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THE IMPACT OF SUPPLY CHAIN PERFORMANCE OF AGRO PROCESSING ORGANISATIONS IN MASVINGO PROVINCE

BY

CHISASA GETRUDE

M 225202

SUPERVISOR: **Mr. M. CHIDYA**

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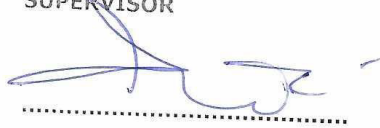
SIGNED: ...Ghisasa..

DATE: ...10|11|2023...

PERMANENT ADDRESS: House No. 1099/3 Mambo Street, Mucheke,   Masvingo

APPROVAL FORM

The undersigned certify that they have read and recommend to the Great Zimbabwe University for acceptance, a dissertation entitled, "The impact of supply chain coordination on operational performance of agro processing organisations in Masvingo Province" submitted by **CHISASA GETRUDE** in partial fulfilment of the requirements for the MASTER OF COMMERCE IN STRATEGIC MANAGEMENT DEGREE.

SUPERVISOR

DATE

....

CHAIRPERSON

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DECLARATION

I CHISASA GETRUDE do hereby declare the contents of the research study to be true and not copied from anywhere or in any publication and previous degrees without acknowledgements.

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DEDICATIONS

This research is dedicated to my beloved sons Blossom Takudzwa, Ramsey Dexter Tanatswa and Thabo Mhlanga, not forgeting my friend Tendayi Bvochora who stood by me during my research period. I want to thank you for all the inspiration and support you gave me.

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ABSTRACT

The main objective of the study is to determine the impact of SCC on the operational performance of agro-processing organisations in Masvingo province. This is supported by four secondary objectives. A descriptive design was used to conduct the study. In order to determine the sample size for this study, the researcher used the Krejcie & Morgan (1970)'s statistical table. Thus, with a target population of 250 individuals, the required sample size was approximately 152 respondents. Questionnaires were self-administered to the 152 respondents. Descriptive statistical analysis were done on quantitative data. The study established that concluded that supply chain collaboration enhances supply chain operational performance. These results reveal that the four hypotheses tested were accepted. The sample for the study was based on a selected sample chosen from agro-processors in Masvingo only. Hence, the findings are limited to the Masvingo only and should not be generalized beyond this context. Nonetheless, the findings could have relevance to organisations in other parts of Zimbabwe.

KEY WORDS: Supply chain collaboration, customer collaboration, internal collaboration, supply chain performance.

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CHAPTER ONE

GENERAL INTRODUCTION

1.0   INTRODUCTION

Over the last decade, there has been growing attention on supply chain collaboration in order to improve the performance of individual companies as well as entire supply chains (Wu *et al.,* 2014). The effects of supply chain collaboration on company performance have also been extensively documented (Panahifar *et al.,* 2015). Scholten and Schilder (2015) described how specific collaborative activities (information-sharing, collaborative communication, mutually created knowledge and joint relationship efforts) increase supply chain resilience via increased visibility, velocity and flexibility. The purpose of this study is to examine the influence of supply chain collaboration on operational performance of agro-processing organisations in Masvingo province. This chapter presents the nature and background of the study. Thus, this chapter provides the research gaps and how the study sought to close them. The problem statement, research objectives and research hypotheses are given. Moreover, justification and significance of the study is given. Research delimitations, assumptions, limitations are further outlined. The chapter concludes with the definition of key terms and the organisation of the dissertation.

1.1 BACKGROUND TO THE STUDY

Supply chain coordination (SCC) has become increasingly critical for organizational success in the long run (Huo et al., 2014). In order to survive, firms need to coordinate with their suppliers and customers and have extensive collaboration with them. SCC refers to the strategic collaboration between manufacturers and their supply chain partners in order to leverage internal and external resources and capabilities across the whole supply chain (Flynn et al., 2010).

The concept of supply chain coordination is of great interest for academics working in operational management (Zhao, Huo, Selen & Yeung, 2011; Flynn, Huo & Zhao, 2010). SCC is a concept whose definition and whose operationalization are still up for debate. There is no consensus as to which components to include, nor how to measure them (Roth, Schroeder, Huang & Kristal, 2008; Zhu, Sarkis & Lai, 2008; Li, Rao, Ragu-Nathan & Ragu- Nathan, 2005; Flynn et al., 2010, Alfalla-Luque, Medina-Lopez & Dey, 2012). Most previous studies have considered SCC as an approach to integrate information among suppliers, manufacturers, distributors, and customers (Pagell, 2004).

In general, SCC is divided into internal and external integration (Li, 2015). Internal coordination refers to the level at which the manufacturer organizes its internal activities, processes, and strategies to meet the needs of its customers (Kahn & Mentzer, 1996). External coordination refers to collaboration and coordination between the firm and its external supply chain partners (Zhao et al., 2013). One approach divides external coordination into supplier and customer coordination, which refers to coordinated and cohesive links between a firm and its suppliers or customers (e.g., Boon-itt & Pongpanarat, 2011; Fazli & Amin Afshar, 2016; Flynn et al., 2010, 2016; Hosseini & Sheikhi, 2013; Kim, 2009; Oghazi, 2009). This study considers Customer integration, supplier coordination, external coordination and internal coordination.

Various factors have been used as a basis for evaluating organizational performance in previous research, including operational performance (Devaraj et al., 2007), financial performance (Vickery et al., 2003), customer satisfaction (Homburg & Stock, 2004), innovation in product (Koufteros et al., 2007), competitive abilities (Rosenzweig et al., 2003), and level of customer service (Vickery et al., 2003). Following Huo et al. (2014), operational performance (OP) is used as benchmarks for assessing firm performance.

Members of the supply chain work together and collaborate to improve performance, resulting in more profitability while meeting customer demand (Kumar et al., 2017). SCI has been commonly recognized as an important factor that positively influences firms' competitive advantage (Devaraj et al., 2007). It has proved to have a significant

positive impact on firm's operational and financial performance (Mohammadi et al., 2014).

Studies that empirically explored the effect of SCC on the performance of firms have presented differing results (Basu et al., 2017). Some studies point to clear organizational level benefits arising from SCC while other studies observed no significant performance improvement arising from firms' SCC initiatives (Effendi, 2015; Ha et al., 2011; Shahbaz et al., 2018).

Beheshti et al.'s (2014) study on Swedish manufacturing companies showed that all SCC dimensions, including internal coordination and external coordination with suppliers and customers were beneficial to organizations' financial performance. In other words, firms with higher levels of SCC had higher levels of financial performance. Flynn et al. (2010) found a positive relationship between external integration with customers and suppliers and operational performance. Fazli and Amin Afshar (2016) found that SCC had a positive effect on operational and financial performance of the organizations.

A study conducted in Malaysia by Doganay and Ergun (2017) established that SCC has significant and positive relation with SCP while another study in the same country by Shahbaz et al. (2019) revealed that all the approaches have a positive influence on supply chain performance. SCC was measured using information sharing, agreeing vision and mission, supplier relationship, postponement, risk and reward sharing, customer relationship, and information quality. Panahifar et al. (2018) in Thailand observed that trust, information readiness and secure sharing of information improve supply chain collaboration and ultimately supply chain performance.

 In South Africa, Pfanelo (2017) using data from 450 SMEs examined the influence of supply chain partnership on collaboration, collaboration on integration, integration on relationship commitment and relationship commitment on performance. Findings revealed that all the SCC approaches positively influence manufacturing SMEs' supply chain performance.

Locally, in related studies Chari, Muzinda, Novukela and Ngcamu (2021)'s study investigated the effectiveness of supply chain cooperation in aid delivery performance variables, specifically in the context of Cyclone Idai humanitarian relief operations in

Zimbabwe. Findings of this study show a significant and positive impact of humanitarian supply chain (HSC) cooperation in achieving output, resource and flexibility performance in the delivery of aid.

In the Zimbabwean agro-processors context, research on the linkage between SCC and performance is scarce. Previous research has dominantly focussed on agro-processors challenges (Mhazo et al., 2012), policy issues (Chigwenya & Mudzengerere, 2013), informal sector (Matsongoni & Mutambara, 2018), and government policies on SMEs (Bomani, 2016). Linking agro-processors' SCC capabilities to performance is important in the Zimbabwean context and other developing countries with similar conditions. Zimbabwe is an agro-based economy therefore agro-processors significantly contribute to job creation, poverty alleviation and livelihoods (Ampadu-Ameyaw & Omari, 2015).

Existing research rarely consider traditional sectors such as agro-processors of developing countries (Zhou et al., 2019; Wendra et al., 2019). Elsewhere, although researchers are recognising the need for new knowledge coordination, and marketing coordination in the fast-paced operating environment, research in this area is still sparse. Extant literature is dominantly supply chain management oriented cases (Jean & Kim, 2019), digital business models (Verhoef & Bijmolt, 2019). This study primarily interrogated the impact of SCC on the operational performance of agro-processors in Masvingo, specifically at Tongaat Huletts.

1.2 STATEMENT OF THE PROBLEM

The world over, disasters are now much larger, frequent and more complex than before. The Southern African region is not exempted and continues to be impacted by severe and extreme natural disasters, especially weather-related events (Save the Children 2019). These natural disasters have resulted in interrupted distribution networks. The supply chain of many agro-processing organisations is still fraught with issues of stock-outs, fuel shortages, high operational costs, and other logistics challenges, despite many years SCC initiatives in Zimbabwe companies (Chari & Ngcamu 2017; Dasmani, 2020). Responses to customer needs and preferences often involve large numbers of actors who frequently work in the together towards achieving

the same broader goals. This huge and complicated supply network of diverse actors who cooperate in delivering quality products to the market (Adem et al. 2018). This study came as a result of an exponentially growing interest amongst authors (Mushanyuri & Ngcamu 2020; Wankmüller & Reiner 2020) to evaluate the effects of cooperation as an enabler to facilitate operational performance of agro-processing organisations in Masvingo. Studies that empirically explored the effect of SCC on the performance of firms have presented differing results, ranging from negative to positive relationships (Agyei-Owusu *et al.,* 2018). Hence, earlier findings point to an unclear relationship between SCC and firm performance. It is therefore in the researchers' interest to get a better insight into the effects of supply chain collaboration (SCC) on operational performance variables, specifically in the context of agro-processing organisations in Masvingo, Zimbabwe. Chari (2021) notes that many companies in Zimbabwe have minimal knowledge of the economic value of supply chain collaboration, despite so many collaborations.

1.3 RESEARCH OBJECTIVES

1.3.1 Main objective
The main objective of the study is to determine the impact of SCC on the operational performance of agro-processing organisations in Masvingo province.

1.3.2 Specific objectives
- To investigate the impact of customer collaboration on the operational performance of agro-processing organisations in Masvingo province.
- To assess the influence of supplier collaboration on the operational performance of agro-processing organisations in Masvingo province.
- To determine the relationship between internal collaboration and the operational performance of agro-processing organisations in Masvingo province.

- To determine the relationship between external collaboration and the operational performance of agro-processing organisations in Masvingo province.

1.4 HYPOTHESIS

H1: Customer collaboration positively influences the operational performance of agro-processing organisations in Masvingo province.

H2: Supplier collaboration positively influences the operational performance of agro-processing organisations in Masvingo province.

H3: Internal collaboration positively influences the operational performance of agro-processing organisations in Masvingo province.

H4: External collaboration positively influences the operational performance of agro-processing organisations in Masvingo province.

1.5 RESEARCH QUESTIONS

1.5.1 Main research question

What is the impact of SCC on the operational performance of agro-processing organisations in Masvingo province?

1.5.2 Specific questions

- What is the impact of customer collaboration on the operational performance of agro-processing organisations in Masvingo province?
- What is the influence of supplier collaboration on the operational performance of agro-processing organisations in Masvingo province?
- What is the effect of internal collaboration on the operational performance of agro-processing organisations in Masvingo province?
- What is the impact of external collaboration on the operational performance of agro-processing organisations in Masvingo province?

