

**THE IMPACT OF SUPPLY CHAIN INTEGRATION ON SUPPLY CHAIN VISIBILITY IN
MANUFACTURING FIRMS IN UGANDA: A CASE OF CENTURY BOTTLING COMPANY
(COCA COLA)**

ESTHER KYASIIMIRE

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**A DISSERTATION SUBMITTED TO THE SCHOOL OF BUSINESS, IN PARTIAL
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UNIVERSITY**

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**UGANDA CHRISTIAN
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DECLARATION

I, Kyasiimire Esther hereby declare that this research report entitled “the impact of supply chain integration on supply chain visibility in manufacturing firms in Uganda: a case of Century Bottling Company (Coca Cola),” has never been submitted to any institutions of higher learning for any award. Where people’s work has been copied, reference has been made to that effect.

Signed.....

Date.....

KYASIIMIRE ESTHER

M21B12/025

APPROVAL

This is to certify that this research report entitled, “the impact of supply chain integration on supply chain visibility in manufacturing firms in Uganda: a case of Century Bottling Company (Coca Cola),” has been under my supervision and it’s now ready for submission to the School of Business of Uganda Christian University with my approval.

Signed.....

Date.....

MR. TUMUHAMYE DUNCAN

(Supervisor)

DEDICATION

With special regard, I wish to dedicate this piece of work to my dear parents , family and friends who have always been there to support me in my education and who have always encouraged and motivated me spiritually, physically and emotionally.

ACKNOWLEDGEMENT

I would like to thank the Almighty God for the gift of life and guiding me throughout my education; it has not been easy but it was possible.

My heartfelt gratitude goes to my supervisor, Mr. Tumuhameye Duncan for the tireless efforts and expertise he rendered to me during his supervision.

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Lastly, special thanks go to the management of Coca –Cola Company who allowed me to carryout research from their organizations and also provided me with all the data that were needed to complete my research report.

God bless you all.

Table of Contents

DECLARATION	i
APPROVAL	ii
DEDICATION	iii
ACKNOWLEDGEMENT	iv
LIST OF FIGURES	viii
LIST OF TABLES	ix
LIST OF ACRONYMS	x
ABSTRACT	xi
CHAPTER ONE	1
INTRODUCTION	1
1.0 Introduction.....	1
1.1 Background of the study.....	1
1.2 Problem statement.....	2
1.3 Purpose of the study.....	3
1.4 Objectives of the study	3
1.5 Research questions.....	4
1.6 Scope of the study.....	4
1.6.1 Content scope	4
1.6.2 Geographical scope	4
1.6.3 Time scope	4
1.7 Conceptual framework.....	5
1.8 Significance of the study.....	5
1.9 Anticipated challenges	6
1.10 Operational definition	6
CHAPTER TWO	7
LITERATURE REVIEW	7
2.0 Introduction.....	7
2.1 Concept of Supply Chain Integration.....	7

2.2 Concept of Supply Chain Visibility	8
2.3 Relationship between supplier ICT and supply chain visibility in manufacturing firms	9
2.4 The drivers of supply chain integration in manufacturing firms	10
2.5 Key success factors for supply chain integration in manufacturing firms.....	12
2.6 Research gap	13
CHAPTER THREE	14
RESEARCH METHODOLOGY.....	14
3.0 Introduction.....	14
3.1 Research Design	14
3.2 Area of Study	14
3.3 Study Population.....	15
3.4 Sampling	15
3.4.1 Sample size.....	15
3.4.2 Sampling methods	16
3.5 Data collection tools	17
3.5.1 Questionnaire.....	17
3.5.2 Interview Guide.....	17
3.6 Data management and control	17
3.6.1 Validity.....	17
3.6.2 Reliability	18
3.7 Data Analysis.....	18
3.7.1 Quantitative data analysis.....	18
3.7.2 Analysis of qualitative data	19
3.8 Ethical Issues	19
3.9 Limitations of the Study	19
CHAPTER FOUR.....	21
DATA PRESENTATION AND INTERPRETATION OF FINDINGS.....	21
4.0 Introduction.....	21
4.1 Findings on demographic characteristics of respondents	21
4.2 Relationship between supplier ICT and supply chain visibility in manufacturing firms in Uganda.....	23

4.3 Drivers of supply chain integration in manufacturing firms in Uganda	26
4.4 The key success factors for supply chain integration in manufacturing firms	28
CHAPTER FIVE.....	31
DISCUSSION OF FINDINGS, SUMMARY, CONCLUSION AND	
RECOMMENDATIONS	31
5.0 Introduction.....	31
5.1 Discussion of findings.....	31
5.1.1 Relationship between supplier ICT and supply chain visibility in manufacturing firms in Uganda.....	31
5.1.2 Drivers of supply chain integration in manufacturing firms in Uganda.....	32
5.1.3 The key success factors for supply chain integration in manufacturing firms	33
5.2 Summary of findings.....	34
5.3 Conclusions.....	35
5.4 Recommendations	36
5.5 Areas for further research	37
REFERENCES	38
APPENDICES	41
APPENDIX 1: QUESTIONNAIRE	41
APPENDIX 2: INTERVIEW GUIDE.....	45

LIST OF FIGURES

Figure 1: Conceptual framework.....	5
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LIST OF TABLES

Table 1: Showing population and sample size	16
Table 2: Background Information about the respondents	21
Table 3: Relationship between supplier ICT and supply chain visibility.....	23
Table 4: Pearson's correlation on supplier ICT and supply chain visibility	25
Table 5: Drivers of supply chain integration in manufacturing firms in Uganda	26
Table 6: The key success factors for supply chain integration in manufacturing firms.....	28

LIST OF ACRONYMS

EDI: - Electronic Data Interchange

ERP: - Enterprise Resource Planning

ICT: - Information Communication Technology

SCI: - Supply chain integration

SCM: - Supply Chain Management

SCV: - Supply Chain Visibility

SPSS: - Statistical Package for Social Sciences

ABSTRACT

The study examined the impact of supply chain integration on supply chain visibility in manufacturing firms in Uganda: a case of Century Bottling Company (Coca Cola). It specifically focused on; examining the relationship between supplier integration and supply chain visibility in manufacturing firms, examining the drivers of supply chain integration in manufacturing firms in Uganda and examining the key success factors for supply chain integration in manufacturing firms in Uganda.

The study was carried out using a cross sectional survey research design where both quantitative and qualitative research approaches were also used. The data was collected using questionnaires and interviews during the data collection, both purposive and stratified sampling methods were used. A sample size of 80 respondents who are management and employees of Century Bottling Company (Coca Cola) was also used in the study.

The study recommended that Century Bottling Company should invest in advanced supplier ICT systems, leverage key integration drivers, foster robust collaboration with partners, empower an adaptable workforce through training, and establish an ongoing process for KPI monitoring. By embracing these strategies, the company can enhance supply chain visibility, streamline operations, and strengthen market competitiveness, ultimately contributing to a more integrated, efficient, and responsive supply chain ecosystem

From the findings, it was revealed that supplier ICT systems are demonstrated to significantly enhance supply chain visibility, offering real-time inventory tracking, proactive disruption management, and improved collaboration with suppliers. The drivers for integration revolve around the complexities of operational processes and competitive pressures, along with motivations for reduced lead times, enhanced product quality, and market advantage. Effective coordination, adaptability, and collaborative partnerships emerge as pivotal success factors for supply chain integration, underscoring the significance of agility and cohesive relationships in optimizing integration efforts. These findings collectively contribute to a deeper understanding of the intricate interplay between technological, operational, and strategic facets in fostering successful supply chain integration within Ugandan manufacturing firms.

CHAPTER ONE

INTRODUCTION

1.0 Introduction

This study was about examining the impact of supply chain integration on supply chain visibility in manufacturing firms in Uganda: a case of Century Bottling Company (Coca Cola). This chapter presents background of the study, problem statement, purpose of the study, objectives, research questions, justification, significance of the study and theoretical framework.

1.1 Background of the study

Recent years have seen growth in the importance of integration suppliers, manufacturers and customers (Leenders and Johnson, 2000). Effective integration of suppliers into supply chains serves as a key factor for some companies to gain competitive advantage (Bowersox and Closs, 2006). In this globalized era, most industries will not be able to survive by simply optimizing internal structures and infrastructures based upon business strategy. The most successful manufacturers seem to be those that have carefully linked their internal processes to external suppliers and customers in unique supply chains. The trends can be seen as below, where today's dynamic era, e-business and supply chain are integrated and play a vital role towards a supply chain visibility of the manufacturing firms and achieving competitive advantage (Ghoshal and Bartlett, 2017).

Supply chain integration (SCI) has become increasingly critical for organizational success in the long run (Huo et al., 2014). In order to survive, firms need to integrate with their suppliers and customers and have extensive collaboration with them. SCI 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). 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).

SCI can affect supply chain visibility in both direct and indirect ways. Directly, the close collaboration between the companies within the supply chain results in improved performance (Flynn et al., 2010; Huo et al., 2014; Kim, 2009; Kumar et al., 2017; Rosenzweig et al., 2003). Indirectly, SCI can help firms identify and eliminate the activities that do not add value to the whole supply chain. This can enhance product quality and decrease cost of production, resulting in better value creation and higher customer satisfaction (Rosenzweig et al., 2003).

