

**EFFECTS OF SUPPLY CHAIN INTEGRATION AND VALUE CREATION
ON PERFORMANCE OF MANUFACTURING FIRMS IN NAIROBI
COUNTY OF KENYA**

BY

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DECLARATION

Declaration by the Candidate

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DEDICATION

This research project is dedicated to my parents for their financial support and encouragement throughout my studies.

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ABSTRACT

In today's highly competitive and rapidly changing business landscape, organizational performance is critical for success. Organizations must continually improve their performance to meet the ever-increasing demands of customers, stakeholders, and the market. The objective of the study was to determine the mediating effect of value creation on the relationship between supply chain integration and the organizational performance of manufacturing firms in Nairobi County, Kenya. Specifically, the study sought to determine the effect of supply chain integration on organization performance, the effect of supply chain integration on value creation, the effect of value creation on organizational performance, as well as the mediating effect of value creation on the relationship between supply chain integration and organization performance of manufacturing firms in Nairobi County, Kenya. The study was informed by resource-based view (RBV) theory, resource dependence theory, and knowledge-based theory. The philosophical foundation of this study is in line with the positivist approach. Anchoring on an explanatory research design, the study target population was 1,255 respondents from 251 manufacturing firms in Nairobi, Kenya. The study sample size was 191, computed using the Nassiuma's formula. The firms were selected using stratified and simple random sampling techniques. Data was collected using structured questioners and items anchored on a five-point Likert scale. The study hypotheses were tested using a multiple regression model and the Hayes process macro for mediation analysis. The regression results revealed that supply chain integration ($\beta = 0.390$, $p = 0.000$) had a positive and significant effect on organization performance. In addition, supply chain integration ($\beta = 0.4092$, $p = 0.000$) had a positive and significant effect on value creation. While value creation ($\beta = 0.589$, $p = 0.000$) had a positive and significant effect on organizational performance, It was also discovered that value creation had a significant mediating effect on the relationship between supply chain integration [mediating index = 0.1802, CI (0.1101, 0.4039)] and firm performance. The study concludes that supply chain integration and value creation are complementary and strategic resources that enhance organizational performance. The study findings propose a framework showing the contribution of supply chain integration and value creation to enhance overall organizational performance. Furthermore, the assimilation of value creation would be pertinent for future studies to examine the mediating effect of value creation on individual dimensions of supply chain integration (internal, supplier, logistic, and customer integration) on organization performance in the current settings of digital transformation and where supply chain integration is required.

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ACRONYMS AND ABBREVIATIONS

COGS	Cost of Goods Sold
E2e	End-To-End
EABL	East Africa Bureau Limited
ICT	Information Communication Technology
IMA	Institute of Management Accountants
IT	Information Technology
KAM	Kenya Association of Manufacturers
NACOSTI	National Council of Science and Technology Institute
QM	Quality Management
RBV	Resource-Based View
RDT	Resource dependence theory
ROI	Return on Investment
SCI	Supply Chain Integration
SCM	Supply Chain Management
SCQM	Supply Chain Quality Management
SMEs	Small and Medium Enterprises
SPSS	Statistical Package for social Sciences
TQM	Total Quality Management

DEFINITIONS OF TERMS

- Supply Chain Integration** - Refers to the degree to which a manufacturer strategically collaborates with its supply chain partners in order to achieve effective and efficient flows of products and services to provide maximum value to the customer.
- Organization Performance**- Organization performance is a continuous and flexible process that involves managers and those whom they manage by acting as partners within a framework that sets out how they can best work together to achieve the required results.
- Value Creation** - Refers to the process of enhancing the worth of products, services, or business operations to meet customer needs and generate competitive advantage. It involves improving product quality, increasing cost efficiency, optimizing customer experiences.
- Supplier Integration**- Refers to the process by which a firm collaborates with its suppliers to streamline procurement, production, and delivery processes. It involves sharing information, aligning strategies, and coordinating operations to enhance efficiency, reduce costs, and improve product quality.
- Customer Integration**- Refers to the alignment of a company's operations, strategies, and decision-making processes with customer needs and preferences.
- Logistical Integration**- Refers to the coordination and synchronization of various logistics activities, such as transportation, warehousing, inventory management, and order fulfillment, across the supply chain.