1.6 RESEARCH CONCEPTUAL MODEL

Figure. 1.1 shows the conceptual framework for the study. In this study, an attempt is made to establish the relationships between the various constructs of the model. It is assumed that, in an attempt to examine the relationship between the independent and dependent constructs, three kinds of relationships may be established: positive, negative, or no relationship at all.
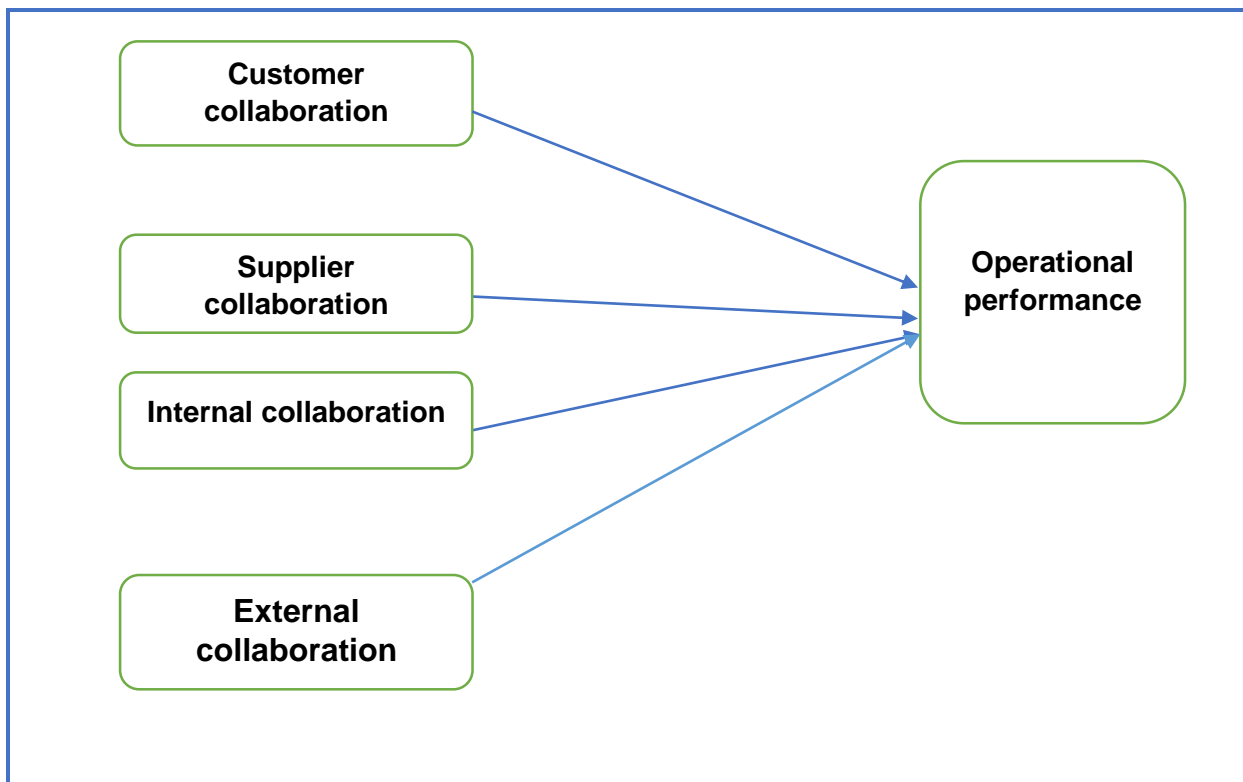
Figure. 1.1: Conceptual framework
Source: Zhao *et al.* (2013)

1.7 SIGNIFICANCE OF THE STUDY

The study will be of great importance to the following key stakeholders:

The Researcher

The study is useful to the researcher since the research process helped the researcher to get deeper understanding of the concepts of supply chain collaboration in agro-processing organisations in Zimbabwe. More so, the researcher acquired research skills as the study was conducted under the guidance of an experienced supervisor in the field of research. The study was conducted in partial fulfilment of the requirements of master's degree.

Agro-processing firms

The study will develop supply chain collaboration practices for use by agro-processing firms in Zimbabwe. Thus, the recommendations, will help agro-processing firms formulate sustainable supply chain collaboration practices that will help improve their performance.

Supply chain management professionals

Furthermore, the study could be of importance to supply chain management professionals across all sectors in the economy of Zimbabwe since it would add a body of knowledge to theory on the effects of supply chain collaboration on firm performance.

Great Zimbabwe University

The research dissertation will be made available to the library for further reference by fellow students and researchers pursuing their studies, thus benefiting the University. The study will help extend the body of knowledge in the area of supply chain collaboration and its effects on the operational performance in operational performance in Zimbabwe.

1.8 ASSUMPTIONS

The researcher assumed that:
- Respondents would be willing to actively participate in the study.

- Supply chain collaboration practices are being implemented by agro-processing firms in Masvingo.

- Data to be collected will be sufficient to draw up complete and conclusive results, generalizable to all agro-processing firms in Zimbabwe.

- The researcher observed all ethical considerations throughout the course of this study.

- The participants responded within a reasonable time period to allow the study to be carried out as scheduled.

- The participants supplied the researcher with true and accurate information.

- The selected sample was a true representative of the population under study.

1.9 DELIMITATIONS

The study's four key delimitations are presented below:

Theoretical boundary

The literature search focused on four theories: Resource Based Theory (RBT) and the Network Theory (NT). This is complemented by the existing literature on supply chain collaboration as well as performance. Conceptually, the study is delimited to the four supply chain collaboration dimensions that are customer collaboration, supply collaboration, internal collaboration and external collaboration.

Time delimitations

The period concerned for the study was August 2023 to December 2023. This period was influenced by the Great Zimbabwe University's academic calendar since the project was academic

Delimitation of Participants

The study drew targeted key personnel such as procurement personnel and other supply chain management department personnel as they are the office bearers involved in supply chain collaboration issues.

Geographical boundary

The research was limited to agro-processing organisations in Masvingo. However, inference will be made to all agro-processing organisations in Zimbabwe.

1.9 Limitations

The cross-sectional nature of the research restricted the determination of the supply chain collaboration and the operational performance. The mitigation measure to this is that the researcher resolved in focusing on one industry, which is agro-processing organisations, in order to obtain uniform results that can be generalised across the country.

Time was limited in conducting the study. The researcher had to include all the study constructs to get comprehensive results that would give a fair picture of the relationship between the study variables.

The study used closed ended questionnaires to gather data. Closed ended questions do not give respondents the opportunity to express their views. To address this, the researcher conducted a pilot study to ensure that the questions covered every issue that was important in answering the research questions.

1.10 DEFINITION OF TERMS

Supply Chain Management: is the management of material, money, men, and information within and across the supply chain to maximize customer satisfaction and to get an edge over competitors (Shukla, Garg, & Agarwal, 2011).

Supply chain collaboration: SCC is two or more autonomous firms that form long-term relationships and work closely to plan and execute supply chain operations

toward common goals, thereby achieving more benefits than acting independently (Khadi, 2019).

Supply chain operational performance: refers to the extended supply chain' activities in meeting end customer requirements, including product availability, on time delivery, and all the necessary inventory and capacity in the supply to deliver that performance in a responsive manner (Krajewski *et al.,* 2018)..

1.11 DISSERTATION OUTLINE

Chapter 1: This chapter introduces the study by providing a description background and context of the study. It also presents the research problem, research objectives and research hypotheses. Lastly, it provides the significance of the research, the research delimitations, the study's conceptual framework and the dissertation structure.

Chapter 2: This chapter presents the literature review pertaining to the research objectives. The chapter firstly provides an overview of the theories that guides the study and the conceptualization of study variables. The examination of empirical literature follows.

Chapter three: Chapter 3 provides the research methodology used in carrying out the study. The chapter discusses the research philosophy, the research design, the population and sampling design. Furthermore, research instruments, data collection and analysis methods, issues of data quality and ethical consideration are provided.

Chapter four: This chapter presents and interprets the results of the study. The chapter also discusses the research findings in relation to the four research objectives and reviewed literature.

Chapter five: Chapter five presents the summary, conclusions, recommendations of the study. A summary of the dissertation chapters is followed by key conclusions and recommendations. The research limitations and some areas for future research given lastly.

1.12 CHAPTER SUMMARY

Chapter one outlined the overview of the study. Therefore the background of the research project and the statement of the problem was presented. The research objectives, research questions, as well as assumptions were drawn. The chapter also laid bare the significance of the study to various key stakeholders. Furthermore, the study delimitations, limitations, and definition of some terms was presented. Chapter two will provide review of literature related to supply chain collaboration practices and supply chain operational performance.

<div align="center">**CHAPTER TWO**</div>

<div align="center">**LITERATURE REVIEW**</div>

2.0 INTRODUCTION

The previous chapter presented the nature and tone of the study that is the background of the study. Chapter two presents the literature review. Chapter two starts with the theories guiding the study. This chapter presents a review of literature pertaining to research study variables. The chapter also discusses the findings of the previous studies on supply chain collaboration and operational performance. The chapter wraps with the chapter summary.

2.1 THEORETICAL REVIEW

The research is anchored on administrative theories which will the study to have a comprehensive scrutiny of how collaboration impact on the operational performance of organizations. These theories are the Resource based theory and The Network theory.

2.1.1 Resource Based View Theory

RBT has received ample consideration in elucidating supply chain collaboration in particular and management research at large. RBV postulates that firms can be seen as assemblages of resources that may or may not be strategic (Hitt, Xu & Carnes, 2016). For resources to be considered valuable, they must be rare, non-substitutable and inimitable (Wernerfelt, 2016). The essential ideas underpinning RBT are resources, capabilities, and strategic assets (Backman, Verbeke & Schulz, 2017). RBT is mostly used to elucidate the factors upsetting the exploitation of resources by organisations to advance their competitive benefit as well as performance by arguing that strategic resources, for instance, core competencies, dynamic capabilities (Daspit, Chrisman, Sharma, Pearson & Long, 2017), as well as absorptive capacities, account for the discrepancies in firm performance (Kauppila, 2015). Core competencies, therefore, refer to the main physiognomies of the core products offered by the firm and are firm-wide shared learning that is essential ingredients of competitive advantage (Hitt et al., 2016).

Dynamic capability emphasises how and where firms use their resources to generate and appropriate capabilities (Carter, Kosmol & Kaufmann, 2017). Supply chain academics have recognized RBT as a prevalent theory in SCM research by acknowledging the complexity of internal/cross-functional and external collaboration with a firm's upstream and downstream supply chain participants hence requiring unique capabilities that may be hard or expensive to implement (Mandal, Roy & Raju, 2016). According to the RBT, automated integration by investing in definite assets that are rare, treasured, inimitable and non-substitutable allows collaborating firms to build competitive advantage (Durand, Grant & Madsen, 2017).

Another cause for supply chain collaboration is resource complementarity, whereby investments in relation-specific assets, extensive knowledge exchange as well as merging complementary and rare resources help produce rents out of the synergistic amalgamation of resources, competencies and capabilities to produce inimitable goods and services (Kull, Mena & Korschun, 2016).

The entrenchment of collaborating firms' relationship-specific assets and the underlying uncertainty makes it hard for competitors to imitate (Yeniaras, Sener & Unver, 2017). SCC allows firms to focus on their superior capabilities and thereby intensifies firms' specific competencies that help create economies of scale and learning effects that enhance their competitive positions (Lieberman, Lee & Folta, 2017). Hence, investing in assets that are relationship-based results in great competitive benefits to the supply chain as a whole because such assets are rare and inimitable (Lioukas, Reuer & Zollo, 2016). Collaboration within the supply chain permits the firms to concentrate on their essential capabilities. As a result, there is improved specialization as well as increase scale economies, thereby increasing their competitive benefit (Qian, Wang, Geng & Yu, 2017).

Since competitiveness emanates from the firm's capacity to exploit its resources in a dynamic environment, absorptive capacity stands for capability (integration, conversion, procurement, and utilisation) of a firm to exploit resources in a manner that leads to competitive benefits in the form of active knowledge formation as consequences (Hoskisson, Gambeta, Green & Li, 2017). Recognising that resources

can be procured from sources outside the firm has led to several researchers exploring RBT's role in inter-firm relationships such as supply chain integration, outsourcing and supply chain collaboration (Kellermanns, Walter, Crook, Kemmerer & Narayanan, 2016). These inter-firm relationships are the means of procuring resources which are external to the firm (Mohd et al., 2016), thereby helping bridge the gap between a firm's strategic objectives and the current resource possessions (Backman et al., 2017).

Miemczyk et al. (2016) argue the RBV can explain the importance of new resources in technology, knowledge, and relationships, emphasizing the role of SCM to constantly address changes in the business environment to renew its strategic resources and keep is BP. For Flynn et al. (2010), an effective SM derives from strategic collaboration between producers and suppliers, with shared management of intra and inter-organizational processes to achieve effective flows in products, services, information, and cash. Of the many categories of resources, the organizational and human are interconnected, the becomes a strategic artifice, as they could improve the use conditions of the others (physical, technological, financial, and reputational) by promoting synergy and greater gains in the companies' BP and of SC (Carvalho et al., 2014). RBV become a relevant management theory, in which companies analyze their resources and improve their performance.

However, RBT has been criticised for the mystery surrounding where, when and how resources may be beneficial to the firm (Cao and Zhang, 2012). Attempts at overcoming this limitation gave rise to a concept called dynamic capability, opined by Teece, David, Pisano, & Shuen (1997). This refers to the firm's capacity to incorporate, shape and design competencies (internal and external) in adapting to swiftly fluctuating markets. Teece et al.'s (1997) point of view, then, allowed researchers to investigate the process of resource alignment in vibrant business environments (Ralston, 2014).