Today, many activities such as the procurement of raw materials, inventory control and goods distribution are no longer performed within the boundaries of the organizations and have moved to the supply chain level. Firms have accepted that they cannot operate on their own and require the participation and collaboration of other members of their supply chain, including their suppliers and customers (Bavarsad et al., 2017). Experts have recognized the advantages of SCI and coordination among supply chain members (Flynn et al., 2010). In fact, SCI is identified as one of the important factors influencing firm performance (Van der Vaart & van Donk, 2008).

Visibility is a very important concept for supply chains and logistics operations; it provides to information to supply chain managers that allow them to be knowledgeable in all aspects of the business (Rhodes, 2016). It allows the manufacturers, shippers, suppliers, retailers and even customers to have an idea of exactly where along the supply chain their products are located. At any point along the supply chain, information from the point of the raw material supplier to the point of customer contact (final destination) can be accessed. Supply chain visibility is made easier for all stakeholders within the chain, through the integration of supply chain, but it is only effective if there is full integration of all stakeholders in the supply chain (Mc-Crea, 2011).

1.2 Problem statement

Supply chain integration is a critical aspect of modern business, and manufacturing firms are no exception. However, the complex nature of the supply chain can make it difficult for firms to effectively conduct supply chain integration. One key challenge is achieving supply chain visibility, which allows firms to track the movement of goods and information through the supply chain. According to a survey by Accenture, only 6% of companies in Uganda have achieved end-to-end supply chain visibility, indicating a significant gap in the industry (Accenture, 2018). It is not empirically proven whether the failure to conduct effective supply

chain integration is responsible for the low level of supply chain visibility in these manufacturing companies.

Furthermore, despite the large body of research in operations and supply chain integration fewer studies have been done in Uganda as regards to supply chain integration and supply chain visibility. Most studies have focused on supply chain integration and operational performance. For example, Das, Narasimhan, & Talluri (2006), Stank, Keller, & Closs (2001) and Flynn et al., (2010) investigated the effects of supply chain integration on performance and concluded that there is not necessarily a positive relationship, especially on operational performance. Barasa, Simiyu and Iravo (2014) in their study also found out that supply chain integration practices significantly contribute to performance of the companies.

However, none these studies have focused on how supply chain integration with a focus on; supplier integration, information integration and relation integration affect supply chain visibility specifically in manufacturing companies in Uganda which creates a gap that necessitates the need to conduct this study. It is therefore against this background that the researcher sought to examine the impact of supply chain integration on supply chain visibility in manufacturing firms in Uganda: a case of Century Bottling Company (Coca Cola).

1.3 Purpose of the study

The purpose of the study was to examine the impact of supply chain integration on supply chain visibility in manufacturing firms in Uganda: a case of Century Bottling Company (Coca Cola).

1.4 Objectives of the study

- i. To examine relationship between supplier ICT and supply chain visibility in manufacturing firms in Uganda.
- ii. To examine the drivers of supply chain integration in manufacturing firms in Uganda.
- iii. To examine the key success factors for supply chain integration in manufacturing firms in Uganda.

1.5 Research questions

- i. What is the relationship between supplier ICT and supply chain visibility in manufacturing firms in Uganda?
- ii. What are the drivers of supply chain integration in manufacturing firms in Uganda?
- iii. What are the key success factors for supply chain integration in manufacturing firms in Uganda?

1.6 Scope of the study

The scope of the study covered three dimensions that is; content, geographical and time and these are discussed in detail below.

1.6.1 Content scope

This study specifically focused on; examining the relationship between supplier integration and supply chain visibility in manufacturing firms, examining the drivers of supply chain integration in manufacturing firms in Uganda and examining the key success factors for supply chain integration in manufacturing firms in Uganda.

1.6.2 Geographical scope

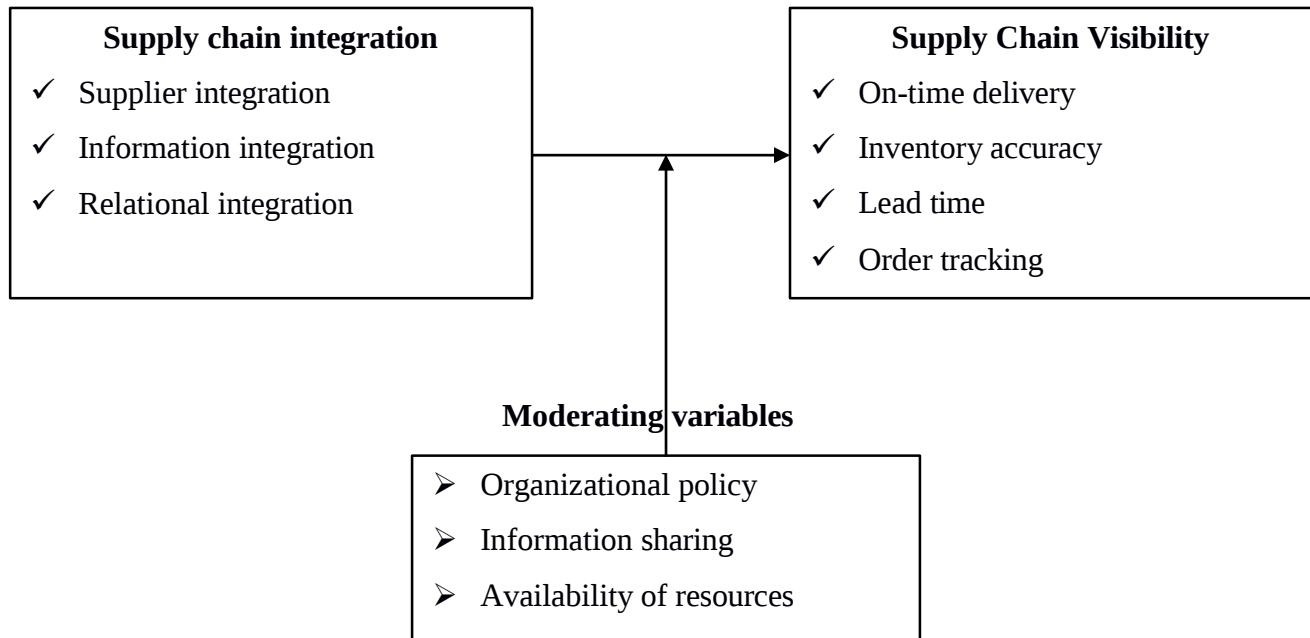
Geographically, the study was conducted in Century Bottling Company Limited (Coca Cola) located on Plot 964, Namanve Industrial Area, Jinja road ,2990, Kampala, Uganda. Crown Beverages Limited was chosen because it's one of the companies in Uganda which has tried to incorporate supply chain integration in its operations in the bid to ensure visibility in its supply chain.

1.6.3 Time scope

The study was carried out for a period of five months from January to May, 2024, whereby the research looked at approximately 5(2020-2024) years back because they contain recent data concerning supply chain visibility.

1.7 Conceptual framework

Figure 1: Conceptual framework



1.8 Significance of the study

To the suppliers, it is hoped that the findings of this study will provide them with more accurate demand forecasts and delivery dates, firms can help suppliers better manage their own inventory and production schedules.

To the academia, it is hoped that the findings of this study will contribute to the academic literature on supply chain management, particularly in the area of supply chain integration and visibility. It can also provide a basis for future research in this area.

To the manufacturing firms like Century Bottling Company, it is hoped that the findings of this study will provide them with insights into how supply chain integration can impact supply chain visibility, and how to improve their supply chain management practices. By understanding the relationship between integration and visibility, firms can identify areas for improvement and implement strategies to enhance their supply chain performance.

To the customers, it is hoped that the findings of this study will improved supply chain visibility can lead to better customer service and satisfaction. By tracking the movement of goods and information through the supply chain, firms can provide more accurate delivery dates and better communicate any issues that may arise. This can lead to increased customer loyalty and repeat business.

1.9 Anticipated challenges

Data accessibility: Accessing comprehensive and accurate data on supply chain integration and visibility practices with in Coca-Cola 's operations maybe challenging due to confidentiality and proprietary concerns.

Complexity of supply chain: Coca cola's supply chain is likely intricate, involving multiple suppliers, distributors and partners , making it challenging to untangle the various integration points and visibility mechanism.

Resource constraints: limited resources including time and budget, may constrain the researcher's ability to conduct in depth interviews, surveys or data analysis especially in a context like Namanve , Uganda.

1.10 Operational definition

My topic being the impact of supply chain integration on supply chain visibility in manufacturing firms in Uganda , the operational definition is focused on Supply chain Management which involves analyzing how raw materials are sourced , transported and managed within the company's supply chain.

CHAPTER TWO

LITERATURE REVIEW

2.0 Introduction

This chapter presents the literature that was reviewed on the basis of the study objectives. The literature was selected, studied and arranged according to the themes relating to supply chain integration and supply chain visibility in manufacturing firms. The chapter presentation is under three sections; review of various theories and concepts, highlighting the objectives of the study and synthesis of literature and research gap analysis. Literature sources included; books and journals aim at providing insight in what has already been done within this area of study.