CHAPTER ONE

INTRODUCTION

1.1 Introduction

The chapter presents the background to the study, statement of the problem, objectives of the study, research hypothesis, significance, and scope of the study.

1.2 Background of the Study

Organizational performance is the ability of an organization to reach its goals and optimize results. Previous studies have considered organizational performance as an important indicator of organizational success (Gavrea, Stegorean, & Divoiu, 2019; Stegorean & Gavrea, 2010). Organizational performance is considered an outcome accomplished by a person, team, organization, or process (Mahfouz, 2019). According to Carvalho et al. (2016), In modern business scenarios, firm performance in terms of profitability, sales revenue, market share, and customer satisfaction has become the backbone for every business organization (Resenweig, 2009). In bid to achieve this, all these organizations have introduced supply chain integration as one of the important organizational practices. All supply chain partners are joined together in the value-delivery network of the company that no one can perform better without the support of others (Flynn et al. 2010).

The ultimate objective of this cohesive relationship is to deliver value to customers and get the desired state of customer satisfaction and loyalty for the organization. Thus, the need to integrate the internal and external partners in supply chain at various levels (Flynn et al., 2010). According to Sammuel and Kashif (2013), supply chain integration is the degree to which a manufacturer strategically collaborates with its supply chain partners in order to achieve effective and efficient flows of products and services to provide maximum value to the customer. The objective of supply chain integration is

to increase effectiveness and accuracy in the overall operations of the company and streamline product, information, and cash flow from suppliers to the end consumer (Sammuel and Kashif, 2013). According to Richard et al. (2009), firm performance encompasses three specific areas of firm outcomes: financial performance (profits, return on assets); product market performance (sales, market share); and shareholder return (total shareholder return, economic value added).

Value creation and supply chain integration continue to play critical roles in influencing firms' ability to compete in the market. Therefore, more and more studies are increasingly looking across the supply chain, beyond its encompassing concept, to establish a link between supply chain integration, value creation, and supply chain management (SCM), with the aim of creating a seamless flow of goods and services and information from supplier operations to the ultimate customer. However, the linkages of value creation and supply chain integration have not yet been addressed explicitly and modeled collectively with respect to their contribution to firm performance. Indeed, previous studies have found there is a linkage between value creation and firm performance (Cannon et al. 2010). But inconsistent results are found on the direct relationship between value creation and firm performance in companies of varied sizes.

The implementation of value creation has significant impacts on operational efficiency (Liu et al. 2010). This implies that the actual contribution of value creation to firm performance may not be direct; perhaps it is probably mediated by a number of competencies and interrelated objectives (Wong et al., 2011). Given that firm capability is a significant source of greatest value and superior firm performance, it is vital to consider the impact of supply chain integration on firm performance (Cai et al. 2010). Due to the globalized nature of manufacturing activities, the arena of competition and

competitiveness advantage is moving from firms towards supply chains and networks. With the recent advancement of information and communication technologies, this participation is becoming a common business practice in firms in developed countries. Companies are more integrating into the world market for the global nature of the sourcing, manufacturing, and distribution.

The performance of manufacturing firms globally has been a key area of concern due to increasing market competition, rising operational costs, and the rapid evolution of supply chain management practices. Many firms struggle to maintain efficiency, reduce costs, and enhance customer satisfaction while managing complex supply chain networks (World Bank, 2023). In developed economies, firms have adopted integrated supply chain strategies to improve coordination, enhance operational efficiency, and create competitive advantages (Christopher & Holweg, 2021). Studies indicate that supply chain integration (SCI) plays a critical role in improving firm performance by enabling seamless coordination between suppliers, manufacturers, and customers (Ivanov & Dolgui, 2023). However, despite these advancements, firms still face challenges in maximizing value creation, as supply chain integration alone does not guarantee improved performance (Gunasekaran et al., 2022). For instance, a study conducted in China by Han et al. (2013) on the effects of supply chain integration (SCI) on firm performance in pork supply chains found out that internal integration and buyer-supplier relationship coordination are significantly related to firm performance in both relationships. Information technology integration is not significantly related to both upstream and downstream relationships. Logistics integration significantly contributes to pork processors' performance in relationships with downstream customers. In Kenya, managing supply chains in the recent business environment is increasingly challenging. Market globalization, short product life cycles, rapid technological growth, high

complexities in logistics and distribution, and involved manufacturing processes have led to complexities in managing supply chains.