RBT has been popular as an underpinning theory in explaining how collaborations in the supply chain improve firm performance (Liu & McKinnon, 2016). RBT theory presupposes that collaboration between supply chain partners leads to improvements

in their competitive benefits such as the swiftness, ease, and consistency with supply chain processes (Gu, 2016).

RBT has been used to elucidate the effect of supply chain collaboration on collaborative advantage and firm performance (Ralston, 2014). Although RBT is not a prescriptive theory, special attention is given to how resources are utilised in the supply chain collaboration process. (Durand, Grant, & Madsen, 2017). Even though RBT is contingent on the acquisition and utilisation of strategic resources that help to explain changes in the performance of firms, it is not a prescriptive theory (Backman et al., 2017). In this study, RBT is used to explain how collectivism and long-term orientation influence SCC. It is also used to explain the link between supply chain collaboration and operational performance. In effect, collectivism and long-term orientation are seen as unique and valuable resources for supply chain collaboration. In contrast, supply chain collaboration provides an organisation with competitive benefits in the form of operational and financial performance, since it results in cost savings, improved lead-times as well as better flexibility (Durand et al., 2017).

This suggests that resource-based capabilities make firms think collectively with a long-term orientation, thereby making them good candidates for collaborative partnerships. Furthermore, supply chain collaboration is a resource-based competence that firms use to improve their operational performance as well as financial performance. Hence these logical inferences underpin the study.

2.1.2 Network Theory

The network theory is one of the grand theories for supply chain management which have been introduced the last decades. The theory is considered to describe the relationships in which companies, suppliers, customers or buyers are engaged. The theory was first introduced in the 1980s and developed from the focus on relationships between just two entities, towards an approach which entails multiple relationships between different counterparts throughout the supply chain. Harland (1996) defines the network as a specific type of relation linking a defined set of persons, objects or events. The supply chain network is a complicated network and its specific context

depends on the relationships among the network members (Chang et al., 2012). The networks are seen as beneficial for every company embedded in the network.

For purposes of this research the term supply network refers to a set of interconnected supply chains encompassing both up-stream and down-stream co-operative relationships (Harland, Zheng, Johnsen & Lamming, 2004). Supply networks are formed to create, stimulate, capture and satisfy end customer demand through the innovation of products, services and network structures in a global dynamic environment (Harland & Knight, 2005). Supply networks are characterized by their complexity and differentiation encompassing diverse topologies, lateral links, reverse loops, and multi-way exchanges, and include a broad, strategic view of resource acquisition, development, management, and transformation (Choi & Krause, 2006).

The Network perspective posits openness and trust between the parties as a condition for gaining the best possible results from cooperation. Over time, mutual adjustments improve supply chain efficiency and therefore, make them more efficient. Examples of adjustment processes might include an electronic data interchange and B2B connections between the partners for the implementation of a quality control system. By entering into close cooperation with partners who possess complementary competencies, the individual firm is able to utilize resources and skills controlled by other players (Halldorsson et al., 2007). In close and long-term cooperation, the parties are able to establish mutual and strong relations of trust, which may result in the disappearance of cost-consuming, contractual safeguards.

Rather than seeing links in a chain that connect each other, we should see the complex and dynamic ecosystems that are making network theory an increasingly relevant component to supply chain management. By applying network theory to the challenges of modern supply chains, we can better understand and manage the information and systems that move products from source to market. Nowadays most companies, and especially large companies, have complex and dynamic systems of suppliers and customers that are interlinked. Each firm in the systems represents a cluster of contact, some that are useful to other clusters and some that are not. These clusters aren't just moving physical goods but also money, information and insights.

Network theory provides ways to measure and quantify how those clusters related to one another and, therefore, how information and insights move, efficiently or not, across all the structures that are involved. Applying this theory to academic research and current business problems offers a variety of benefits to supply chain managers. For instance, Network theory can help leaders identify the critical players in different clusters so they can more efficiently give and receive the best possible information and insights. More so, the theory can help managers identify and understand both the structures and the interpersonal relationships that either aid or hinder the flow of information. Lastly, the theory connects indirect partners who previously had relatively no knowledge, thus opening new possibilities of broader visibility, deeper learning and better situational awareness.

Supply chains can be modelled as networks by a set of "nodes" that represent autonomous business units as firms who are able to exercise sovereign choices, and a set of "connections" that link these firms together for the purposes of creating products or services (Bullmore and Sporns, 2009). Connections between firms represent exchange relationships and the underlying contract if present. According to Barabas (2009), when modelling exchange relationships, numerous connection types can be considered, but the critical connection types are the presence of contracts and various flow types including material flows, information flows and financial flows. Kim et al. (2011), material flows refer to the transfer of physical products, information flows refer to the transfer of coordinating data and financial flows refer to the transfer of monetary resources, all relating to the exchange of products or services.

2.2 SUPPLY CHAIN MANAGEMENT COLLABORATION

Supply chain collaboration has been defined as a business process whereby two or more supply chain partners work together toward common goals and mutual benefits (Cao & Zhang 2011:166). Many businesses around the world have been practicing supply chain collaboration for many years. SCM approaches have been defined in various ways. According to Basu et al., (2017), supply chain collaboration approaches are used to achieve organizations' short-term and long-term goals such as to enhance

productivity, control inventory, reduce waste, increase market share and sustain growth.

Supply chain collaboration encourages future planning of promotional sales (Ramanathan & Muyldermans, 2011) and also improves environmental management in manufacturing (Vachon & Klassen, 2008). Successful SC collaboration can be represented in terms of sales growth, market share (Mishra & Shah, 2009) and satisfaction of supply chain partners. Success of collaborative partnership normally motivates the businesses to engage in future projects (Ramanathan et al., 2011). Subsequently, SC partners will try to retain the successful partner-ship to establish future businesses (Nyaga, Whipple & Lynch, 2010).

2.2.1 Customer collaboration

The logic of firms having strong relationships with customers, consumers and even end users is self-evident. The difficulty confronting most firms, however, is that "...physical distribution operations and responsibilities seldom terminate when ownership transfer occurs" (Statsenko and staZubielqui, 2019:4). The SCM-related reality for most firms is that the "customer" is often a channel in a distribution system charged with the task of navigating a path to the ultimate user of a product. Under this scenario both spatial and temporal factors become critical to the effective management of the channel (Wu et al., 2020). Developing relationships with channel partners becomes a potential source of strategic advantage when they work with a supplier to find consumers and end users (Bowersox, 1990). Developing relationships with customers and therefore involve not just collaborating with the users of products, but also with those intermediaries providing access to consumers. This can be a significant challenge.

Another difficulty relates to the practical issues in implementing collaborative relationships with customers. A number of generic management systems have been proposed. These include customer relationship management (CRM), collaborative demand planning, demand replenishment, and shared distribution systems. Most of these systems take the form of integrating information systems and processes in pursuit of competitive dimensions such as speed and efficiency (Sanders and Premus, 2015). They can also take the form of relationships where forecasts are developed

through consensus (Holmstrom et al., 2019), planning and problem solving become a joint responsibility, and risks and rewards are shared (Stank et al., 2001). While it has been shown recently that firms investing in both IT infrastructure and relationships to support collaboration experience greater returns from the investment in relationships (Kahn et al., 2006), there are still considerable doubts about the efficacy of many of these off-the-shelf systems (Holmstrom et al., 2017).

2.2.2 Supplier collaboration

Mohr and Spekman (20116) define partnerships as purposive strategic relationships between independent firms who share compatible goals, strive for mutual benefit, and acknowledge a high level of mutual interdependence. Supplier management is a business process that allows a company to adequately select its vendors and negotiate the best prices for goods and services that it purchases. Senior managers also monitor the corporate supply chain to ensure that vendors familiarize themselves with the company's operating activities and manufacturing processes (Arthur 2017).

Due to technological and environmental changes, businesses all over the world are encouraged to rely upon or collaborate with their suppliers more than before. According to Albinson (2020), suppliers' collaboration refers to any joined or coordinated efforts between buyers and suppliers to achieve a common goal. Based on Feng et al., (2020) and Kafouros et al., (2020) studies, the primary function of supplier collaboration is to create a balance between the demand and the supply (Kafouros et al., 2020). In other words, the focus of supplier collaboration with e-businesses is to ensure that the right materials are delivered at the right time and location. However, Tjahjono et al., (2019), state that supplier collaboration should not only be perceived as a merely provider of materials but as a strategy that can help businesses to over perform or outperform their competitors. Accordingly, Dominguez et a.l, (2018) claim that when challenges arise, suppliers can help business to revaluate their daily activities, do cost and benefit analysis, optimise the resources and deliver competitive goods in order to enable the firm to function in a fiscally responsible manner.

According to Tjahjono et al., (2019), supplier collaboration is about developing two-way, mutually beneficial relationships with your most strategic supply partners that

deliver greater levels of innovation and competitive advantage than could be achieved by operating independently. Peters (2004) argues that supply chain managers should be responsible for managing no more than three supplier relationships, in order to devote sufficient time to each.

Supplier collaboration is a long-term relationship between the organization and its suppliers, in which the company is involved directly with the processes and activities of its suppliers to ensure their performance and capabilities (Chen, 2012). Supplier relationship means to build a good relationship with the supplier by mutual tanning, having an attractive reward system, or setting common goals (Chen et al., 2013). Supplier relationships can create numerous advantages like reducing cost, new product development, reducing cycle timing, or reducing uncertainty. Due to the lack of training and eagerly available tools, most global supplier relationships tended to be transactional, adversarial, and penalty-oriented (Manuj, 2013).

2.2.3 Internal collaboration

With regard to internal collaboration, top management, engagement, support and commitment is vital to the implementation of collaborative practices in the supply chain (Fawcett et al., 2006). Without this, efforts to an integrated approach between the actors in the supply chain can be superficial and ineffective. Moreover, managers need to 'sell' the idea of collaboration in the internal environment of their organisations (Stank et al., 2001), by investing in the propagation of a culture founded on teamwork (Fawcett et al., 2006). This is only possible if supported by top management.

2.2.4 External collaboration

External collaboration describes an interdependent and win-win relationship between a firm and its partners linked by interactive, open, and direct communication, which supports the firm's innovation and experimentation, and thus creates beneficial outcomes for all participants (Jap, 2001). A firm must acquire diverse new knowledge, organize value-creation activities and improve competitive advantage, because in the networked society the locus of innovation resides not inside the firm, but in the interstices between the firm and its external partners (Powell et al., 1996; Wang et al., 2015). Therefore, a firm needs to constantly develop external collaboration and

knowledge alliances to meet new business challenges and achieve sustainable development (Ferreras-Méndez et al., 2015).

It is most popular and widespread to study external collaboration from the perspective of its breadth and depth (Laursen and Salter, 2006; Ferreras-Méndez et al., 2015; Zhu et al., 2019). Collaboration breadth reflects the number of external partners that a firm relies upon in its innovative activities, and collaboration depth reflects the intensity of collaboration with each type of partner. In today's increasingly complex and knowledge-intensive world with shortened product life cycles and intensified competition, it is increasingly difficult for a single firm to internalize innovations, especially for an SME, for which resources and capabilities are limited (Kull, Mena & Korschun, 2016). As a result, more and more firms begin to cross organizational boundaries and participate in external collaboration.

Inter-organizational external collaboration, which can facilitate the flows of resources and technologies in different organizations, has emerged as an important way for firms' innovation. (D'Angelo & Baroncelli, 2020). Participating in such external collaboration activities provides firms with opportunities to acquire various resources, ideas, and technologies. Besides, it can also help firms to share the costs of innovation with their partners and reduce the uncertainty in the process of innovation (Faems et al., 2005). Therefore, for firms, especially for SMEs, external collaboration is very important for improving their innovation performance (Santoro, Bresciani and Papa, 2020). In recent years, external collaboration has become a heavily researched topic in the field of innovation management and strategic management.

External collaboration is an important form of open innovation strategy, and it mainly refers to the behavior of firms to cross organizational boundaries and build collaboration relationships with external organizations such as suppliers, customers, competitors, and universities (Santoro et al., 2018). Studies on external collaboration are grounded on three primary theories or perspectives. First, from the knowledge-based view, external collaboration is helpful to acquire knowledge that does not exist in the firm, such as specialized technological knowledge, market information, and

customer needs (Kull, Mena & Korschun, 2016). External collaboration thus extends firms' knowledge base, which is crucial for innovation.

Second, from the perspective of cost and risks, external collaboration can help reduce costs and risks through co-R&D and building shared expectations and approaches to challenges in the process of innovation ((Faems et al., 2005). Third, from the perspective of organizational learning, external collaboration can help firms to learn skills and competences related to the technology and market aspects underlying the innovation (D'Angelo & Baroncelli, 2020).