2.1 Concept of Supply Chain Integration

Supply Chain Integration (SCI) refers to the level of strategic collaboration and management of inter- and intra-organizational processes in the supply chain (Flynn et al., 2016). Most previous studies have considered SCI as an approach to integrate information among suppliers, manufacturers, distributors, and customers (Pagell, 2004). While some definitions of SCI emphasize material flows and components, others focus on information, resources, and cash flows (Flynn et al., 2016). SCI has many benefits for the firm, including improvement in financial performance (Flynn et al., 2010; Kim, 2009; Oghazi, 2009), increase in customer satisfaction (Kim & Chai, 2016), and rise in the market share (Oghazi, 2009).

In general, SCI is divided into internal and external integration (Droge et al., 2004; Li, 2015). Internal integration refers to the level at which the manufacturer organizes its internal activities, processes, and strategies to meet the needs of its customers. It involves collaboration and coordination across organizational functions through information sharing in order to better understand and address the needs of its customers (Flynn et al., 2016). External integration refers to collaboration and coordination between the firm and its external supply chain partners (Zhao et al., 2013).

The supply chain integration construct consists of three dimensions including internal, vendor and client integration to catch multidimensionality (Wong et al., 2011). Interior integration describes the degree to which a producer re-engineers its own organisational strategies and

processes right into synchronised processes to please its clients' needs (Zhao et al., 2011). The expansion of cross-functional groups that often tend to concentrate on their process requires a seamless flow of resources and pertinent details in supply chains and elimination or minimisation of barriers between useful boundaries to surmount the imperfections of specialisation (Askarany et al., 2010; Sgro et al., 2020).

2.2 Concept of Supply Chain Visibility

According to Christopher (2011), supply chain visibility is the ability to track and trace inventory and orders as they move across multiple trading partners, facilities, and geographical locations in the supply chain in near real-time. Lamming & Hampson (2019) also defines supply chain visibility as the ability of supply chain partners to have access to, capture, and share relevant and timely information on inventory, orders, shipments, and other related data, enabling effective coordination, planning, and decision-making.

Visibility is a very important concept for supply chains and logistics operations; it provides to information to supply chain managers that allow them to be knowledgeable in all aspects of the business (Rhodes, 2016). It allows the manufacturers, shippers, suppliers, retailers and even customers to have an idea of exactly where along the supply chain their products are located. At any point along the supply chain, information from the point of the raw material supplier to the point of customer contact (final destination) can be accessed. Supply chain visibility is made easier for all stakeholders within the chain, through the integration of supply chain, but it is only effective if there is full integration of all stakeholders in the supply chain (Mc-Crea, 2011).

In recent times, supply chain visibility (SCV) has been gaining attention as essential for supply chain performance (Catalayud et al., 2019; Bechtsis et al., 2021). There are a few key characteristics of SCV. First is the accessibility of information for stakeholders across the supply chain (Caridi et al., 2014). Second is the accuracy of the information (Williams et al., 2013). Third is the timely availability of information (Francis, 2008). Finally, fourth is the usefulness of information in terms of maintaining and improving business and operational performances (Brandon-Jones et al., 2015). These characteristics make SCV crucial for decision making and supply chain operations.

2.3 Relationship between supplier ICT and supply chain visibility in manufacturing firms

Information integration is recognized in research as an important dimension of supply chain integration (Zhao et al., 2008; Flynn et al., 2010). According to Flynn et al., (2010) information is the glue that holds organizations together and can be used to integrate process activities within a single process and across multiple processes. The concept is also closely related to the sharing of information and knowledge across the supply chain particularly that of demand, forecasting and replenishment (Lee, 2000), and is recognized as a central component in integration of planning and control. But given that information integration involves backward coordination of information technologies and the flow of data from customers to suppliers, it differs from the integration of physical products which involves forward integration.

Information integration involves the sharing of key information data among supply chain partners through IT systems in order to bring about mutually beneficial outcomes (Trkman, Indihar Štemberger, Jaklič & Groznik, 2007).

The supply chain information integration consists of information technology and information sharing and they are viewed as an example for the logistics integration (Abbas & Kamal, 2018; Chiang, et al., 2015). Channels mostly used for information sharing in IT include traditional methods (emails, phones, faxes etc.), corporate information system, in-house information system, warehouse management system and electronic data interchange (Pham, Nguyen, McDonald & Tran-Kieu, 2019; Lee & Ma, 2012).

Information sharing can be quantitative and qualitative and both aspects are important for the practices of SCM and have been treated as independent constructs in past SCM studies. Level (quantity aspect) of information sharing refers to the extent to which critical and proprietary information is communicated to one's supply chain partner. The nature of shared information can vary from strategic to tactical and from logistics activities to general market and customer information (Menzter, 2000). Childhouse and Towill (2003) affirm that simplified material flow, including streamlining and making all information flow throughout the chain highly visible, is the key to an integrated and effective supply chain.

On the other hand, quality of information sharing pertains to the accuracy, timeliness, adequacy, and credibility of information exchanged. However, while information sharing is important, the

significance of its impact on SCM depends on what information is shared, when and how, and

with whom. Divergent interests and opportunistic behavior of supply chain partners, and informational asymmetries across supply chain affect the quality of information. It appears that there is a built in reluctance within organizations to give away more than minimal information since information disclosure is perceived as a loss of power. Given these predispositions, ensuring the quality of the shared information becomes a critical aspect of effective SCM. Organizations need to view their information as a strategic asset and ensure that it flows with minimum delay and without distortion (Li et.al, 2006).

Kalakota and Robinson (2010) suggested that significant progress in supply chain management can be achieved through the integration of business processes and information flow between business partners. Lai et al., (2007) defined information integration as using information and communication technology in order to coordinate decisions and activities between an organization and its partner. Jayaram and Tan (2010) concluded that information integration has positive relationship with organizational performance of an organization. Information integration in this study is reviewed through two dimensions of information technology (technical) and information sharing (social dimension). More importantly, placing emphasis on information technology without the willingness to share critical information will not significantly associate organizations together.

Enhanced Tracking and Traceability: Supplier ICT systems, combined with supply chain visibility platforms, enable end-to-end tracking and traceability of raw materials, components, and finished products. This visibility allows manufacturers to monitor the movement of goods throughout the supply chain, identify potential bottlenecks or delays, and take proactive measures to mitigate risks.

Demand Forecasting and Planning: ICT tools leverage data analytics and artificial intelligence to analyze historical trends, customer preferences, and market dynamics. By leveraging this information, suppliers can improve demand forecasting accuracy, optimize production schedules, and align inventory levels with anticipated demand, thereby reducing stockouts and excess inventory.

Risk Management and Resilience: Supplier ICT systems play a crucial role in risk management and resilience within the supply chain. By providing real-time visibility into supplier performance, quality issues, and potential disruptions, manufacturers can identify and address risks proactively. This may include diversifying supplier networks, implementing contingency plans, or renegotiating contracts to mitigate potential disruptions.

Collaborative Decision-Making: ICT facilitates collaborative decision-making between manufacturers and suppliers by providing a centralized platform for sharing insights, analyzing data, and identifying opportunities for process improvement. This collaborative approach fosters trust and transparency between partners, leading to mutually beneficial outcomes and a more resilient supply chain.

Overall, the relationship between supplier ICT and supply chain visibility in manufacturing firms is symbiotic. By leveraging ICT tools and platforms, manufacturers can enhance visibility into their supply chain, improve collaboration with suppliers and drive operational excellence.

2.4 The drivers of supply chain integration in manufacturing firms

Customer demands and expectations: Meeting customer demands and expectations is a significant driver for supply chain integration. As customers increasingly expect shorter lead times, customized products, and higher service levels, manufacturing firms need to align their supply chains to effectively respond to these demands. Integration enables better visibility, flexibility, and responsiveness, allowing firms to meet customer requirements more effectively (Fawcett et al., 2007).

Competitive pressures: The competitive landscape and market dynamics can drive manufacturing firms to pursue supply chain integration. In highly competitive industries, integration offers opportunities for cost reduction, improved efficiency, and enhanced customer service, all of which contribute to gaining a competitive advantage. By integrating supply chain activities,

firms can streamline operations, optimize inventory levels, and respond more quickly to changes in the market (Lambert et al., 2016).

Globalization and market expansion: Globalization has led to increased complexity and interconnectedness in supply chains. Manufacturing firms expanding their operations into global markets often face challenges related to distance, cultural differences, and diverse regulatory environments. Supply chain integration can help mitigate these challenges by improving coordination, standardizing processes, and enhancing communication across geographically dispersed partners (Gereffi et al., 2005).

Cost and efficiency improvement: Cost reduction and operational efficiency are key drivers for supply chain integration. Integration initiatives aim to eliminate redundancies, optimize inventory levels, and streamline processes across the supply chain. By sharing information, collaborating with partners, and leveraging economies of scale, manufacturing firms can achieve cost savings and improved operational performance (Cagliano et al., 2020).