Supply chain integration and its practices are considered a powerful weapon to gain competitive advantages (Lambart et al., 1998), and linking performance measurement systems to supply chain integration can lead to increased success of supply chain initiatives and even improve the performance of the organization. Despite a host of benefits gained from supply chain integration, only a few firms have adopted and successfully implemented the concept of jointly planning, controlling, and designing a supply chain (Lori et al., 2011).

In the African context, manufacturing firms encounter even greater challenges due to weak supply chain networks, inadequate infrastructure, and limited access to global markets (AfDB, 2023). Unlike their counterparts in developed economies, many African firms struggle with poor supplier relationships, inefficient logistics, and high production costs, which negatively impact their performance (Kimenyi & Were, 2024). Research suggests that while SCI is crucial for improving firm efficiency, its impact on performance is often influenced by value creation strategies such as product differentiation, cost leadership, and innovation (Ambe & Maleka, 2022). However, studies examining the mediating role of value creation in SCI-performance relationships in Africa remain limited, leaving a significant research gap (Njuguna & Kimani, 2023).

In Kenya, the manufacturing sector is one of the pillars of the country's economic growth under the Vision 2030 and Bottom-Up Economic Transformation Agenda (BETA) 2024. However, the sector has been experiencing declining performance, with its contribution to GDP dropping from 9.6% in 2019 to 7.2% in 2022 (KNBS, 2023).

Reports indicate that inefficient supply chain practices, high operational costs, and low levels of value creation have led to poor firm performance (Wekesa et al., 2023). While supply chain integration has been identified as a potential solution, its effectiveness in enhancing performance is not well understood without considering the role of value creation (Ochieng & Ndungu, 2023). Previous studies have largely focused on the direct relationship between SCI and performance, but have failed to examine how value creation mediates this relationship (Muriithi et al., 2024).

Manufacturing companies in Nairobi County have a well-performing supply chain; however, its integration with the supplier and customers has been very wanting of late due to the poor performance of the firms (KNBS, 2023). It is due to this background that this study sought to bridge this gap by investigating the mediating effect of value creation on the relationship between supply chain integration and firm performance among manufacturing firms in Nairobi County, Kenya.

1.3 Statement of the Problem

Organizations face many challenges in the current competitive world as a result of a rapid increase in new products, processes, and technologies, as well as customer preferences. Ideally, as much as supply chain integration plays an instrumental role in organizations, its actual effect in manufacturing companies has not been fully articulated or felt, and moreover, very few manufacturing companies have adopted and successfully implemented it in their supply chain. Their supply chain process and integration have been faulted to cause bottlenecks in the performance of the firm and even its operation.

According to the 2018 Kenya overview annual report from the World Bank and KAM (2018), out of the more than two hundred manufacturing firms registered by the

Ministry of Industrialization in Nairobi County, 30 firms, representing 47%, have experienced many cases of poor performance due to poor supply chain integration. This is a disturbingly high statistic as compared to neighboring manufacturing companies in other towns.

The performance of manufacturing firms in Nairobi County has been a major concern due to declining productivity, inefficiencies in operations, and reduced competitiveness. Despite the critical role of manufacturing in Kenya's economic development, many firms struggle to achieve sustainable growth due to challenges such as low profitability, declining market share, inconsistent product quality, and high operational costs. Reports from the Kenya Association of Manufacturers (KAM, 2018) indicate that approximately 47% of manufacturing firms in Nairobi County have experienced declining performance in recent years, affecting their ability to meet customer demands and compete effectively in both local and international markets.

A key contributor to this decline is the limited ability of firms to create value through efficient operations, innovation, and market responsiveness. Many manufacturing firms face difficulties in optimizing their supply chain strategies to enhance production efficiency and cost management. Moreover, a lack of strategic integration between suppliers, customers, and internal operations has resulted in fragmented processes, delayed production cycles, and inconsistent delivery of products. This inefficiency has led to higher production costs, longer lead times, and poor customer satisfaction, which negatively impact firm performance.