2.3 OPERATIONAL PERFORMANCE

Organisational performance is the measure of an organisation's or individual's productivity in terms of profit, quality product, market share, expansion and survival (Almatrooshi, Kumar & Farouk, 2016). Performance refers to how well a firm fulfils its financial goals compared with the firm's primary competitors (Li, Ragu-Nathan, Ragu-Nathan, & Rao, 2006:107). Performance is conceptualized as the operational success of the firm, measured mainly in terms of costs, quality, flexibility, and delivery (Liu and Lee, 2-18). Attia and Eldin (2018) indicate that increased organizational competencies between firms in the supply chain, and each firm's increased overall operational efficiency, affect performance.

According to Cao & Zhang (2011), collaboration in the supply chain directly influences the operational performance of companies, showing itself as a method of obtaining superior advantage over competitors. For Bronzo (2004) collaborative relationships are supported by a common objective of creating environments conducive to innovation and more efficient production, thus favoring organized production chains with a competitive edge. In this way, Simatupang & Sridharan (2002) indicate that collaboration in the supply chain is measured through the impact on the overall performance of the chain, pointing out the levels of improvement in some factors such as, for example, total costs, inventory, and customer satisfaction and use of assets.

Among the literature, there are some factors considered relevant to operational performance, treated as quality, reliability, flexibility, costs, and innovation. Quality is determined by the consumers' perception of some attributes of a product. Such

attributes are given as performance, conformity, durability, aesthetics, maintenance, and perceived quality (Garvin, 1987).

Reliability is understood as the customer's perception of compliance with delivery deadlines of a product or service, complying with what was agreed (Garvin, 1987). Flexibility, on the other hand, is understood as the ability to meet demand fluctuations with agility and promptness, both in terms of quantity and product customization (Ward et al., 1998).

Costs reflect the pricing strategy and market positioning, and it is through assertive cost management that the financial results for organizations can be verified (Ward et al., 1998).

Finally, innovation can be perceived as the ability of an organization to develop new products and reach new markets, as well as to innovate internally in business processes and strategies (Wang & Ahmed, 2004).

Aloise (2018) characterizes a company as flexible when it presents alternative processes, versatile machines, and ease of change in the mix of parts. Barreto & Pozo (2011) complement the idea by stating that flexible companies are more competitive in the market because they can meet new demands with agility and effectiveness. Therefore, as detailed in each collaborative practice, each element can directly affect performance indicators, also stated in several studies and surveys. As an example, Mathuramaytha (2011) demonstrated that collaboration in the supply chain has a positive effect on factors such as cost reduction and greater operational flexibility, concluding that there is a significant correlation between the collaboration rate and operational performance.

Regarding quality, Domenek & Moori (2016) pointed out as the main performance factor acquired as a result of collaboration processes should be implemented. The reliability factor was diagnosed by Rodrigues & Sellitto (2008) through an improvement in the delivery schedule, reducing tasks that did not add value, and increasing the information of agreed deadlines.

In the innovation indicator, Bronzo (2004) stated in his research that, in collaborative processes with constant information transition, client companies can act in the offer of new technologies to their suppliers, destined to the innovation of processes and as well as the development of new technologies.

2.4 EMPIRICAL REVIEW

Collaboration has great potential to enhance firm's performance where partners collaborate with others to ensure that their supply chain can response to dynamic market needs (Cao and Zhang, 2011). In a collaborative SCM, trading partners (e.g. suppliers and their customers) exchange and integrate information to make strategic or tactical joint decisions (e.g. supply and demand forecasts). The general idea is that partners can gain much benefit from collaborating with other supply chain members. Benefits of collaboration schemes on firms' performance have been discussed in previous studies, and consist broadly of improvement of forecasting accuracy, reduction of the bullwhip effect, increase revenues and earnings, increase responsiveness, reduction in stock-outs and greater transparency in the supply chain (Claassen et al., 2008; Panahifar, Heavey, Byrne and Fazlollahtabar, 2015).

The empirical results of the effects of internal and external collaboration on supply chain performance are mixed. For example, some researchers have found negative effects of supplier integration on performance (Narasimhan, Swink, and Viswanathan 2010), while others have been unable to confirm significant relationships between them (Flynn, Huo, and Zhao 2010). Nevertheless, some scholars have emphasised the positive role of supply chain collaboration in firm performance (Cao and Zhang 2011; Wu and Chiu 2018; Ahmed et al. 2019). For example, Mishra and Shah (2009) found that external and internal collaboration (i.e. supplier engagement, customer engagement and cross-functional engagement) can directly improve project performance and indirectly improve market performance. Sudusinghe and Seuring (2022) performed a systematic literature review to examine how internal and external collaboration may improve sustainability performance in supply chains. Internal collaboration capacitates cross-functional knowledge sharing (Caridi, Pero, and Sianesi 2012), and helps to smooth the supply chain process by the way of eliminating

wasteful procedures and avoiding delays and blockages (Turkulainen and Ketokivi 2012).

Shukor et al. (2020) suggested that strong relationships exist between customer, supplier (external collaboration), internal integration (internal collaboration), and supply chain performance according to agility and flexibility. Wong, Wong, and Boon-Itt (2020) also verified different effects of internal and external collaboration on improving performance. Efficient internal collaboration improves the ability to respond to information produced beyond the firm. External collaboration helps coordinate tasks and solve problems (Ragatz, Handfield, and Peterson 2002), improve product quality (Rosenzweig, Roth, and Dean 2003), reduce the lead time (Sherman, Souder, and Jenssen 2000), enhance flexibility and ensure delivery (Schoenherr and Swink 2012). Through internal and external collaboration, supply chain members are more capable of understanding each other, realising customer value (Zhong, Ma, and Tu 2016), reducing uncertainties, and achieving collaborative satisfaction and performance among better-performing firms (Nyaga, Whipple, and Lynch 2010).

Cao and Zhang (2011) in their survey of U.S. manufacturing firms explored the impact of SCC on firm performance from a collaborative advantage paradigm. They found that SCC resulted in both positive collaborative advantage and stronger firm performance. Still in the U.S., Won Lee et al. (2007) studied the effect of supplier linkages, customer linkages, and internal linkages on supply chain performance and observed that supplier linkages positively impacted performance reliability and overall performance, whilst internal linkages positively impacted cost containment performance. The findings of Vereecke and Muylle (2006) also suggest that improving collaboration with both suppliers and customers enabled European firms reap maximum benefits in terms of improvement of performance, whilst collaboration with only one resulted in only minor benefits. The study of Lorentz (2008) explored SCC in an uncertain cross-border context (Finland and Russia) and explored whether it positively impacted supply chain performance. Their findings weakly supported the proposed positive impact of SCC on supply chain performance.

Singh and Power (2009) surveyed Australian manufacturing plants in their study and hypothesized that strong customer relationships and strong customer involvement

positively impacted firm performance. Their findings supported both hypotheses, although the effect customer relationship on firm performance was greater. Their findings also suggest a strong inter-relationship between collaboration with suppliers and customers. Finally, Stank et al. (2001) explored the impact of internal collaboration and external collaboration on logistics performance using data from firms in North America. Their findings indicated that external collaboration influences increased internal collaboration, which in turn improves service performance.

Panahifar et al. (2018) conducted a study to identify and assess the interrelationships between various characteristics of information sharing and trust and their criticality for effective information-centred supply chain collaboration initiatives and, in turn, its criticality to overall firm's performance. Structural equation modelling through partial least squares is used to study the relationships between four enablers (trust, information readiness, information accuracy and information security), perceived collaboration success, and two outcomes (sales growth and overall operational performance). Findings indicated that three collaboration enablers including trust, information readiness and secure sharing of information improve supply chain collaboration and ultimately firm performance.

In Istanbul, Turkey, Doganay and Ergun (2017) conducted a study to analyze the relationship between Supply Chain Collaboration (SCC) and Supply Chain Performance (SCP). A conceptual model with theoretical basis is developed as a causal model that can be operationalized using Statistical Package for the Social Science (SPSS). Findings showed that SCC has significant and positive relation with SCP, which means SCC may help to increase organization's SCP related with ultimate customer. It was concluded that SCC is becoming more important than ever to achieve better performance in supply chain between partners.

In Malaysia, Shahbaz et al. (2019) conducted a s study to empirically verify the relationship between supply chain collaboration and supply chain performance for the manufacturing sector of Malaysia. A self-administered questionnaire was distributed by convenience sampling in all listed manufacturing in the federation of manufacturers Malaysia. The findings revealed that all the approaches have a positive influence on

supply chain performance. Information sharing, agreeing vision and mission, supplier relationship, customer relationship, and information quality are significantly effecting, while postponement and risk and reward sharing have positive effects but this effect is not significant.

Pfanelo (2017) conducted a study to examine the influence of supply chain partnership on collaboration, collaboration on integration, integration on relationship commitment and relationship commitment on performance in South African SMEs. The researcher collected data from 450 SMEs managers in South Africa. The results shows that all the proposed five hypotheses were empirically supported indicating that supply chain performance positively influence manufacturing SMEs' collaboration, integration, relationship commitment and performance in a significant way.

Extant literature suggests that relationships characterised by higher partnership quality are associated with mutual sharing of business risks, trust, commitment, mutual adaptation, reciprocity, and durability (Lahiri & Kedia, 2012). In a recent study, Lahiri and Kedia (2011) noted that benefits associated with such close partnerships between the focal firm and its suppliers may include "customer satisfaction, enhanced perception of fairness and justice, customer loyalty, relationship satisfaction, positive word-of-mouth, repeat transactions and business continuity". Close relationships based on trust and cooperation, mutual sharing of risks and benefits, between the buyer and the supplier, may have beneficial performance effects (Mahesh, Debmalya & Ajai, 2011).

While the results of prior studies are interesting, the impact of SCC initiatives on performance has not been explored properly with the context of developing countries. Specifically, no study on the subject have originated from agro processing firms in Masvingo. This study exploring the impact of SCC initiatives in the context of agro-processing firms is the first of its kind and provides findings on the impact of SCC on performance that are more specific to Zimbabwean context.

Without understanding and cooperation, all strategic management actions are bound to fail. Effectively, information sharing is crucial to help businesses to promptly meet customer needs or expectations through customer relationship systems, which

encourage customer integration (Xie et al., 2020). Statsenko and staZubielqui (2019) believe that a good information sharing system is one that allow customers to access the organisation's history details freely. When an organisation makes their information public, it is easier for them to receive feedback from customers and develop services and goods that offer extra value to customers (Wu et al., 2020). For instance, knowledge hoarding causes distrust amongst departments, kills any efforts being made to increase collaboration and costs your company valuable time and money.

Eslami and Melander (2019) advocate that companies should base their relationships on transparency and information sharing as a foundation, with the expectation that greater trust will follow. Dominguez et al., (2018) stated that simple collaboration efforts with customers can be a source of innovation and success. The authors posit that organisations should demonstrate their desire to collaborate with customers through information sharing. Effectively, in addition, as long as companies are willing to disclose their information to the public, the more customers are willing to intervene with business and remain loyal to the company (Zheng et al., 2020).

According to Kafouros et al. (2020), excelling at supplier collaboration requires more than an active engagement with suppliers, it also calls for a change of mindset and commitment from both buyers and suppliers, this ultimately enhance operational performance. It is in the same perspective that Feng et al., (2020) posit that supplier collaboration gives room for information sharing that reducing information costs associted with research and development. Effectively, when collaborating, suppliers are more likely to share information with the buyers to ensure transparency and visibility necessary to plan or schedule organisational activities. When collaborating, suppliers should have a communication platform where information can be accessed and shared in order to develop a single version of truth that enable the suppliers and buyers to be on the same page which as a result, will help decision makers to spend less time on non-valued activities (Jonas et al., 2018). However, Ellingrud (2020), notes that while collaborating with suppliers, managers must determine, which information and designs can be shared without posing a risk to their intellectual

property or trade secrets. In addition, Dominguez et al., (2018) and Wu et al., (2020) argue that the speed at which organisations and suppliers react or collaborate is related directly to the speed at which the information is shared.

Through internal collaborations, employees, departments and work stations can work with others who can share responsibility for product success (Achuora, 2018). Such strategic internal collaborations should enable SCM to succeed. Partnership relationships like this are expected to increase customer satisfaction which in the end will also improve the overall performance of the company (Thongrawd, Chomchom, Phudetch & Somboon, 2019).

In Turkey, Doganay and Ergun, (2017) conducted a study to investigate the relationship between supply chain collaboration dimensions and supply chain performance. Regression analysis tests discovered that internal collaborations is one of the SCC dimensions that positively affects supply chain performance. Lee (2021) sought to identify the effects of supply chain management (SCM) on the operational performance of SMEs in Korea, specifically considering organizational competencies. The relationships between the variables were analyzed through structural equation modelling. These show that specific SCM strategies, internal collaboration being included, have a significant effect on overall business performance.

In Malasyia, Shahbaz et al. (2019) analysed the relationship between supply chain collaboration and supply chain performance for the manufacturing of Malaysia. Data from structured questionnaires were analyzed through Smart PLS 3. The finding revealed that all the approaches (including internal collaboration) have a positive influence on supply chain performance. Information sharing between departments are significantly effecting supply chain performance.