Risk management and resilience: The need for risk management and resilience is another driver for supply chain integration. Disruptions, such as natural disasters, geopolitical uncertainties, or supplier failures, can have significant impacts on supply chains. Integration enables better risk identification, mitigation, and recovery strategies. By building collaborative relationships, diversifying suppliers, and enhancing supply chain visibility, manufacturing firms can improve their ability to anticipate and respond to disruptions (Ivanov, 2020).

Technological advancements: Advancements in technology play a crucial role in driving supply chain integration. The emergence of digital technologies, such as cloud computing, Internet of Things (IoT), and advanced analytics, provides new opportunities for data sharing, real-time visibility, and process automation. These technologies facilitate the integration of information systems, improve communication, and enable more efficient decision-making across the supply chain (Chopra & Meindl, 2021).

Regulatory Compliance and Risk Management: Increasing regulatory requirements and supply chain risks compel manufacturing firms to prioritize integration. Integration helps firms ensure compliance with regulations, traceability of products, and effective risk management through enhanced visibility, collaboration, and control over the entire supply chain.

Supplier and Partner Collaboration: Strong collaborative relationships with suppliers and partners are essential drivers of supply chain integration. Close collaboration enables sharing of information, joint decision-making, and synchronized processes, leading to improved agility, reliability, and innovation within the supply chain.

Organizational Culture and Leadership: A culture of collaboration, innovation, and continuous improvement, fostered by strong leadership, is instrumental in driving supply chain integration. Leaders who champion integration initiatives and prioritize cross-functional collaboration create an environment conducive to effective integration efforts.

Demand for Sustainability and Corporate Social Responsibility (CSR): Growing concerns about sustainability, ethical sourcing, and CSR compel manufacturing firms to integrate sustainability principles into their supply chain practices. Integration facilitates transparency, traceability, and collaboration with suppliers to ensure compliance with sustainability standards and minimize environmental impact.

2.5 Key success factors for supply chain integration in manufacturing firms

Information sharing and visibility: Effective communication and information sharing among supply chain partners are crucial for integration. Sharing real-time data on demand forecasts, inventory levels, production schedules, and quality information enables better coordination and decision-making. This factor emphasizes the use of integrated information systems, such as enterprise resource planning (ERP) systems and electronic data interchange (EDI) platforms, to facilitate seamless data exchange between partners (Christopher, 2016).

Collaborative relationships: Building and maintaining strong collaborative relationships with supply chain partners is essential. Firms need to foster trust, open communication, and mutual understanding to establish a foundation for effective collaboration. Collaborative relationships enable joint planning, risk sharing, and coordinated problem-solving, leading to improved overall supply chain performance (Lambert et al., 2016).

Supply chain visibility and control: Achieving visibility and control over the supply chain network is critical. This involves having the ability to track and monitor inventory, shipments, and production processes at various stages. By implementing technologies such as radio frequency identification (RFID) and barcode scanning, firms can gain real-time visibility, enabling them to respond quickly to changes and disruptions (Chopra & Meindl, 2021).

Process standardization: Standardizing processes and procedures across the supply chain helps streamline operations and enhance integration. This includes developing common performance metrics, quality standards, and operating procedures. Process standardization reduces variability, improves coordination, and enables smoother information flow and collaboration between partners (Monczka et al., 2020).

Supplier relationship management: Effective supplier relationship management plays a vital role in supply chain integration. Establishing long-term partnerships with reliable suppliers fosters trust, enhances supplier commitment, and promotes joint improvement initiatives. Engaging suppliers early in the product development process and involving them in decision-making can lead to cost savings, quality improvements, and innovation (Handfield & Nichols, 2002).

Technology and infrastructure: Investing in appropriate technology and infrastructure is essential for successful supply chain integration. This includes implementing advanced planning and optimization tools, warehouse management systems, transportation management systems, and other digital solutions. Utilizing technologies like cloud computing, big data analytics, and artificial intelligence enables efficient data processing and decision-making (Cagliano et al., 2020).

2.6 Research gap

From the above literature review, it was evident that existing literature on supply chain integration is largely driven by the typical view that a greater level of integration leads to better firm performance. However, past research has been set up in the public sector (Cannon et al., 2010; Rosenzweig, 2009), which differ from the private sector (Zhao et al., 2007), and hence the results did not apply in the context of manufacturing firms' supply chains.

Contextual Factors in Uganda: Limited research exists on how contextual factors specific to Uganda, such as infrastructure constraints, regulatory environments, and market dynamics, influence the integration of supply chains and visibility practices within manufacturing firms like Century Bottling Company.

Industry-Specific Insights: While studies on supply chain integration and visibility abound globally, there is scarcity of research focusing on the beverage industry in Uganda. Investigating how integration initiatives impact supply chain visibility within this industry provides valuable industry-specific insights.

Measurement and Metrics: Research is needed to develop or refine measurement frameworks and metrics tailored to assess the impact of supply chain integration on supply chain visibility in the Ugandan manufacturing context. This includes identifying key performance indicators (KPIs) relevant to the industry and region.

Supplier and Partner Dynamics: Understanding the dynamics of supplier relationships, collaboration with distributors, and interactions with other partners in the supply chain ecosystem within Uganda is an underexplored area. Examining how integration efforts influence these relationships and the resulting impact on supply chain visibility is crucial.

Technology Adoption and Infrastructure Challenges: Investigating the role of technology adoption and the challenges related to infrastructure limitations in Uganda in achieving supply chain integration and visibility is another potential research avenue. This includes exploring the effectiveness of ICT solutions in enhancing

visibility and overcoming infrastructure constraints.

Sustainability and Social Impact: Assessing the implications of supply chain integration on sustainability practices and social impact initiatives within the Ugandan manufacturing context is another research gap. Understanding how integration affects aspects such as environmental sustainability, ethical sourcing, and community development provides valuable insights.

Addressing these research gaps contributes to a deeper understanding of the dynamics between supply chain integration and visibility within the manufacturing sector in Uganda, particularly focusing on the case of Century Bottling Company (Coca-Cola) and its operations in the region.

CHAPTER THREE

RESEARCH METHODOLOGY

3.0 Introduction

The chapter covers the methods used to capture the data for the research. It includes detailed description of the proposed research design, population of interest, sample and sampling techniques, research instruments, data collection procedure, pilot test and data analysis and presentation. This research methodology presents the overall framework on how to achieve research findings through data collection and analysis and presentation.

3.1 Research Design

This study used a cross-sectional research design. Under this design, data from respondents was collected at a single point in time without repetition from the representative population. In addition, cross-sectional design involves the use of correlation and regression analysis which were used to determine the impact of supply chain integration on supply chain visibility in manufacturing firms. It was used because it reduces time wastage and costs and it also gives useful conclusions in the form of statistics and in-depth details about the study (Patrik & Ugo, 2019).

The study adopted both qualitative and quantitative approaches. Under the quantitative methods, the researcher used questionnaires that were filled by respondents and she analyzed the data using proceedings and then presented the data in narrative quotations. The qualitative method focused on collecting in-depth information where data was collected using interview guides, Analyzed using SPSS and then presented in a tables. The qualitative approach facilitated in depth understanding of the variables (Leedy & Ormrod, 2013).

3.2 Area of Study

The study was conducted in Century Bottling Company Limited (Coca Cola) located on Plot 964, Namanve Industrial Area, Jinja road ,2990, Kampala, Uganda. Crown Beverages Limited was chosen because it's one of the companies in Uganda which has tried to incorporate supply chain integration in its operations in the bid to ensure visibility in its supply chain.

3.3 Study Population

Kothari et al., (2017) defined target population as all real or hypothetical members, people, events or subjects that the researcher wishes to generalize his result findings. This section of the research portrays the particular group of respondents that the researcher is interested in the field of the study. Century Bottling Company (Coca Cola) has around 700 employees from the different departments in its main branch and other plants in Uganda according the HRM report 2022. However, the main branch has around 100 employees and these were included in the study as the population. This comprised of employees in the different departments like; administration, procurement & logistics, accounts & finance, marketing & sales plus operations departments among others.

3.4 Sampling

3.4.1 Sample size

Singh, (2007) defined sample size as finite part of a statistical population whose properties are used to make estimates about a population as a whole. For this research study, a cross section of individuals was selected to draw research responses that give a true picture of the research phenomena. With regard to the sample size, the researcher selected 80 employees as the sample of respondents from a population of 100 according to Slovin's formula as shown below.

“n” is sample size, “N” is population, “e” is error (0.05) or level of confidence 95%

“N” (population) = 100 employees of Century Bottling Company

n = 80 employees

Therefore the sample size was 80 respondents

Table 1: Showing population and sample size

Category	Population	Sample size	Source: <i>Century Bottling Company (2023)</i>
Administration/ HRM	12	10	
Procurement & Logistics	24	19	
Accounts & Finance	15	12	
Marketing & Sales	20	16	
Operations	29	23	
Total	100	80	

3.4.2 Sampling methods

The study was carried out using both purposive and stratified sampling methods. Purposive sampling was used to select the key informants who include the Managing Director, Procurement Manager and Officer plus the Stores and Finance Manager totaling to 5. This method was used basing on the fact that the key informants are few in number and given that they had more knowledge on the subject matter basing on the fact that they are the ones tasked with putting in place supply chain integration in the bid to ensure supply chain visibility.