Furthermore, while supply chain integration has been widely acknowledged as a performance-enhancing factor, its actual implementation remains weak in most manufacturing firms in Kenya. Prior studies have focused on direct relationships

between supply chain integration and performance but have overlooked the role of value creation as a mediating factor in enhancing firm performance. Value creation through cost efficiency, product differentiation, and innovation plays a critical role in improving organizational performance, yet its contribution in manufacturing firms remains underexplored.

Thus, this study sought to investigate the mediating role of value creation in the relationship between supply chain integration and firm performance. The gap is that the role of value creation as a mediating variable between supply chain integration and performance of manufacturing firms in Kenya and other developing countries seems not to have been established by previous studies.

1.4 Objectives of the Study

1.4.1 General Objective

To determine the mediating effect of value creation on the relationships between supply chain integration and firm performance of manufacturing firms in Nairobi County, Kenya.

1.4.2 Specific Objectives;

The study was guided by the following specific objectives;

- i. Establish the relationship between supplier integration and performance of manufacturing firms in Nairobi County, Kenya.
- ii. Analyze the relationship between customer integration and performance of manufacturing firms in Nairobi County, Kenya.
- iii. Establish the relationship between logistic integration and performance of manufacturing firms in Nairobi County, Kenya.

- iv. Determine the relationship between information integration and performance of manufacturing firms in Nairobi County, Kenya.
- v. Establish the relationship between supply chain integration and value creation of manufacturing firms in Nairobi County, Kenya.
- vi. Establish the relationship between value creation and performance of manufacturing firms in Nairobi County, Kenya.
- vii. Analyze the mediating effect of value creation on the relationship between supply chain integration and performance of manufacturing firms in Nairobi County, Kenya.

1.5 Research Hypotheses

- H₀₁**; There is no significant relationship between supplier integration and performance of manufacturing firms in Nairobi County, Kenya.
- H₀₂**; There is no significant relationship between customer integration and performance of manufacturing firms in Nairobi County, Kenya.
- H₀₃**; There is no significant relationship between logistical integration and performance of manufacturing firms in Nairobi County, Kenya.
- H₀₄**; There is no significant relationship between information integration and organizational performance of manufacturing firms in Nairobi County, Kenya.
- H₀₅**; There is no significant relationship between supply chain integration and value creation of manufacturing firms in Nairobi County, Kenya.
- H₀₆**; There is no significant relationship between value creation and organization performance of manufacturing firms in Nairobi County, Kenya.
- H₀₇**; Value creation does not have a mediating effect on the relationship between supply chain integration and organization performance of manufacturing firms in Nairobi County, Kenya.

1.6 Significance of the Study

The study sought to determine the relationship between supply chain integration, value creation, and firm performance of the manufacturing firms in Nairobi County, Kenya. The study findings will be beneficial to various stakeholders as they brought different perspectives on supply chain integration, value creation, and the performance of manufacturing firms in Nairobi County. First, the study would be important to the management of manufacturing companies since it elaborates on the importance of value creation in the relationship between supply chain integration and the performance of manufacturing firms.

This study was important to not only manufacturing firms' managers but also to local managers working in turbulent global environments seeking ways to enhance value creation and organization performance by embracing supply chain integration. The study also created a finding that could be replicated in other organizations that are facing global and local competition. Most importantly, the study developed a consensus about current findings and an understanding of the underdeveloped areas and misunderstandings of the supply chain integration phenomenon.

1.7 Scope of the Study

This study focused on examining the mediating effect of value creation on the relationship between supply chain integration and the performance of manufacturing firms in Nairobi County of Kenya. The study was conducted in Nairobi County, Kenya, which serves as the industrial hub of the country, hosting a significant proportion of Kenya's manufacturing firms. The study was anchored on three key theories; Resource-Based View (RBV) Theory (Barney, 1991). This theory explains how internal firm resources, including supply chain capabilities and value creation strategies, contribute to competitive advantage and firm performance. Resource

Dependence Theory (RDT) (Pfeffer & Salancik, 1978), emphasizes the importance of external resources and how firms depend on supply chain relationships to enhance efficiency and performance. Knowledge-Based Theory (KBT) (Grant, 1997) highlights the role of knowledge sharing and value creation in improving supply chain efficiency and organizational performance.