With regards to postponement, the many studies have agrred that postponement enhances supply chain performance. Postponement enables firms to minimise inventory costs by holding small inventories. Moreover, the strategy enhances quality of materials supplied as frequent small lot deliveries allow the detection of any quality problems. Postponement also increase flexibility by enhancing the firm's ability to change product mix in a reliable manner. Subsequently, operational performance is

expected to be improved. Postponement allows SC managers to deal with demand variance, and short product life cycle in a changing environment (Huang & Li, 2009). Furthermore, postponement enhances a firm's ability to customize their products due to flexibility (Van Hoek, 2001).

In the USA, Li et al. (2006) found that postponement contributed significantly to risk minimisation. However, their study showed that there are a number of other factors that affect this strategy's ability to reduce risks; the market characteristics, and the logistics systems to a greater extent. Li et al (2006) further asserts that organizations to work more effectively with key, few and important suppliers that are willing to share responsibilities for the success and failure of the products. They established that high implementation of strategic supply partnerships can lead to enhanced organizational performance. The authors stress that partnering firms need to collaborate on evaluating inventories, processes, systems, work methodologies, training, equipment utilization, to reduce the operational costs while exploring opportunities for value creation.

Arawati (2011) conduted a study to invetsigate the effect of postponement on business performance. It was established that the postponement "concept" significantly affect firm operational performance. Mustefa (2014) conducted a to determine the the relationship between supply chain management practices, of which postponenment was included, and operational performance. The study was guided by the deductive approach to research and data was analysed by regreression and corellation statistical methods. The findings of the study showed that postpondenet was strongly and positively related to firm performance that is (delivery, quality and effeciency).

There is a huge gap between this study and the studies which were carried out previously by other researchers. The topic of this study was never previously researched by other researchers particularly for the small scale retailers in Zimbabwe, a developing country. The topic focused on the effects of supply chain collaboration approaches on supply chain performance in a volatile environment. The objectives

adopted in this study are different from the objectives which were pursued in previous studies.

2.5 CHAPTER SUMMARY

The chapter has explored literature related to supply chain collaboration and supply chain performance. The issues discussed included the three supply chain collaboration approaches and operational performance. The chapter also presented the theories guiding this study. Empirical literature on the relationship between the key variables was reviewed. The following chapter presents the research methodologies adopted in collecting and analysing data.

CHAPTER THREE

RESEARCH METHODOLOGY

3.0 INTRODUCTION

This chapter provides detailed information on how the research was designed, planned, and executed. The chapter provides explanation on how the study was conducted and sought answers to the research questions. It provides details on the research philosophy, research approach and research design. This chapter also embodies and discusses study population, data collection instruments, method of data collection and data analysis. In addition, the chapter also addresses sample size, sampling techniques, instrument's reliability and validity issues as well as ethical considerations.

3.1 RESEARCH PHILOSOPHY

The three major research philosophies identified in management research include pragmatism, interpretivism and positivism (Bryman and Bell, 2015). In line with research objectives, positivism was adopted for the study. Positivism was used for the study since it depends on quantifiable observations that would lead to statistical analyses. The main assumptions of the positivist research philosophy include the following: there are no differences in the logic of inquiry across sciences, research should aim to explain and predict; research should be empirically observable through human senses and that science is value-free and should be judged only by logic (Easterby-Smith, Thrope and Jackson, 2012; Soni and Kodali, 2018).

Positivism is logically connected to pure scientific laws and is based on facts in order to satisfy the four requirements of falsifiability, logical consistency, relative explanatory power, and survival. Under the positivism research philosophy, it was possible to investigate what truly happened in the supply chain collaboration amongst the agro-processing firms in Masvingo through scientific measurement of people and system behaviours. More so, positivism produces quantitative data; uses large samples and is concerned with hypothesis testing (Cohen, Manion and Morrison, 2013). The other

benefit of using the positivist philosophy was that it could identify the precise relationships between chosen variables (Soni and Kodali, 2018).

3.2 RESEARCH APPROACH

The three main research approaches used in research are quantitative, qualitative and mixed methods. The study utilised a quantitative research approach in order to investigate the influence of supply chain collaborations on operational performance. According to Mohammad (2013), a quantitative research approach seeks explanations and predictions that could be generalised to other persons, organisations and places. The assumptions underlying quantitative research approach include objectivism, the study is independent of the researcher and research is based on deductive forms of logic (Ihantola and Kihn, 2014; Peersman, 2014). The data collected by quantitative research tends to be numerical and are open to interpretation by use of statistics (Babbie and Mouton, 2015).

The research uses data that are structured in the form of numbers or that can be immediately transported into numbers. Thus, the quantitative research approach involved the collection of data that information could be quantified and subjected to statistical treatment so as to support or refute alternate knowledge claims. The intent of the study was to establish, confirm, or validate relationships and to develop generalisations that contributed to theory (Field, 2015). The purpose of the quantitative research approach was to quantify the data by using statistical measures and control procedures which reduced bias and confounding variables. More so, the aim of the quantitative research approach was to identify potentially strong, non-random, correlations between supply chain collaboration (independent) variables and operational performance (dependant variables) by employing a relatively large number of cross-sectional observations (Braun and Clarke, 2012). As such, the quantitative research approach emphasised the production of precise and generalisable statistical findings.

3.3 RESEARCH DESIGN

According to Salkind (2012), a research design is a roadmap of how a researcher goes about answering the research questions. Many leading scholars including Bryman and Bell (2015) and MacIntosh and O'Gorman (2015) agree that the main research design widely used within business and management research include experiment, survey, case study, action research, grounded theory, ethnography and archival research. In business management, the choice of a research design is influenced by the type of research questions, ability to meet the research objectives, consistency with the philosophical considerations and boundary of existing knowledge.

The study adopted the survey design as it was concerned with describing how supply chain collaborations affect operational performance. From a philosophical perspective, the survey research design followed the positivist approach as it could target what the researcher aimed to study within a particular conceptual framework. The survey research design provided data on past and intended behaviours, beliefs, attitudes, feelings and other descriptive items relating to the influence of supply chain collaboration on operational performance. More so, data collection for the wider generalisations to population was the basic aim of survey so that the collected data could be aggregated across the enterprises (Gorsuch, 2015). As pointed out by Root, Fellows and Hancock (2015), survey is a rigorous approach which could remove bias from the research process and produce replicable results. In addition, the use of survey method did not require control over behavioural actions and mainly focused on contemporary events relating to the influence of supply chain collaborations on operational performance.

3.4 POPULATION

Blumberg, Cooper and Schindler (2017) defined population as the total collection of elements about which the researcher intends to make some inferences. A target population refers to the entire group of people, events, or things of interest that the researcher wishes to investigate" (Sekaran & Bougie, 2019). The population for the study is made up of all the agro-processing organisations in Masvingo province. According to the department of agriculture (2022) report they are approximately 250

registered agro-processing firms in operating in Masvingo. The researcher targeted the owner/managers of the selected enterprises.

3.5 SAMPLE SIZE OF THE STUDY

Sekaran and Bougie (2016) views sample size as the actual number of elements chosen as a sample to represent the target population. In order to determine the sample size for this study, the researcher used the Krejcie & Morgan (1970)'s statistical table.

Table 3.1: Sample size

Table for Determining Sample Size from a Given Population

N	S	N	S	N	S
10	10	220	140	1200	291
15	14	230	144	1300	297
20	19	240	148	1400	302
25	24	250	152	1500	306
30	28	260	155	1600	310
35	32	270	159	1700	313
40	36	280	162	1800	317
45	40	290	165	1900	320
50	44	300	169	2000	322
55	48	320	175	2200	327
60	52	340	181	2400	331
65	56	360	186	2600	335
70	59	380	191	2800	338
75	63	400	196	3000	341
80	66	420	201	3500	346
85	70	440	205	4000	351
90	73	460	210	4500	354
95	76	480	214	5000	357
100	80	500	217	6000	361
110	86	550	226	7000	364
120	92	600	234	8000	367
130	97	650	242	9000	368
140	103	700	248	10000	370
150	108	750	254	15000	375
160	113	800	260	20000	377
170	118	850	265	30000	379
180	123	900	269	40000	380
190	127	950	274	50000	381
200	132	1000	278	75000	382
210	136	1100	285	1000000	384

Note.—N is population size.
S is sample size.

Source: Krejcie & Morgan (1970)

The sample size for the study is 152 from a population of 250 targeted. The table is illustrated below. According to Saunders et al. (2019), the sample was big enough for statistical purposes.

3.6 SAMPLING TECHNIQUES

Sampling refers to the process of choosing samples from the target population – making sure that the elements chosen are representative of the entire population (Neuman, 2019). Sekeran and Bougie (2013:242) explains that "in research it is impractical to collect data from every element of the population, even it were possible, it would be prohibitive with regard to time, cost and other human resources needs". In the same vein, Zikmund and Babin (2013:322) concur and add that it is not always possible to gather data from every possible member in a population for reasons of cost and time. Hence, sampling becomes important to facilitate data collection. Sampling techniques can be classified into two categories, which are probability sampling and non-probability sampling (Bryman & Bell, 2015; Saunders et al., 2016:213). The study adopted both probability technique.

3.6.1 Probability sampling methods

Probability sampling is sometimes referred to as 'representative sampling', where the sample is understood to be representative of the population under study. In this type of sampling, every member of the population has an equal chance of being selected (Rowley, 2014). Probability methods include stratified sampling, systematic sampling, simple random sampling, and cluster sampling (Bryman & Bell, 2015; Cooper & Schindler, 2014). The study used stratified random sampling.

Stratified random sampling is a modification of random sampling in which the researcher divides the population into relevant and significant strata based on one or a number of attributes (Saunders et al., 2016). Bryman and Bell (2018) notes that stratified random sampling is employed when the researcher wants to highlight specific subgroups within the population and to collect detailed data from each stratum regarding the impact of supply chain collaboration practices on operational

performance. Stratified random sampling is used when the study population is heterogeneous (Macmillan & Schumacher, 2010). The variations in the population characteristics are significant for the problem being investigated (Burgess, 1994). In stratified random sampling, the study population is divided into strata, in which individuals have common characteristics (Fink, 2009).

The researcher divided the population into three classes that is primary, secondary and tertiary sectors. These depicted the nature of activities the different enterprises are involved with. Random sampling was then done within the different stratus (Saunders et al., 2019). This ensured equal chance on each element of being nominated. In this way, the resultant sample was representative of the entire population. The study adopted the proportionate sampling, in which the sample size of each strata reflect its contribution to the whole population (Saunders et al., 2019).

3.7 DATA SOURCES

Data sources are places where data is obtained. In research, there are two main data sources, that is primary and secondary data sources (Saunders et al., 2019). The researcher used both primary and secondary data collection methods. These methods are further explored below.

3.7.1 Secondary sources

Secondary data involves a systematic review of appropriate literature from accredited journal articles, textbooks, internet, and other relevant sources (Bell et al., 2018). Secondary data was useful as it allowed the researcher to explore the management problem as well as develop the background of the study from relevant journal such as Journal of Business Management, African Journal of Business Management, Journal of African Business, etc. Past empirical studies on supply chain collaboration and operational performance were reviewed thus providing insights on existing answers to the problem. The researcher was able to make critical assessments and draw invaluable insights from prior studies.

3.7.2 Primary data

Saunders et al. (2016) defines primary data as a type of data that is collected by researchers directly from main sources through surveys, interviews, observations, etc. This study took place in the form of a survey. Surveys involve reaching a large number of people to answer a set of questions and they are mostly used to assess thoughts, opinions and feelings (Saunders et al., 2016). Thus, the study involved gathering of data in real life settings. Bryman and Bell (2015) note that primary data is information that the researcher gathers by using interview questionnaires, observation and tests. Primary data were gathered by use of questionnaires.

3.8 RESEARCH INSTRUMENTS

A research instrument is a tool used to collect, measure and analyse data related to the study (Creswell, 2014). Various research instruments are used in the collection of data. Quantitative research uses questionnaires and structured interviews (Rowley, 2014). Qualitative research uses in-depth interview guided, observation guide, and audio-visual material (Bhattacherjee, 2012).

The current study used the self-administered questionnaire as the primary data collection instrument. Acharya (2010) defines a questionnaire as a document containing questions and other types of items designed to solicit information appropriate for analysis. Questionnaires are well known for mitigating 'middle-man' bias. The questionnaire was relatively simple for the researcher to analyse, it limited the apprehensiveness of respondents when self-administered and avoids the elements of researcher intrusiveness of the respondents (Bell et al., 2018).

The use of a questionnaire was appropriate in this study as the study was descriptive in nature, and the data collected was used to suggest possible reasons for particular relationships business model variables and business performance. More so, the questionnaire offered many advantages to the current investigation. Firstly, data was easily gathered from a large number of people (Saunders et al., 2019). The researcher was able to gather voluminous data quickly and the data was presented in a way that it was easy to interpret.