On the other hand, stratified sampling method was also used whereby samples were selected from the departments of Coca Cola which included; administration, procurement & logistics, accounts & finance, marketing & sales plus operations departments among others. This was due to their convenience about the topic and area under study hence they were expected to represent each element in the population. This method helped in reducing on the costs of collecting and analyzing data.

3.5 Data collection tools

3.5.1 Questionnaire

The researcher used both closed-ended and open-ended questionnaires in the study. Closed- ended

questions were used because they are easy and quick to answer and because they help in

improved consistence of the responses. Open-ended questions were also used because they do not place any limits on the response which means that the survey respondents were able to tell the researcher anything they felt was relevant and anything they wanted the researcher to know. The questionnaires were administered to the employees of Century Bottling Company in the selected departments. A five (5) Likert scale where; 5 (Strongly Agree), 4 (Agree), 3 (Not Sure), 2 (Disagree), 1 (Strongly Disagree) was used on the self-administered questionnaires.

3.5.2 Interview Guide

The interview guide on the other hand was used to obtain data from the key informants comprising mainly of the Managing Director, Procurement Manager and Officer plus the Stores and Finance Manager of Century Bottling Company since they are the ones responsible for putting in place supply chain integration in the bid to ensure supply chain visibility. The interview guide comprised of semi structured questions which are meant to get an in-depth analysis from the respondents about the study. The use of the interview guide provided room for in depth analysis of the actual situation prevailing in the community. The information obtained from this source was used for validation of that obtained from other primary sources.

3.6 Data management and control

3.6.1 Validity

According to Somekh and Cathy (2005), validity is the degree by which the sample of test items represents the content the test is designed to measure. Validity of research instruments ensure scientific usefulness of the finding arising from data collection (Williams, 2016). The researcher also ensured that right questions for the study were guided by the objectives and in addition compute content valid index. The researcher used the following formula to establish validity of the research instruments as seen below.

Content validity Index (CVI) = Relevant items by all judges as suitable

Total number of items judged.

The CVI was 0.81 which was greater than the recommended 0.70 (Kent, 2001) hence implying that the questionnaire was valid for data collection.

3.6.2 Reliability

Reliability seeks to establish whether an assessment instrument gives the same results each time it is used in the same setting with the same type of subjects and thus it essentially means consistent or dependable results (Wildemuth, 2016). Cronbach's Alpha was used to establish the reliability of scores on a psychometric instrument. Cronbach's Alpha determines the internal consistency (reliability) of test scores such that the more research item scores are in agreement with the total scores, the more reliable is the test (Kothari et al., 2017). The Cronbach's Alpha Test of reliability was used to test the reliability of the constructs describing the variables of the study.

3.7 Data Analysis

3.7.1 Quantitative data analysis

Data analysis was done with the aid of the package (SPSS) which besides being user friendly, is appropriate for handling the correlations between the variables plus regressions in the study. All variables were assigned with names and coded for computer entry. Secondly all the responses were coded to facilitate computer data in-put. Thirdly, after data entry was completed, negatively worded scales were recorded and assigned with new values. Fourthly, in order to get composite scores for items on a scale, target variables were computed. Fifthly, data was screened in order to minimize data entry errors. Quantitative data was analyzed using descriptive statistics and Pearson Correlation to examine the relationship between the independent and the dependent variable in the study. The correlation coefficient at all times takes a value between -1 and 1, with 1 or -1 indicating perfect correlation.

3.7.2 Analysis of qualitative data

This involved content analysis. Thus, qualitative data was edited and reorganized into meaningful phrases. In other words, a thematic approach was used to analyze qualitative data where themes, categories and patterns were identified. The recurrent themes, which emerged in relation to each guiding question from the interviews, were presented in the results, with selected direct quotations from participants presented as illustrations.

3.8 Ethical Issues

The researcher obtained an official letter from the school of business to introduce the researcher to case study.

The researcher cited all the sources she used in the study either in the literature or appendices and also accessed data through official channels.

The researcher sought approval and permission from authorities and obtained consent from the respondents before proceeding to collect the field data.

3.9 Limitations of the Study

During the study, the researcher faced a problem of not finding all respondents in the time of the study due to them being too busy with the organization work. The researcher however planned an appropriate time table with the top company managers that favorably suited all the respondents during the process of data collection for reliable and valid information.

Most libraries were not able to get copies of old and new reports and government publications in time and therefore the researcher was limited to only old reports and books since the library books were not updated. The researcher helped in informing the libraries on where they could easily get copies of the articles.

Most organizations fear that the material supplied by them to researchers would be misused and as such they are often reluctant to supply the needed information to researchers. There was need to first of all generate the confidence that the information obtained from the business unit would not be misused. Some respondents also feared or suspected that the information they given out would be used against them. This was overcome by the researcher first of all creating a good rapport with the respondents and convincing them that the information would be treated with all the confidentiality it deserves. The researcher also provided an authorization letter from the University to ensure confidentiality.

CHAPTER FOUR

DATA PRESENTATION AND INTERPRETATION OF FINDINGS

4.0 Introduction

This chapter presents and discusses the results of analysis that has been done to look at the specific objectives of the study and in relation to the reviewed literature. The study was carried out using questionnaires with 80 employees of Century Bottling Company (Coca Cola). The findings are presented with the help of tables for purposes of clarity and interpretation.

4.1 Findings on demographic characteristics of respondents

This section presents the general background information about the respondents in relation to their gender, age, highest level of education, department and period spent working with Century Bottling Company (Coca Cola) as shown in the table below;

Table 2: Background Information about the respondents

Item	Description	Frequency	Percentage (%)
Gender	Male	47	58.7
	Female	33	41.3
	Total	80	100.0
Age bracket	21-30 years	38	47.5
	31-40 years	30	37.5
	41-above years	12	15.0
	Total	80	100.0
Level of education	Diploma	16	20.0
	Bachelor's degree	34	42.5
	Master's degree	5	6.2
	Others	25	31.3
	Total	80	100.0
Departments	Administration/ HRM	8	10.0
	Procurement & Logistics	20	25.0

	Accounts & Finance	12	15.0
	Sales & Marketing	16	20.0
	Operations	24	30.0
	Total	80	100.0
Period spent working	1-5 years	32	40.0
	6-10 years	37	46.3

	Above 10 years	11	13.7
	Total	80	100.0

Source: *Primary data*

Table 2 above shows that majority of the questionnaires were filled by males represented by 58.7% and the rest were females represented by 41.3% and therefore, there were more male respondents than female respondents in this survey. However, the inclusion of both male and female in the survey was to get a balance view of responses from different people in the company concerning the topic under study.

The table above shows that 47.5% of the respondents are between 21-30 years, followed by those with 31-40 years represented by 37.5%, whereas those who are between 41-above years were represented by 15%. This therefore implies that there was no age discrimination since information was gotten from people with different age groups.

Furthermore, the table above indicates that majority of respondents represented by 30% are from the operations department, followed by those who are from the procurement and logistics department represented by 25%, followed by those who are from the sales and marketing department represented by 20%, followed by those from the accounts and finance department represented by 15%, whereas those from the administration/ human resource department constituted 10% of the total population. This implies that all employees from different departments and at different levels were involved in the study and this helped to gather information and different views of people about the topic in particular.

Finally, the table above also indicates that majority of respondents represented by 46.3% have spent between 6-10 years working in Century Bottling Company, followed by those who have

spent 1-5 years working in Century Bottling Company represented by 40%, whereas those who have spent above 10 years working with Century Bottling Company represented the minority 13.7% of the total population. The findings imply that the respondents have the necessary and efficient knowledge about the topic under study since majority of the respondents have spent reasonable time working with Century Bottling Company.

4.2 Relationship between supplier ICT and supply chain visibility in Century Bottling Company (coca-cola).

Table 3 summarizes respondents' responses the relationship between supplier ICT and supply chain visibility in Century Bottling Company(coca-cola) by using a Likert scale where SA (Strongly Agree), A (Agree), NS (Not Sure), D (Disagree) and SD (Strongly Disagree).

Table 3: Relationship between supplier ICT and supply chain visibility

Statements	Extent of agreement and disagreement				
	SA	A	NS	D	SD
	Freq. (%)	Freq. (%)	Freq. (%)	Freq. (%)	Freq. (%)
Supplier ICT systems provide real-time visibility of inventory levels and locations across our supply chain	42 52.5%	24 30.0%	00	10 12.5%	4 5.0%
The use of supplier ICT systems enables proactive identification and resolution of supply chain disruptions	23 28.8%	35 43.7%	6 7.5%	11 13.7%	5 6.3%
Supplier ICT systems improve the accuracy of demand forecasting, leading to better supply chain visibility	19 23.7%	38 47.5%	7 8.8%	15 18.7%	1 1.3%
Our company benefits from supplier ICT systems by having access to up-to-date information on supplier performance	21 26.3%	34 42.5%	5 6.3%	20 25.0%	00
Supplier ICT systems enhance our ability to track and monitor the movement of goods throughout the supply Chain	23 28.8%	35 43.7%	10 12.5%	12 15.0%	00
Supplier ICT systems enable efficient collaboration and information sharing with suppliers, resulting in improved supply chain visibility	24 30.0%	40 50.0%	00	16 20.0%	00

Source: Primary data

Table 3 represents the descriptive statistics on the relationship between supplier ICT and supply chain visibility in Century Bottling Company (coca-cola)in Uganda. According to the study in table 3 above, 82.5% of the respondents agreed that supplier ICT systems provide real-time visibility of inventory levels and locations across the company's supply chain, whereas 17.5% of the

respondents disagreed with the statement put across. The study illustrated that 72.5% of the respondents agreed that the use of supplier ICT systems enables proactive identification and resolution of supply chain disruptions, 7.5% were not sure, whereas 20% of the respondents disagreed and strongly disagree respectively with the statement put across.