The study adopted an explanatory research design to assess causal relationships between supply chain integration, value creation, and firm performance. The target population consists of 251 registered manufacturing firms in Nairobi County according to data from KNBS, (2023). Utilizing a sample size of 191 participants from the manufacturing firms. The research used both structured and unstructured questionnaires with the help of a research assistant to collect data from the firms. Hierarchical regression models and Hayes PROCESS Macro vs. 4.0 for mediation were used to analyze the data for the hypothesis test. The study was conducted between September 2023 and December 2023.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter reviews the previous studies in the related field, acknowledging the contributions made by the scholars' seminar papers, conference proceedings, business journals, text books, and periodicals. It identifies the gap and provides the way forward. A critical review is done to identify gaps.

2.2 Organization Performance

Organizational performance is the ability of an organization to reach its goals and optimize results. Organizational performance is an important indicator of organizational success (Gavrea, Stegorean, & Divoiu, 2019; Stegorean & Gavrea, 2010). Organizational performance has been defined as an outcome accomplished by a person, team, organization, or process (Mahfouz, 2019). Hence, organization performance and success also relate to employee skill levels, personnel development, the quality of strategic planning, and the ability to understand and adapt to the nature and dynamics of the business environment (Carvalho et al. 2016). Generally, organizational performance is arguably the most important indicator of organizational success and one of the most important variables in management research (Stegorean & Gavrea 2010). Thus, organizational performance is the ability of an organization to reach its goals and optimize results. In today's workforce, organizational performance is the company's ability to achieve goals in a state of constant change. Performance is the outcome that the organization seeks to achieve in the long term (Borahima, Noermijati, Hadiwidjojo, & Rofiq, 2021; Morgan, Vorhies, & Mason, 2009).

The concept of firm performance needs to be distinguished from the broader construct of organizational effectiveness. Vanichchinchai et al. (2011) offered an enlightening figure of three overlapping concentric circles, with the largest representing organizational effectiveness. Inayatullah et al. (2012) point out that overall organizational performance can be divided into three parts: financial performance, product performance, and operational performance. The financial performance of an organization includes market share, return on investment, profit margin, inventory turnover rate, and productivity. Product performance includes functionality, service, operating expenses, comfort, and ease of use. Higher product performance enhances customer and employee satisfaction. Operational performance includes: product/service quality, lead time/service completion time, product development time, utilization of resources, responsiveness to customer demand, and operational cost.

According to Hussein, Mohamad, Noordin, & Ishak (2014), organizational performance is the outcome of various organizational processes that occur in the course of its daily operations. Performance and success have been defined in various ways in the literature, and in any business, the related parties always want to see good performance in their business (Bahta, Yun, Islam & Bikanyi, 2021; Islam et al., 2011). Performance management includes activities that ensure organizational goals are consistently being met in an effective and efficient manner (Bahta et al., 2021). Generally, performance management focuses on the performance of the organization, a department, processes to build a product or service, and employees. Hence, performance is the result of strategies the company employs to achieve market-oriented and financial goals (Harash et al. 2014). While organizational performance involves analyzing a company's performance against its objectives and goals.

Generally, the analysis focuses on three main outcomes: first, shareholder value performance; second, financial performance; and third, market performance. However, organizational performance has not been frequently defined and has been used differently according to the context, as well as being difficult to define and measure (Hussein et al., 2014). Organizational performance is the degree of an organization's achievement of its mission (Cascio, 2006). Organizational performance is the set of achievements gained after implementing a set of practices. In general, the concept of organizational performance is based on the idea that an organization is a voluntary association of productive assets that includes human, physical, and capital resources aimed at achieving a shared purpose (Kyere & Ausloos, 2021; Alchian & Demsetz, 1972; Barney, 2001; Jensen & Meckling, 1976; Simon, 1976).