The questionnaire had three sections. **Section A:** collected data such as age, education levels, years of experience. **Section B:** gathered data relating to the four supply chain collaboration dimensions, and lastly **Section C:** collecting data on operational performance data.

The questionnaire used the Likert scale to guide respondents to choose their answers. According to Saunders et al. (2019) the five point Likert scale "makes the response items standard comparable amongst the respondents and the answers are easy to code and analyse directly from the questionnaires." The Likert scale read 1=strongly disagree to 5=strongly agree to indicate the respondents' level of agreement for the supply chain collaboration and operational performance indicators.

The questionnaires was be made up of closed ended questions to facilitate easy statistical analysis of data. The study's questionnaire was greatly informed by the scholarly works of many scholars (Cao and Zhang 2011; Wu and Chiu 2018; Ahmed et al. 2019). However, the questions were adapted to suit the current study and context.

3.9. DATA COLLECTION PROCEDURE

The identified potential respondents were contacted and asked to participate in the study. The researcher first obtained permission from the University supervisor to start data collection. The researcher travelled physically to administer the questionnaires directly to the respondents from the selected firms in Masvingo. The questionnaires also addressed the research purpose in the invitation letter, along with the confidentiality of respondents' answers, so as to increase the response rate and eliminate response bias (Nikolić, Muresan, Feng and Singer, 2016). The researcher made follow-ups by calling at different times reminding respondents of the questionnaire (Saunders et al., 2019). Data were collected between August 2023 and September 2023.

3.10. Data analysis and presentation procedure

According to Peersman (2014) data analysis procedure includes the act of packaging the collected information, putting it in order and structuring its main components in a way that the findings can be easily and effectively communicated. The essential sequential operations for data included editing, coding and data entry. The aim of editing questionnaires was meant to achieve consistency within the collected data and detect, correct and eliminate any outliers (Bell, 2014; Ponterotto, 2017). As such, the completed questionnaires were edited for ensuring completeness and consistency in the responses. On the other hand, coding was a necessary step since the data was to be processed by computer software.

The researcher collected data from the respondents and tabulated it by compiling the frequency table in accordance with the Likert-scale. In analysing data, the researcher used both Microsoft Excel and the Statistical Package for the Social Sciences (SPSS) version 25 to facilitate the analysis of quantitative research data. The data for the study was analysed through both descriptive (mean, standard deviation) and inferential statistics (Pearson correlation and multiple linear regression analysis) to address the research objectives. Frequencies tables, pie charts, and graphs were used to present data.

3.10 RELIABILITY AND VALIDITY

Validity is defined by Gorsuch (2015) as the extent to which an instrument measures what it is supposed to measure. Another definition by Golicic and Davis (2012), interprets validity as the extent to which a particular measure is free from both systematic and random error. The two types of validity which were of interest for this study were content validity, the degree of correspondence between the items selected to constitute a summated scale and its conceptual definition and construct validity. Construct validity can be demonstrated by showing whereby a study construct is related to various other measures as specified in the theory (Henseler, Ringle and Sinkovics, 2016).

Important to note, the study's variables were derived from accepted theories that were tested in previous studies and indicated positive results. Lastly, in order to guarantee construct validity, the researcher identified a group of measurement items that were proven in previous studies to measure supply chain collaboration sub-variables and operational performance (Bryman and Bell, 2018). Hence the study adopted the instrument for the study.

To enhance face validity, the supervisor and supplier development professionals were consulted during and after preparation of the questionnaire. They commented on the appropriateness of the language for all the questions in the survey. The current study ensured content validity by including all the supply chain collaboration elements in the research instruments.

Reliability refers to the degree of consistency or accuracy with which an instrument measures the attribute it is designed to measure (Saunders et al., 2019). The research objectives and the problem statement were measured against the results of the study with the main purpose of finding out whether or not we measure what is intended to be measured and efficiency of the measurement. Reliability deals with the level at which study findings are repeatable (Bell et al., 2018).

Reliability of the questionnaire was determined by using Cronbach's Alpha test. Cronbach's alpha is the widely used index to determine reliability (Saunders et al., 2019). Cooper and Schndler (2017) claims that acceptable reliability is indicated by alpha values from 0.75 to 1. Sekeran and Bougie (2019) adds that "reliabilities that are less than 0.6 are rated poor, those in the range of 0.7 are acceptable while those over 0.8 are considered really well". To enhance reliability, the current study's questionnaire adapted more that 80 % of the questionnaire items from previously used scales.

On the other hand, reliability of the qualitative study was addressed by a detailed description of the research process, presented in the first part of this chapter, to ensure a level of transparency (Shenton, 2004), which makes the repeatability of this study possible to a certain degree.

3.11 ETHICAL CONSIDERATIONS

According to Saunders et al. (2019), ethics refers to norms or standards for conduct that distinguish between right and wrong. The following is the explanation of ethical consideration as described by Bell et al. (2018), and this was adhered to strictly in the course of conducting this research.

All willing research participants were thoroughly informed beforehand that there will be no potential harm from the study. Although there was no harm, research participants were still given absolute freedom to either share their own narratives or not in whatever way they felt comfortable with. The researcher requested that all the participants should complete a consent form indicating their willingness to be a part of the research process.

In this study, no identifying information was collected and the researcher assured all the participants that effort will be made to ensure that in the final report the data they would have provided will not be traced. The researcher also used pseudo names to preserve anonymity of study participants.

Lastly, the researcher had a non-disclosure of information agreement with the study participants. Information on supply chain collaborations and business performance data was to be kept in strict confidence. The researchers assured the participants that all questionnaires will be kept in a lockable safe.

3.12 CHAPTER SUMMARY

The philosophy and research design that guided the research design and approach were provided in this chapter. A survey study technique and numerous quantitative approaches were used in this investigation. This chapter also introduced and examined the research population, data gathering instruments, data collection methods, and data analysis. Furthermore, the chapter addressed sample size, sampling methodology, instrument reliability and validity, as well as ethical aspects. The next chapter gives analyses and examines the study's findings.

CHAPTER FOUR

DATA PRESENTATION, ANALYSIS, AND DISCUSSION OF FINDINGS

4.0 INTRODUCTION

Chapter three covered the research methodology employed for the study. This chapter focuses on the presentation, analysis, and discussion of the study's empirical results. The Microsoft Excel was used to analyse the research data. The first section covered the questionnaire response rate followed by the reliability of the instrument. Data was analysed in the order of their appearance in the questionnaire that is from section A to section C. The chapter wraps with the chapter summary.

4.1 QUESTIONNAIRE RESPONSE RATE

The study had a sample size of 152 respondents and of these 138 completed and returned the questionnaires. This translated to a response rate of 91%. This is an acceptable response rate, considering the business environment the organisations are operating in.

4.2 QUESTIONNAIRE RELIABILITY

The researcher pilot tested the questionnaire and the following results were found. Table 4.1 illustrates that the alpha coefficient values ranged from 0.765 to 0.992, with an average index above 0.876. This demonstrated that questionnaire reliability was high and acceptable.

Table 4.1: Questionnaire reliability

CONSTRUCT	QUESTIONS	ALPHA VALUE	COMMENT
Supplier collaboration	5	0.892	Very reliable

Customer collaboration	5	0.962	Very reliable
Internal collaboration	5	0.883	Very reliable
External collaboration	5	0.896	Very reliable
Supply chain performance	5	0.765	Reliable
Average	**20**	**0.876**	**Internally reliable**

Source: SPSS Output (2023)

4.3 DEMOGRAPHIC DATA FOR RESPONDENTS

4.3.1 Gender

Table 4.1 shows the distribution of study respondents based on their gender. The pie chart below shows that 23% are female while 77% are male. Thus, the study results reveal that the majority of the respondents were males. This can be considered a true reflection of the population structure of staff concerning gender in the Zimbabwe's industrial sector.

Figure 4.1: Gender distribution
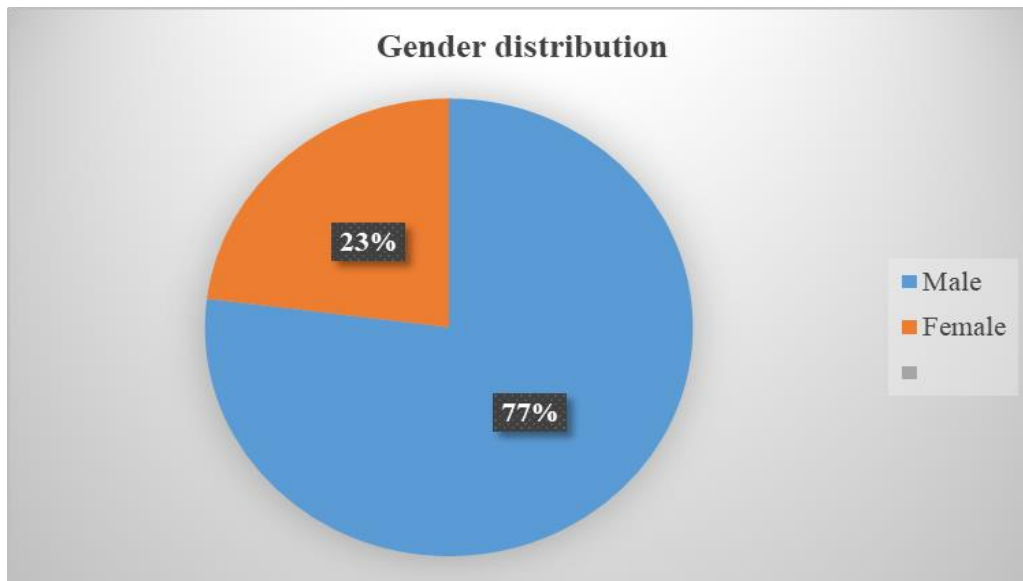
Source: SPSS Output (2023)

These findings concur with Mazuruse et al. (2021) who observes that more male entrepreneurs occupy senior positions in many companies.

4.3.2 Age

The results indicates that 11% of the study respondents were aged between 18 and 31 years while the majority (40%) are in the range of 32 and 42 years. More so, 31% were aged between below 43 years and 53 years. Lastly 18% are in the range 54 and 64 years. These results are illustrated in table 4.2 below.

Figure 4.2: Age distribution

Age distribution

40 (32-42)				
31 (43-53)				
18 (54-64)				
11 (18-31)				0 (65+)

18-31   32-42   43-53   54-64   65+
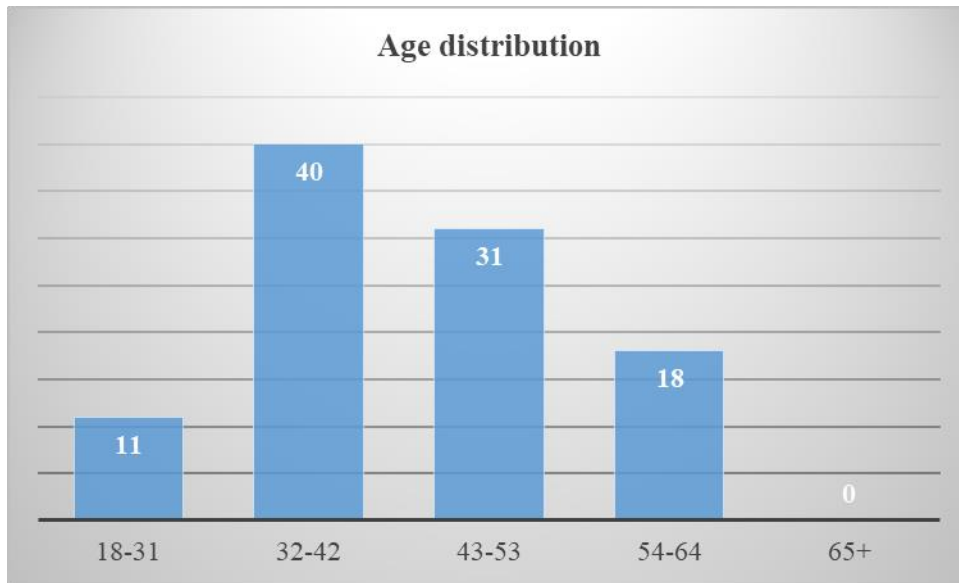
Source: SPSS Output (2023)

Figure 4.2 shows that there is a diverse workforce, of all ages. Very few are above 50 years, hence this indicates that the agro companies are being managed by young and vibrant people who are alert of the economic environment and can respond and adapt quickly to the changes in the environment.

4.3.3 Level of education

The educational level is an important issue in business management. Generally firms with educated managers are likely to perform much better than those manned with uneducated people. The researcher requested the participants to indicate their level of education. The results are illustrated in table 4.3 below.