The study established that 71.2% of the respondents agreed that supplier ICT systems improve the accuracy of demand forecasting, leading to better supply chain visibility, 8.8% were not sure whereas 20% of the respondents disagreed with the statement put across. The study further noted that 68.8% of the respondents agreed that their company benefits from supplier ICT systems by having access to up-to-date information on supplier performance, 6.2% were not sure whereas 25% of the respondents disagreed and strongly disagreed with the statement put across.

Furthermore, the study found out that 72.5% agreed that supplier ICT systems enhance the company's ability to track and monitor the movement of goods throughout the supply chain, 12.5% were not sure whereas 15% disagreed with the statement. Finally, the findings established that 80% of the respondents agreed that supplier ICT systems enable efficient collaboration and information sharing with suppliers, resulting in improved supply chain visibility, whereas 20% of the respondents were not sure of the statement put forward.

Therefore the findings of the study illustrated that supplier ICT is positively related to supply chain visibility in Century Bottling Company(coca-cola) in Uganda since supplier ICT systems provide real-time visibility of inventory levels and locations across the company's supply chain and given that the use of supplier ICT systems enables proactive identification and resolution of supply chain disruptions which were represented by 82.5% and 80% of the respondents who agreed respectively. The findings of the study concerning the relationship between supplier ICT and supply chain visibility in manufacturing firms in Uganda were further determined using Pearson's correlation that was conducted as shown below;

Table 4: Pearson's correlation on supplier ICT and supply chain visibility**Correlations**

		Supplier ICT	Supply chain visibility
Supplier ICT	Pearson Correlation	1	.848**
	Sig. (2-tailed)		.000
	N	80	80
Supply chain visibility	Pearson Correlation	.848**	1
	Sig. (2-tailed)	.000	
	N	80	80
**. Correlation is significant at the 0.05 level (2-tailed).			

Source: *Primary data*

The findings indicated in table above shows that there is a significant positive relationship between supplier ICT and supply chain visibility in Century Bottling Company (coca-cola) in Uganda. This relationship is affirmed by r-values of 0.848** with significant p-values of 0.000 at the level of 0.05 (2-tailed) ($r = .848^{**}$, $p < .05$). It should further be noted that the p-value is below the significance level of 0.05 which means that we accept the null hypothesis. This means that there is a significant positive relationship between supplier ICT and supply chain visibility in manufacturing firms in Uganda.

The findings relate with the literature by Flynn et al., (2010) who argued that information is the glue that holds organizations together and can be used to integrate process activities within a single process and across multiple processes. The concept is also closely related to the sharing of information and knowledge across the supply chain particularly that of demand, forecasting and replenishment and is recognized as a central component in integration of planning and control. But given that information integration involves backward coordination of information technologies and the flow of data from customers to suppliers, it differs from the integration of physical products which involves forward integration.

4.3 Drivers of supply chain integration in Century Bottling Company (coca-cola) in Uganda

Table 5 summarizes respondents' responses on the drivers of supply chain integration in Century Bottling Company (coca-cola) in Uganda by using a Likert scale where SA (Strongly Agree), A (Agree), NS (Not Sure), D (Disagree) and SD (Strongly Disagree).

Table 5: Drivers of supply chain integration in Century Bottling Company(coca-cola) in Uganda

Statements	Extent of agreement and disagreement				
	SA	A	NS	D	SD
	Freq. (%)	Freq. (%)	Freq. (%)	Freq. (%)	Freq. (%)
The increasing complexity of our company operations processes necessitates greater supply chain integration	20 25.0%	58 72.5%	2 2.5%	00	00
Competitive pressure from industry peers drives our company to pursue supply chain integration	14 17.5%	63 78.8%	3 3.8%	00	00
The need to reduce lead times and improve delivery speed is a driving force behind our supply chain integration efforts	22 27.5%	54 67.5%	2 2.5%	2 2.5%	00
Enhancing product quality and reducing defects is a driver for our company to integrate its supply chain	19 23.8%	57 71.3%	4 5.0%	00	00
Government initiatives promoting supply chain integration play a significant role in driving our company's efforts	00	49 61.3%	00	31 38.7%	00
The desire to gain a competitive advantage in the marketplace is a key driver for our company's supply chain integration initiatives	19 23.8%	57 71.3%	4 5.0%	00	00

Source: Primary data

Table 5 represents the descriptive statistics on the drivers of supply chain integration in Century Bottling Company(coca-cola) in Uganda. According to the study in table 5 above, 97.5% of the respondents agreed that the increasing complexity of their company operations processes necessitates greater supply chain integration, whereas 2.5% of the respondents disagreed with the statement put forward. The study illustrated that 96.3% of the respondents agreed that

competitive pressure from industry peers drives their company to pursue supply chain integration, whereas 3.8% were not sure of the statement put across.

The study established that 95.0% of the respondents agreed that the need to reduce lead times and improve delivery speed is a driving force behind their supply chain integration efforts, 2.5% were not sure whereas 2.5% of the respondents disagreed with the statements put across. The study also noted that 95.0% of the respondents agreed that enhancing product quality and reducing defects is a driver for their company to integrate its supply chain, whereas 5% of the respondents were not sure of the statement put across.

The study further noted that 61.3% of the respondents agreed that government initiatives promoting supply chain integration play a significant role in driving their company's efforts, whereas 38.7% disagreed with the statement put forward. Finally, the study findings revealed that 95.1% of the respondents agreed that the desire to gain a competitive advantage in the marketplace is a key driver for their company's supply chain integration initiatives, whereas 5% of the respondents were not sure of the statement put across.

Therefore the major findings of the study illustrated that the major drivers of supply chain integration in manufacturing firms in Uganda specifically Century Bottling Company are the increasing complexity of their company operations processes and competitive pressure from industry peers which were represented by 97.5% and 95% of the respondents who agreed respectively.

The findings relate with the literature by Lambert et al. (2016) who argued that the competitive landscape and market dynamics can drive manufacturing firms to pursue supply chain integration. In highly competitive industries, integration offers opportunities for cost reduction, improved efficiency, and enhanced customer service, all of which contribute to gaining a competitive advantage. By integrating supply chain activities, firms can streamline operations, optimize inventory levels, and respond more quickly to changes in the market.

4.4 The key success factors for supply chain integration in Century Bottling Company (coca-cola)

Table 6 summarizes respondents' responses on the key success factors for supply chain integration in manufacturing firms in Uganda by using a Likert scale where SA (Strongly Agree), A (Agree), NS (Not Sure), D (Disagree) and SD (Strongly Disagree).

Table 6: The key success factors for supply chain integration in Century Bottling Company (coca-cola)

Statements	Extent of agreement and disagreement				
	SA	A	NS	D	SD
	Freq. (%)	Freq. (%)	Freq. (%)	Freq. (%)	Freq. (%)
Effective coordination and collaboration among supply chain partners contribute to successful supply chain integration in our company	23 28.8%	51 63.8%	4 5.0%	1 1.3%	1 1.3%
Continuous training and skill development of supply chain employees are crucial success factors for supply chain integration in our company	19 23.8%	53 66.3%	7 8.8%	00	1 1.3%
Adoption of standardized processes and procedures facilitates smooth integration across the supply chain in our Company	21 26.3%	54 67.5%	4 5.0%	1 1.3%	00
Our company considers strong supplier relationship management as a critical success factor for supply chain Integration	23 28.8%	51 63.8%	4 5.0%	2 2.6%	00
The ability to quickly adapt to changing market conditions and customer demands is a key success factor for our company's supply chain integration	20 25.0%	58 72.5%	2 2.5%	00	00
Continuous monitoring and evaluation of key performance indicators (KPIs) help drive successful supply chain integration efforts in our company	19 23.8%	57 71.3%	4 5.0%	00	00

Source: Primary data

Table 6 represents the descriptive statistics on the key success factors for supply chain integration in Century Bottling Company (coca-cola) in Uganda. According to the study in table 6 above, 92.6% of the respondents agreed that effective coordination and collaboration among supply chain partners contribute to successful supply chain integration in their company, 5% were not sure, whereas 2.6% of the respondents disagreed and strongly disagree respectively with the statement put across. The study established that 90.1% of the respondents agreed that continuous training and skill development of supply chain employees are crucial success factors for supply chain integration in their company, 8.8% were not sure, whereas 1.3% of the respondents disagreed with the statement put across.

