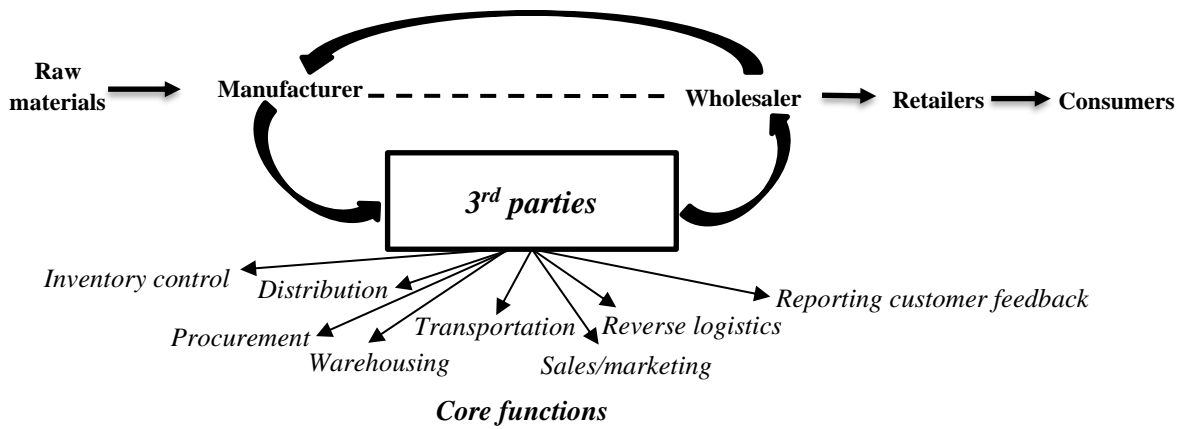


Figure 2. The driving forces and barriers of supply chain collaboration in Nigeria