Figure 4.3: Level of education
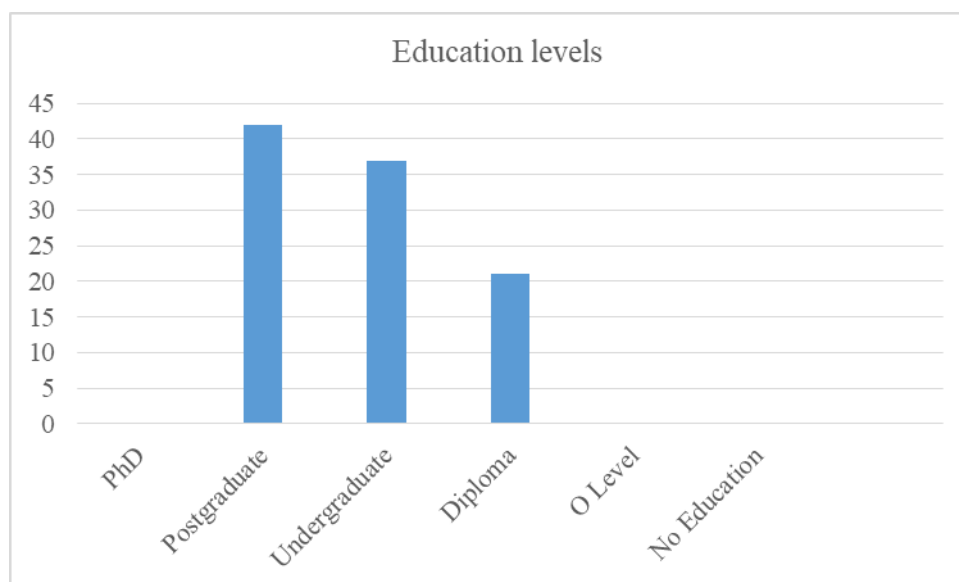
Source: SPSS Output (2023)

The results indicated none of the respondents had a PhD certificate, ordinary level education or even no education. However, the study results indicate that the majority of the employees are holders of postgraduate certificate that is masters degrees.

4.4 DESCRIPTIVE STATISTICS

4.5.1 Supply chain collaborations dimensions

This section analyses descriptive data for the four constructs of SCC. Analysis of data is done using mean, and standard deviation. The combination of mean, and standard provide a clear picture of description of results. Descriptive statistics are presented in the order of the objectives.

4.4.1 Supplier collaboration

The respondents were required to rate various statements using a scale of 5-1 (SA=strongly agree, A=Agree, N=Neutral, D=Disagree, SD=Strongly Disagree). The

descriptive results for each items used to measure Supplier collaboration are presented in Table 4.2

Table 4.2: Supplier collaboration

CODE	ITEM	M	SD
SC1	There is a two-way, mutually beneficial relationships with our most strategic supply partners	3.03	1.47
SC2	There is greater levels of innovation and competitive advantage in supplier collaborations	3.49	1.92
SC3	The focus of supplier collaboration is to ensure that the right materials are delivered at the right time and location.	3.27	1.65
SC4	We rely on our suppliers than before.	3.42	1.23
SC5	The primary function of supplier collaboration is to create a balance between the demand and the supply	3.22	1.52
	OVERALL RATING	**3.29**	**1.53**

Source: SPSS Output (2023)

Table 4.2 illustrate that item SC1 "There is a two-way, mutually beneficial relationships with our most strategic supply partners" received the least rating (M = 3.03, SD = 1.47); suggesting that owner/mangers placed the least importance on this aspect. Item SC2 "There is greater levels of innovation and competitive advantage in supplier collaborations" had the highest score (M = 3.49, SD = 1.92); implying that respondents placed the most importance in this aspect. The overall item mean ± SD was 3.29±1.53 (somewhat agree) out of a possible score of 5 (strongly disagree). This implies that generally participants agreed that they supplier collaboration. Findings illustrate that respondents define partnerships as purposive strategic relationships between independent firms who share compatible goals, strive for

mutual benefit, and acknowledge a high level of mutual interdependence. Also the findings illustrate that supplier management is a business process that allows a company to adequately select its vendors and negotiate the best prices for goods and services that it purchases (Arthur 2017).

4.4.2 Customer collaboration

The respondents were required to rate various statements using a scale of 5-1 (SA=strongly agree, A=Agree, N=Neutral, D=Disagree, SD=Strongly Disagree). The descriptive results for each items used to measure customer collaboration are presented in Table 4.3.

Table 4.3: Customer collaboration

CODE	ITEM	M	SD
CC1	We frequently interact with customers to set reliability, responsiveness, and other standards for us.	3.79	1.00
CC2	We frequently measure and evaluate customer satisfaction.	3.84	1.87
CC3	We frequently determine future customer expectations	3.17	1.27
CC4	We facilitate customers' ability to seek assistance from us.	3.79	1.08
CC5	We periodically evaluate the importance of our relationship with our customers.	3.62	1.29
	OVERALL RATING	**3.64**	**1.30**

Source: SPSS Output (2023)

The table shows that five items measured customer collaboration. The findings are illustrate that items CC1 and CC4 had the identical mean scores but different standard deviations. Respondents placed more importance on CC1 "We frequently interact with customers to set reliability, responsiveness, and other standards for us." as it attained

a rating (M=3.79; SD=1.00) with CC4 item "We facilitate customers' ability to seek assistance from us" getting a rating (M=3.79; SD=1.08). However, their standard deviations differ by 0.08. Item CC3 "We frequently determine future customer expectations" had the least rating scoring (M=3.17; SD=1.27) while item CC2 "We frequently measure and evaluate customer satisfaction." had the highest rating scoring (M=3.84; SD=1.87). The overall item mean ± SD was 3.64±1.31 (somewhat agree) out of a possible score of 5 (strongly disagree).

The logic of firms having strong relationships with customers, consumers and even end users is self-evident in the findings of the study. The findings illustrate that the "customer" is a channel in a distribution system charged with the task of navigating a path to the ultimate user of a product (Wu et al., 2020). Thus, developing relationships with channel partners becomes a potential source of strategic advantage when they work with a supplier to find consumers and end users (Bowersox, 1990).

4.4.4 Internal collaborations

The respondents were required to rate various statements using a scale of 5-1 (SA=strongly agree, A=Agree, N=Neutral, D=Disagree, SD=Strongly Disagree). The descriptive results for each items used to measure Internal collaborations are presented in Table 4.4.

Table 4.4: Internal collaborations

CODE	ITEM	M	SD
IC1	Top management provides the support and commitment needed for business success	4.27	0.98
IC2	Top management provide an integrated approach between the actors in the supply chain	4.01	1.29
IC3	Managers 'sell' the idea of collaboration in the internal environment of their organisations	3.73	1.33

IC4	Top management provides a culture founded on teamwork	3.54	1.51
IC5	Manager's physical appearance always enhance employee satisfaction	3.35	1.00
	OVERALL RATING	**3.78**	**1.22**

Source: SPSS Output (2023)

Table 4.4 above shows that item IC1 "Top management provides the support and commitment needed for business success" was important to respondents as it had the highest rating (M=4.27; SD=0.98). However, participants placed the least significance on item IC5 aspect of proactiveness "Manager's physical appearance always enhance employee satisfaction" as it scored (M=3.35; SD=1.00) and this implies that this element of SCC was not taken all that seriously. On the other hand, the grand mean ± SD stood at 3.78±1.22 (agree) out of a possible 5 (strongly agree). This reflects a high level of agreement on internal collaboration within the organisations. With regard to internal collaboration, findings illustrate that top management, engagement, support and commitment is vital to the implementation of collaborative practices in the organisation (Fawcett et al., 2016). With this approach, respondents claim that the actors in the supply chain can be superficial and ineffective.

4.4.4 External collaboration

The respondents were required to rate various statements using a scale of 5-1 (SA=strongly agree, A=Agree, N=Neutral, D=Disagree, SD=Strongly Disagree). The descriptive results for each items used to measure External collaboration are presented in Table 4.5.

Table 4.5: External collaboration

CODE	ITEM	M	SD
EX1	We interact with our partners	4.08	0.94

EX2	There is direct communication with supply partners	3.97	1.06
EX3	We have a number of external partners we are dependent upon.	3.86	1.03
EX4	We have a high intensity of collaboration with each supply partner	3.64	1.00
EX5	Manager's physical appearance always enhance employee satisfaction	3.52	1.14
	OVERALL RATING	**3.77**	**1.03**

Source: SPSS Output (2023)

The study measured external collaboration by five items, and their mean scores and standard deviations are as illustrated in the Table 4.5 above. The overall item mean ± SD was 3.77±1.03 (agree) out of a possible score of 5 (strongly disagree). This is evidence of a high level of agreement to the statements. Items EX1 "We interact with our partners" had the greatest mean scores (M=4.08; SD=0.94) indicating that the study respondents place much significance on this aspect. Item EX5 "Manager's physical appearance always enhance employee satisfaction" had the least rating (M=3.52; SD=1.14). This implies that the respondents placed less importance on this aspect.

Findings illustrate that external collaboration provides an interdependent and win-win relationship between a firm and its partners linked by interactive, open, and direct communication, which supports the firm's innovation and experimentation, and thus creates beneficial outcomes for all participants (Jap, 2001). Thus agro-processers stress the need to acquire diverse new knowledge, organize value-creation activities and improve competitive advantage, because in the networked society the locus of innovation resides not inside the firm, but in the interstices between the firm and its external partners (Wang et al., 2015).

4.5 HYPOTHESES TESTING

4.5.1 Customer collaboration and operational performance

To determine the relationship between Customer collaboration and operational performance, inferential statistics were calculated with Customer collaboration as the independent variable and operational performance as the dependent variable. The multiple linear regression model summary is shown in Table 4.6 below:

Table 4.6: Customer collaboration and operational performance Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.421a	.177	.243	1.030227E0	.272	3.202E0	3	19	.038

a. Predictors: (Constant), Customer collaboration

b. Dependent Variable: Operational

      performance

Source: Primary data (2023)

The correlation coefficient measures the strength and direction of a linear relationship between two variables. Table 4.6 above shows that R=0.421. This signifies a moderate positive linear relationship between customer collaboration and operational performance. These findings are supported by earlier research findings, for instance, Pfanelo (2017) established that customer collaboration is significantly related to supply chain performance in South Africa. More so, Statsenko and staZubielqui (2019) believe that a good information sharing system allows customers to access the organisation's history details freely.

4.5.2 Supplier collaboration and operational performance

To determine the relationship between supplier collaboration and operational performance, inferential statistics were calculated with supplier collaboration as the independent variable and operational performance as the dependent variable. The linear regression model summary is shown in Table 4.7 below.

Table 4.7: Supplier collaboration and operational performance Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.562ᵃ	.316	.298	.78437	.476	4.782E 0	3	19	.023

a. Predictors: (Constant), Supplier collaboration

b. Dependent Variable: Operational performance

Source: Primary data (2023)

The correlation coefficient R measures the strength and direction of a linear relationship between two variables. Table 4.4 shows that R = 0.562. Interpreted, this signifies an above average strong linear relationship between supplier collaboration and operational performance. These findings are supported by previous findings. For instance, Kafouros et al. (2020) established that excelling supplier collaboration ultimately enhance operational performance. Additionally, Feng et al. (2020) posit that supplier collaboration gives room for information sharing that reducing information costs associated with research and development. Lahiri and Kedia (2011) noted that benefits associated with such close partnerships between the focal firm and its suppliers may include "customer satisfaction, enhanced perception of fairness and justice, customer loyalty, relationship satisfaction, positive word-of-mouth, repeat transactions and business continuity".

4.5.3 Internal collaboration and operational performance

To determine the relationship between internal collaboration and operational performance, inferential statistics were calculated with internal collaboration as the independent variable and operational performance as the dependent variable. The linear regression model summary is shown in Table 4.8 below:

Table 4.8: Internal collaboration and operational performance Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.762[a]	.581	.459	1.19857E0	.206	3.873E0	3	19	.042

a. Predictors: (Constant), Internal collaboration

b. Dependent Variable: operational

      performance

Source: Primary data (2023)

The correlation coefficient measures the strength and direction of a linear relationship between two variables. Table 4.8 above shows that R=0.762. Interpreted this signifies a strong linear relationship between internal collaboration and operational performance. The findings suggest that internal collaboration positively influences speed performance. The findings of the study validate earlier findings on internal collaboration and supply chain performance. For instance, Achuora (2018), through internal collaborations, employees, departments and work stations can work with others who can share responsibility for product success. Thongrawd et al. (2019) note that such strategic internal collaborations should enable SCM to succeed. Shahbaz et al. (2019) supported the positive relationship between internal collaboration and supply chain performance. Shahbaz et al. (2019) note that information sharing between departments are significantly effecting supply chain performance.