The study further noted that 93.8% of the respondents agreed that adoption of standardized processes and procedures facilitates smooth integration across the supply chain in their company, 5% were not sure, whereas 1.3% of the respondents disagreed and strongly disagreed with the statement put across. The study found out that 92.6% agreed that their company considers strong supplier relationship management as a critical success factor for supply chain integration, 5% were not sure, whereas 2.6% disagreed with the statement.

Furthermore, the findings established that 95% of the respondents agreed that the ability to quickly adapt to changing market conditions and customer demands is a key success factor for their company's supply chain integration, whereas 5% of the respondents were not sure of the statement put forward. Finally, the study findings revealed that 95.1% of the respondents agreed that continuous monitoring and evaluation of key performance indicators (KPIs) help drive successful supply chain integration efforts in their company, whereas 5% of the respondents were not sure of the statement put across.

Therefore the major findings of the study illustrated that the major key success factors for supply chain integration in manufacturing firms in Uganda specifically Century Bottling Company are the ability to quickly adapt to changing market conditions and customer demands and effective coordination and collaboration among supply chain partners which were represented by 97.5% and 95% of the respondents who agreed respectively.

The findings relate with the literature by Chopra & Meindl (2021) who assert that building and maintaining strong collaborative relationships with supply chain partners is essential. Firms need

to foster trust, open communication, and mutual understanding to establish a foundation for effective collaboration. Collaborative relationships enable joint planning, risk sharing, and coordinated problem-solving, leading to improved overall supply chain performance.

The findings also relate with the literature by Cagliano et al. (2020) who pointed out that investing in appropriate technology and infrastructure is essential for successful supply chain integration. This includes implementing advanced planning and optimization tools, warehouse management systems, transportation management systems, and other digital solutions. Utilizing technologies like cloud computing, big data analytics, and artificial intelligence enables efficient data processing and decision-making.

CHAPTER FIVE

DISCUSSION OF FINDINGS, SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.0 Introduction

This chapter summarizes all findings reported in chapter four according to questions of the study, draws conclusions, suggests recommendations and also proposes some areas for further study.

5.1 Discussion of findings

5.1.1 Relationship between supplier ICT and supply chain visibility in Century Bottling Company(coca-cola) in Uganda

The findings revealed that there is a significant positive relationship between supplier ICT and supply chain visibility in Century Bottling Company (coca-cola) in Uganda ($r = .848^{**}$, $p < .05$). The findings relate with the literature by Flynn et al., (2010) who argued that information is the glue that holds organizations together and can be used to integrate process activities within a single process and across multiple processes. The concept is also closely related to the sharing of information and knowledge across the supply chain particularly that of demand, forecasting and replenishment and is recognized as a central component in integration of planning and control. But given that information integration involves backward coordination of information technologies and the flow of data from customers to suppliers, it differs from the integration of physical products which involves forward integration.

Furthermore, one key contribution of supplier ICT systems, as indicated in the study, is their ability to provide real-time visibility of inventory levels and locations across the supply chain. This finding corresponds with the literature by Jones (2017) who emphasizes the importance of real-time data and visibility in modern supply chain management. Real-time visibility enables firms to make informed decisions promptly, leading to better inventory management, reduced stockouts, and minimized overstock situations. This aligns with the principles of Just-In-Time (JIT) and lean inventory management, which have been widely discussed in the literature as approaches to improve supply chain efficiency.

More so, the study's emphasis on the role of supplier ICT systems in enhancing demand forecasting accuracy resonates with prior research by Pham et al. (2019) who argued that accurate demand forecasting is a cornerstone of effective supply chain management, and ICT systems contribute by providing access to data and analytics tools that can improve forecasting models. This finding underscores the importance of data-driven decision-making in supply chain operations, a topic extensively covered in the literature.

Lastly, the study's confirmation of efficient collaboration with suppliers through ICT systems aligns with the concept of supply chain integration by Chen (2020) who points out that supply chain literature has long recognized that collaboration and information sharing with suppliers are critical for improving supply chain performance. ICT systems facilitate seamless communication, data sharing, and collaboration between firms and their suppliers, thereby enhancing overall supply chain visibility and efficiency.

5.1.2 Drivers of supply chain integration in Century Bottling Company(coca-cola) in Uganda

The findings regarding the primary drivers of supply chain integration in manufacturing firms in Uganda resonate with established literature in supply chain management. Firstly, the overwhelming agreement among respondents (97.5%) on the growing complexity of company operational processes as a driver aligns with the literature by Lambert et al. (2016) who argued that the competitive landscape and market dynamics can drive manufacturing firms to pursue supply chain integration. In highly competitive industries, integration offers opportunities for cost reduction, improved efficiency, and enhanced customer service, all of which contribute to gaining a competitive advantage. By integrating supply chain activities, firms can streamline operations, optimize inventory levels, and respond more quickly to changes in the market.

Secondly, the strong agreement among respondents (96.3%) that competitive pressures from industry peers drive supply chain integration aligns with the competitive advantage theory of supply chain integration proposed by Frohlich and Westbrook (2001) who noted that firms are motivated to integrate their supply chains to gain a competitive edge and respond effectively to market pressures. Firms are increasingly realizing that collaboration and integration with suppliers, customers, and partners can lead to cost savings, improved quality, and faster response times, which are essential for staying competitive in the marketplace.

Furthermore, the study's emphasis on reducing lead times, enhancing delivery speed, improving product quality, and leveraging a competitive advantage as motivations for supply chain integration aligns with the broader literature on the benefits and objectives of supply chain integration. Authors such as Lambert and Cooper (2000) have highlighted these as key objectives of supply chain management. Reducing lead times and improving delivery speed are crucial for meeting customer expectations and reducing operational costs. Enhanced product quality is a fundamental goal in supply chain management, as it leads to higher customer satisfaction and fewer disruptions. Leveraging a competitive advantage is in line with the strategic perspective of supply chain management, where integration is seen as a means to achieve superior performance and differentiation (Lambert & Cooper, 2000).

Lastly, the mixed response regarding government initiatives promoting integration is in line with the literature on the role of government in supply chain management. Government initiatives can play a supportive role, but their effectiveness may vary depending on the context and industry. Scholars like Monczka et al. (2015) have discussed the importance of a conducive regulatory environment, and government initiatives can be seen as part of this broader discussion.

5.1.3 The key success factors for supply chain integration in Century Bottling Company (coca-cola).

The findings regarding the key success factors for supply chain integration in Century Bottling Company (coca-cola) in Uganda align closely with well-established principles in supply chain management literature. Firstly, the strong endorsement (92.6%) of effective coordination and collaboration among supply chain partners as a central driver of success resonates with the collaborative and relational view of supply chain management emphasized by Lambert & Cooper (2000) who argued that successful supply chains are built on collaborative relationships, where partners work together closely to achieve common goals. The study's findings reinforce the notion that collaboration is not just a nice-to-have but a critical success factor in achieving integration, especially in a manufacturing context where multiple stakeholders are involved.

Secondly, the importance of swiftly adapting to evolving market conditions and customer demands, supported by 95% of respondents, aligns with the dynamic capabilities perspective in supply chain management, as discussed by Teece et al. (2017) who assert that dynamic capabilities refer to an organization's ability to sense changes in its external environment and

quickly respond with innovative strategies. In the context of supply chain integration, firms that can adapt rapidly to shifting market demands and customer preferences are more likely to succeed. This finding reinforces the idea that agility and adaptability are essential attributes for supply chains operating in today's fast-paced and ever-changing business environment.

Additionally, the study's emphasis on continuous training and skill development for supply chain employees aligns with the notion of human capital development in supply chain management literature. As discussed by Ellinger et al. (2019), building a skilled and knowledgeable workforce is essential for supply chain success. Skilled employees can better navigate the complexities of supply chain integration, implement standardized processes effectively, and manage supplier relationships. The adoption of standardized processes, robust supplier relationship management, and the evaluation of key performance indicators are all in line with best practices advocated by various supply chain scholars, including Chopra and Meindl (2016) and Monczka et al. (2015).

Finally, the findings also relate with the literature by Cagliano et al. (2020) who pointed out that investing in appropriate technology and infrastructure is essential for successful supply chain integration. This includes implementing advanced planning and optimization tools, warehouse management systems, transportation management systems, and other digital solutions. Utilizing technologies like cloud computing, big data analytics, and artificial intelligence enables efficient data processing and decision-making.

5.2 Summary of findings

The findings revealed that supplier ICT systems significantly contribute to supply chain visibility in these firms. The respondents acknowledged that supplier ICT systems offer real-time visibility of inventory levels and locations across the supply chain, facilitate proactive identification and resolution of disruptions, improve demand forecasting accuracy, provide up-to-date supplier performance information, enhance tracking and monitoring of goods movement, and enable efficient collaboration with suppliers. Pearson's correlation analysis affirmed a strong positive relationship between supplier ICT and supply chain visibility ($r = .848^{**}$, $p < .05$) indicating that supplier ICT indeed plays a vital role in enhancing supply chain visibility within the context of Ugandan manufacturing firms.