4.5.1 External collaboration and operational performance

To determine the relationship between External collaboration and operational performance, inferential statistics were calculated with External collaboration as the independent variable and operational performance as the dependent variable. The linear regression model summary is shown in Table 4.9 below:

Table 4.9: External collaboration and operational performance Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.421a	.177	.243	1.030227E0	.272	3.202E0	3	19	.038

a. Predictors: (Constant), External collaboration

b. Dependent Variable: External collaboration and operational performance

Source: Primary data (2023)

The correlation coefficient measures the strength and direction of a linear relationship between two variables. Table 4.9 above shows that R=0.421. This signifies a moderate positive linear relationship external collaboration and operational performance.

These findings are in line with other claims. External collaboration helps coordinate tasks and solve problems (Ragatz, Handfield, and Peterson 2002), improve product quality (Rosenzweig, Roth, and Dean 2003), reduce the lead time (Sherman, Souder, and Jenssen 2000), enhance flexibility and ensure delivery (Schoenherr and Swink 2012). Shukor et al. (2020) suggested that strong relationships exist between customer, supplier (external collaboration), internal integration (internal collaboration), and supply chain performance according to agility and flexibility. The findings of Vereecke and Muylle (2006) also suggest that improving collaboration with

externals enabled European firms reap maximum benefits in terms of improvement of performance, whilst collaboration with only one resulted in only minor benefits.

Stank et al. (2001) explored the impact of internal collaboration and external collaboration on logistics performance using data from firms in North America. Their findings indicated that external collaboration influences increased internal collaboration, which in turn improves service performance. Panahifar et al. (2018) conducted a study to identify and assess the interrelationships between various characteristics of information sharing and trust and their criticality for effective information-centred supply chain collaboration initiatives and, in turn, its criticality to overall firm's performance. Findings indicated that external collaboration improves supply chain collaboration and ultimately firm performance.

4.6 HYPOTHESES TESTING SUMMARY

Table 4.10 presents a summary of the results of hypotheses testing.

Table 4.10: Summary of results of hypotheses testing

	Hypothesis	Results
H_1	Customer collaboration positively influences the operational performance of agro-processing organisations in Masvingo province.	Supported ($p<0.05$)
H_2	Supplier collaboration positively influences the operational performance of agro-processing organisations in Masvingo province.	Supported ($p<0.05$)
H_3	Internal collaboration positively influences the operational performance of agro-processing organisations in Masvingo province.	Supported ($p<0.05$)
H_4	External collaboration positively influences the operational performance of agro-processing organisations in Masvingo province.	Supported ($p<0.05$)

Source: Prepared for this research (2023)

These results reveal that the five hypotheses tested were accepted at 5% level of significance while only one was rejected also at 5 % level of significance.

4.7 CHAPTER SUMMARY

This chapter has presented the analysis and interpretation of the research results based on a quantitative analysis of the data. Quantitative data were analysed using both descriptive and inferential statistics. Data were presented using graphs, tables, and pie charts. Descriptive statistics covered percentages, mean and the standard deviation while inferential statistics included correlation coefficient, ANOVA. Data were presented in their order as illustrated in the questionnaire. Chapter five presents the summary of the study, conclusions and recommendations.

CHAPTER FIVE

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.1 INTRODUCTION

The previous chapter presented and discussed the research's empirical findings. Based on the study findings, this chapter presents the summary of the study, its main conclusions, and the proposed recommendations to the management of agro-processors in Masvingo. This chapter also presents the study's key limitations and areas for future studies. The first section of this chapter provides the summary of the study, followed by the study conclusions. The chapter makes proposals for recommendations based on the study findings followed by the study's limitations and areas for further study.

5.2 SUMMARY OF THE STUDY

Chapter one of the study presented the background of the study, the problem statement, research objectives, research questions, research hypotheses, and significance of the study, assumptions, delimitations, limitations and the structure of the study. Chapter two reviewed both theoretical literature and empirical literature on the relationship between supply chain collaboration and operational performance of agro-processors in Masvingo. Chapter three presented the methodology and methods used to fulfil the research objectives. Thus, it covered concepts such as the descriptive and exploratory research designs, target population, sample size and sampling procedures, questionnaire structure and administration, validity and reliability of the questionnaire and its findings, and analysis techniques and the ethical considerations. Chapter four presented, analysed and discussed the research results. Chapter five presents the study's summary as well as conclusions drawn from the findings. The chapter also gives recommendations based on the conclusions in the study. Lastly, areas for further study are given and the study limitations.

5.3 SUMMARY OF THE FINDINGS

5.3.1 Research objective one

The first objective aimed at establishing the impact of customer collaboration on operational performance. The results shows that the hypothesis that customer collaboration positively impacts operational performance was accepted. The results indicate that Pearson correlation coefficient between customer collaboration and operational performance is 0.902 together with a p value of 0.421.

5.3.2 Research objective two

The second objectives investigated the link between supplier collaboration and supply operational performance. Descriptive statistics showed an increase in supply chain operational performance. The results shows that the Pearson correlation coefficient between supplier collaboration and operational performance of 0.316 together with a p value of 0.039. Thus, there is a moderate and positive correlation between the two variables. Thus the study accepted the hypothesis that supply collaboration and operational performance.

5.3.3 Research objective three:

The third objective aimed at establishing the influence of internal collaboration on operational performance. The one tailed test of significance indicated that there was a significantly positive correlation between internal collaboration and performance (pc =0.581, p=0.32). Thus, the study accepted the hypothesis that internal collaboration enhances operational performance.

5.3.4 Research objective four

The last objective investigated the link between external collaboration and operational performance at. Descriptive statistics showed an increase in operational performance. The results shows that the Pearson correlation coefficient between supplier collaboration and supply chain quality performance of 0.177 together with a p value of 0.039. Thus, there is a weak and positive correlation between the two variables.

Thus the study accepted the hypothesis that supply collaboration and operational performance.

5.4 CONCLUSIONS

5.4.1 Research objective one

The results of the quantitative study revealed that there is a strong relationship between customer collaboration and operational performance. The study concludes that supply chain members need to understand ways to enhance customer collaboration so as to enhance operational performance. The study also concludes that customer collaboration is a good approach to enhancing operational performance.

5.4.2 Research objective two

The regression analysis results showed that there is a positive relationship between supplier collaboration and operational performance. Thus, the study concludes that supplier collaboration is one of the main approaches to enhance operational performance. Organisations seeking to enhance their performance should thus collaborate with their various suppliers.

5.4.3 Research objective three

The study indicated that there was a significant and positive relationship between internal collaboration and operational performance. Thus the study concludes that organisations should strive to motivate their internal market to enhance working together spirit in order to enhance operational performance.

5.4.4 Research objective four

The regression analysis results showed that there is a positive relationship between external collaboration and operational performance. Thus, the study concludes that supplier collaboration is one of the main approaches to enhance operational performance. Organisations seeking to enhance their performance should thus collaborate with their various external organisations.

5.5 RECOMMENDATIONS

5.5.1 Given the study's key findings on the influence of customer collaboration on supply operational performance, it is recommended that agro-processors develop CRM strategies aimed at enhancing customer relationship. This will allow the companies to nurture and harness relationships with customers. Constant communication with customers allows the company to know the needs and wants of the customers.

5.5.2 Given the existence of a positive relationship between supplier collaboration and supply chain performance, management needs to continuously nurture their relationships with other supply chain partners so as to improve on supply chain planning, customer satisfaction, demand satisfaction, and new product and service development. Supply chain managers should consider other collaboration strategies with all other suppliers of its raw materials.

5.5.3 The management of agro-processing firms need to invest extensively in employees training by emphasizing and promoting the culture of learning organizations that is different from the current trends where many institutions use seminars and workshops as the only method of training. Management should also employ professional trained procurement staff and continuously train the staff on emerging issues on procurement practices.

5.5.4 Given the existence of a positive relationship between external collaboration and supply chain performance, management need to continuously nurture their relationships with various external partners. In the networked society the locus of innovation resides not inside the firm, but in the interstices between the firm and its external partners.

5.6 LIMITATIONS OF THE STUDY

The sample for the study was based on a selected sample chosen from agro-processors in Masvingo only. Hence, the findings are limited to the Masvingo only and should not be generalized beyond this context. Nonetheless, the findings could have relevance to organisations in other parts of Zimbabwe. Secondly, the study used self-administered questionnaires with closed ended questions only as the research instrument. The challenge with the closed ended questionnaires is that they do not allow the participants to air out their own lines of thinking. It is recommended that similar studies be carried with other sectors in Zimbabwe using big and more representative samples to determine whether the results of this study are authentic. A more effective scale needs to be developed to measure supply chain collaboration. In addition, future researchers need to conduct longitudinal studies to investigate the relationship between supply chain performances.

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APPENDIX A: QUESTIONNAIRE

Introduction

My name is Getrude Chisasa, I am a Master of Commerce in Strategic Management student at the Great Zimbabwe University (GZU). In partial fulfilment of my study programme, I am required to carry out a study in a business related field. So I am kindly asking for your participation in my research through completing this questionnaire. My study topic is **"THE IMPACT OF SUPPLY CHAIN COORDINATION ON OPERATIONAL PERFORMANCE OF AGRO PROCESSING ORGANISATIONS MASVINGO PROVINCE"**

This questionnaire is divided into four sections that is Section A, Section B, and Section C. On average it will take 15 to 20 minutes to answer this questionnaire. The information gathered will be used for academic purposes and also do not provide your name on this questionnaire. This is a measure to ensure that the opinions you express as part of this research are confidential.

General Instructions

1. Place ticks in the boxes or spaces provided to indicate your response. You can also write where the spaces are provided.
2. Be free to express your sincere views as this survey is for academic purposes. There are no wrong or right answers.

SECTION A: DEMOGRAPHIC INFORMATION

This section requires you to put an 'X' in the appropriate box.

1	**Gender**		Male	**1**	Female		**2**

2	**Age**	18-31	32-42	43-53	54-64	65+
		1	**2**	**3**	**4**	**5**

3	**Level of Education**	PhD	Postgraduate	Undergraduate	Diploma	O Level	No Education
		1	**2**	**3**	**4**	**5**	**6**

SECTION B: SUPPLIER COLLABORATION

Please rate how strongly you agree or disagree with supplier collaboration. Please tick the applicable using Likert's 5- point scale as indicated below.

	SUPPLIER COLLABORATION	Strongly	Disagree	Undecided	Agree	Strongly agree
		1	**2**	**3**	**4**	**5**
5	There is a two-way, mutually beneficial relationships with our most strategic supply partners					
6	There is greater levels of innovation and competitive advantage in supplier collaborations					
7	The focus of supplier collaboration is to ensure that the right materials are delivered at the right time and location.					
8	We rely on our suppliers than before.					
9	The primary function of supplier collaboration is to create a balance between the demand and the supply					

SECTION C: CUSTOMER COLLABORATION

Please rate how strongly you agree or disagree with the customer collaboration. Please tick the applicable using Likert's 5- point scale as indicated below.

CUSTOMER COLLABORATION		Strongly disagree	Disagree	Undecided	Agree	Strongly agree
		1	2	3	4	5
11	We frequently interact with customers to set reliability, responsiveness, and other standards for us.					
12	We frequently measure and evaluate customer satisfaction.					
13	We frequently determine future customer expectations					
14	We facilitate customers' ability to seek assistance from us.					
15	We periodically evaluate the importance of our relationship with our customers.					

SECTION D: INTERNAL COLLABORATION

Please rate how strongly you agree or disagree with internal collaboration.

Please tick the applicable using Likert's 5- point scale as indicated below.

	INTERNAL COLLABORATION	Strongly disagree	Disagree	Undecided	Agree	Strongly agree
		1	2	3	4	5
17	Top management provides the support and commitment needed for business success					
18	Top management provide an integrated approach between the actors in the supply chain					
19	Managers 'sell' the idea of collaboration in the internal environment of their organisations					
20	Top management provides a culture founded on teamwork					
21	Manager's physical appearance always enhance employee satisfaction					

SECTION D: EXTERNAL COLLABORATION

Please rate how strongly you agree or disagree with internal collaboration.

Please tick the applicable using Likert's 5- point scale as indicated below.

	EXTERNAL COLLABORATION	Strongly disagree	Disagree	Undecided	Agree	Strongly agree
		1	2	3	4	5
22	We interact with our partners					
23	There is direct communication with supply partners					
24	We have a number of external partners we are dependent upon.					
25	We have a high intensity of collaboration with each supply partner					
26	Manager's physical appearance always enhance employee satisfaction					

SECTION E: OPERATIONAL PERFORMANCE

Please tick (√) on the appropriate question number to indicate the extent to which you agree or disagree with each statement as a result of application of selected supply chain collaboration practices. There is no right or wrong response, the question asks for your opinion.

		Very Poor	Poor	Indifferent	Good	Excellent
	OPERARTIONAL PERFORMANCE	1	2	3	4	5
FP1	Our supply chain costs have reduces					
FP2	The growth of sales is increasing from time to time					
FP3	Our product availability has increased					
FP4	Our supply chain operations are flexible					
FP5	Overall financial performance is better than before					

END OF QUESTIONNAIRE

THANK YOU