Furthermore, the findings highlighted two primary drivers of supply chain integration: firstly, the growing complexity of company operational processes necessitates intensified integration efforts, with an overwhelming 97.5% of respondents in agreement; secondly, competitive pressures from industry peers strongly drive the pursuit of supply chain integration, supported by 96.3% of respondents. Additionally, the study underscored the significance of reducing lead times and enhancing delivery speed, improving product quality, and leveraging a competitive advantage in the marketplace as substantial motivations for supply chain integration initiatives. While government initiatives promoting integration garnered a notable level of agreement, they were met with some disagreement. These findings emphasize the pivotal role of complexity and competitive dynamics in driving supply chain integration efforts within the manufacturing landscape in Uganda, particularly in the context of Century Bottling Company.

Finally, the findings highlighted two central drivers of successful supply chain integration: firstly, the imperative for effective coordination and collaboration among supply chain partners, with 92.6% of respondents affirming its importance; and secondly, the ability to swiftly adapt to evolving market conditions and customer demands, endorsed by 95% of respondents. The study also underscored the significance of continuous training and skill development for supply chain employees, adoption of standardized processes, robust supplier relationship management, and the ongoing evaluation of key performance indicators in fostering successful supply chain integration efforts. These outcomes emphasize the central role of adaptability and collaborative partnerships in the context of supply chain integration for manufacturing firms in Uganda, notably within Century Bottling Company.

5.3 Conclusions

In conclusion, this study illuminates crucial insights regarding supply chain integration in Century Bottling Company (coca-cola), particularly within the context of Century Bottling Company. Supplier ICT systems are demonstrated to significantly enhance supply chain visibility, offering real-time inventory tracking, proactive disruption management, and improved collaboration with suppliers. The drivers for integration revolve around the complexities of operational processes and competitive pressures, along with motivations for reduced lead times, enhanced product quality, and market advantage. Effective coordination, adaptability, and collaborative partnerships emerge as pivotal success factors for supply chain integration, underscoring the significance of agility

and cohesive relationships in optimizing integration efforts. These findings collectively contribute to a deeper understanding of the intricate interplay between technological, operational, and strategic facets in fostering successful supply chain integration within Ugandan manufacturing firms.

5.4 Recommendations

Based on the findings of the study, the following recommendations have been found necessary concerning the impact of supply chain integration on supply chain visibility in manufacturing firms in Uganda: a case of Century Bottling Company (Coca Cola).

The study recommends that the Century Bottling Company should invest further in enhancing its supplier ICT systems to maximize their potential for improving supply chain visibility. This includes exploring advanced technologies, such as Internet of Things (IoT) devices and data analytics, to achieve real-time inventory tracking, faster disruption resolution, and accurate demand forecasting, thereby strengthening the company's overall supply chain transparency and responsiveness.

The study also recommends that Century Bottling Company should capitalize on the identified key drivers of supply chain integration, particularly the increasing complexity of operational processes and competitive pressures. By strategically aligning its integration efforts with these drivers, the company can streamline its supply chain operations and reinforce its market competitiveness. This entails continually reassessing internal processes to identify areas for integration enhancement and leveraging industry benchmarks to align with evolving industry standards.

Furthermore, the study recommends that Century Bottling Company should prioritize the cultivation of effective collaboration and coordination among supply chain partners. This involves fostering strong relationships with suppliers, distributors, and other stakeholders. The company should establish clear communication channels, regular meetings, and shared data platforms to ensure seamless information flow and mutual understanding. This collaborative approach will lead to a more integrated and efficient supply chain ecosystem.

More so, the study recommends that Century Bottling Company should focus on building a workforce that is adaptable and skilled in responding to changing market conditions and customer demands. This can be achieved through ongoing training and skill development programs for supply chain employees. By equipping the workforce with the necessary tools and knowledge, the company can better navigate dynamic market scenarios, optimize production and distribution processes, and enhance overall supply chain integration outcomes.

Finally, the study recommends that Century Bottling Company should establish a systematic process for continuous monitoring and evaluation of key performance indicators (KPIs) related to supply chain integration. This practice will allow the company to track progress, identify areas for improvement, and make informed decisions based on data-driven insights. Regularly reviewing KPIs will provide valuable feedback to refine integration strategies and ensure sustained success in enhancing supply chain visibility and efficiency.

5.5 Areas for further research

Since this study examined the impact of supply chain integration on supply chain visibility in manufacturing firms in Uganda: a case of Century Bottling Company (Coca Cola), the study recommends that; similar study should be done on other areas concerning this topic and these areas of further research needed include the following:

The study recommends that a similar study should be done to investigate emerging technologies like block chain, artificial intelligence, and machine learning in the context of supply chain integration to ascertain their potential impact on supply chain visibility and efficiency.

More so, a comparative study to analyze how supply chain integration and visibility strategies vary across different manufacturing sectors in Uganda, uncovering industry-specific nuances can be conducted by other researchers.

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QUESTIONNAIRE

FOR STAFF OF CENTURY BOTTLING COMPANY (COCA COLA)

Dear sir/madam

My name is Kyasiimire Esther I am a student of Bachelors of Procurement and Logistic Management at Uganda Christian University. I am conducting a study on “the impact of supply chain integration on supply chain visibility in manufacturing firms in Uganda: a case of Century Bottling Company (Coca Cola).” You have been specifically selected to participate in this study and the information collected shall be purely for academic purpose and treated with the highest level of confidentiality. The success of this study shall greatly dependent on your response. Your cooperation shall highly be appreciated.

Section A. Bio Data

Please tick the most appropriate answer

1. Your gender

a) Male ☐

b) Female ☐

2. What's your age?

a) 21-30 years ☐

b) 31-40 years ☐

c) 41-above ☐

3. Educational Level.

a) Certificate ☐

b) Diploma ☐

c) Degree ☐

d) Masters ☐

e) Others:.....

4. Department

- a) Administration/ HRM b) Procurement & Logistics
- c) Accounts & Finance d) Sales & Marketing
- e) Operations

5. Period spent working in Century Bottling Company

- a) Less than 1 year b) 1-5 years
- c) 6-10 years d) Above 10 years

Section B: Relationship between supplier ICT and supply chain visibility in manufacturing firms in Uganda

Rate your degree of agreement on the relationship between supplier ICT and supply chain visibility in Century Bottling Company (Coca Cola) using a scale of 5(Strongly Agree), 4(Agree), 3(Not sure), 2(Disagree) and 1(Strongly Disagree).

s. no	Supplier ICT and supply chain visibility	SA	A	NS	D	SD
1	Supplier ICT systems provide real-time visibility of inventory levels and locations across our supply chain					
2	The use of supplier ICT systems enables proactive identification and resolution of supply chain disruptions					
3	Supplier ICT systems improve the accuracy of demand forecasting, leading to better supply chain visibility					
4	Our company benefits from supplier ICT systems by having access to up-to-date information on supplier performance					
5	Supplier ICT systems enhance our ability to track and monitor the movement of goods throughout the supply chain					
6	Supplier ICT systems enable efficient collaboration and information sharing with suppliers, resulting in improved supply chain visibility					

How else is supplier ICT related to supply chain visibility in other than the ones mentioned Century Bottling Company (Coca Cola) above?

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Section C: Drivers of supply chain integration in manufacturing firms in Uganda

Rate your degree of agreement on the drivers of supply chain integration in Century Bottling Company (Coca Cola) using a scale of 5(Strongly Agree), 4(Agree), 3(Not sure), 2(Disagree) and 1(Strongly Disagree).

s. no	Drivers of supply chain integration	SA	A	NS	D	SD
1	The increasing complexity of our company operations processes necessitates greater supply chain integration					
2	Competitive pressure from industry peers drives our company to pursue supply chain integration					
3	The need to reduce lead times and improve delivery speed is a driving force behind our supply chain integration efforts					
4	Enhancing product quality and reducing defects is a driver for our company to integrate its supply chain					
5	Government initiatives promoting supply chain integration play a significant role in driving our company's efforts					
6	The desire to gain a competitive advantage in the marketplace is a key driver for our company's supply chain integration Initiatives					

Suggest any other drivers of supply chain integration in Century Bottling Company (Coca Cola) other than the ones mentioned above?

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Section D: The key success factors for supply chain integration in manufacturing firms in Uganda

Rate your degree of agreement on the key success factors for supply chain integration in Century Bottling Company (Coca Cola) using a scale of 5(Strongly Agree), 4(Agree), 3(Not sure), 2(Disagree) and 1(Strongly Disagree).

s. no	Key success factors for supply chain integration	SA	A	NS	D	SD
1	Effective coordination and collaboration among supply chain partners contribute to successful supply chain integration in our Company					
2	Continuous training and skill development of supply chain employees are crucial success factors for supply chain integration in our company					
3	Adoption of standardized processes and procedures facilitates smooth integration across the supply chain in our company					
4	Our company considers strong supplier relationship management as a critical success factor for supply chain integration					
5	The ability to quickly adapt to changing market conditions and customer demands is a key success factor for our company's supply chain integration					
6	Continuous monitoring and evaluation of key performance indicators (KPIs) help drive successful supply chain integration efforts in our company					

Suggest any other key success factors for supply chain integration in Century Bottling Company (Coca Cola) other than the ones mentioned above?

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Thank you for your cooperation