Different organizations develop different metrics for measuring their business performance. The balanced scorecard is a conceptual framework for translating an organization's strategic objectives into a set of performance indicators distributed among four perspectives or dimensions, which include financial, customer, internal business processes, and learning and growth. Financial perspective is measured by financial performance; customer satisfaction represents the customer perspective; and finally, operational performance consists of internal processes, innovation, and learning (Kaplan and Norton, 2010). Customer satisfaction relates to response to customer standards, customer evaluation of firm performance, continuity of use of the firm's product or service, and recommendation of the firm's product or service to others (Bozarth et al., 2009). The financial perspective focuses on material acquisition costs, non-quality costs, warehousing costs, manufacturing unit costs, the cost of carrying inventory, logistics costs, transportation costs, sales revenue, market share, return on investment, and return on sale (Beamon, 2010).

Operational performance focuses on the delivery of inputs on time, material inventories, quality inputs, inspection of incoming materials, components, and products, set-up time, lead-time, inventory levels, rate of defective products, level of utilization at the plant, product or service quality, rate of new product development, level of absenteeism, and employee's productivity (Beamon, 2010). Some indicators are maintained to measure an organization's progress toward achieving its vision; other indicators are maintained to measure the long-term drivers of success (Kaplan, 2010). Through the balanced scorecard, an organization monitors both its current performance (finance, customer satisfaction, & business process results) and its efforts to improve processes, motivate and educate employees, and enhance information systems, as well as its ability to learn and improve (Kaplan & Norton 2010). The performance prism is a starting point for organization's stakeholders, including investors, intermediaries, employees, suppliers, and regulators.

This broadest domain of organizational effectiveness includes the medium circle representing business performance, which includes the inner circle representing financial performance. Organizational effectiveness covers other aspects related to the functioning of the organization, such as the absence of internal strain and faults, engagement in legitimate activities, resource acquisition, and accomplishment of stated goals (Al-Ettayem et al., 2015). Firm performance is a subset of organizational effectiveness that includes operational and financial outcomes (Santos & Brito, 2012). Performance measurement is very essential for the proper management of any organization. Zehir et al. (2012) utilized financial, business, innovation, operational, and quality performance while examining the relation between TQM practices and performance. Hassan et al. (2012) identified TQM practices that incorporate diversified measures of performance.

Additionally, Easton and Jarrell (1994) corporate performance; Brahet et al. (2000) business performance; organizational performance (Sterman et al., 1997); plant performance (Choi & Eboch, 1998); operational performance (Terziovski and Samson, 1999); financial performance (Agus and Hassan, 2000); and stock price performance (Hendricks and Singhal, 2001). Koh et al. (2007) and Petrovic-Lazarevic et al. (2007) examine organizational performance from the perspective of supply chain management. While Koh et al. (2007) stated that organizational performance measured by financial and market criteria requires the short-term goal of supply chain management of improving productivity and reducing inventory and the long-term goal of supply chain management of increasing market share and integration. Ardianto and Natsir (2014) identified six indicators to measure organizational performance: lead time, inventory turnover, product rejection or return, sales level, cost reduction, and meeting customer requirements.

2.3 Supply Chain Integration

The supply chain is a network of organizations connected via vertical sequences or upstream and downstream linkages of interconnected transactions and processes that add value to the final products and services delivered to the end consumer, where the network is actively governed by the buying organizations (Christopher and Towill, 2001; Singh and Verma, 2018; Wang and Song, 2017). Supply chain integration is the strategic collaboration of an organization with its supply chain partners, enabling the organization to manage external and internal processes, and as a result, the movement of products, services, organizational information, and capital will be much more effective and efficient (Huo, 2012; Van der Vaart & van Donk, 2008; Zhao, Feng, & Wang, 2015).

According to Flynn et al. (2010), supply chain integration is the degree to which a firm collaboratively manages intra- and inter-organizational processes with channel partners. Further, supply chain integration has been defined as organizational processes to integrate suppliers, customers, and internal functional units in order to optimize the total performance of all partners in the supply chain (Frohlich & Westbrook, 2001). Generally, the scope of supply chain integration is not limited, but it has a wide scope ranging from supplier integration to customer integration, covering the central concept of internal integration (Zhao et al., 2010). Hence, supply chain integration is a strategy that establishes a single system that brings together multiple stakeholders to enhance efficiency, both in terms of productivity and cost savings. Generally, consideration of the dimensionality of supply chain integration is important in understanding how individual dimensions operate as well as how they function jointly.

While some authors investigated supply chain integration as a unidimensional construct (Armistead and Mapes, 1993; Marquez et al., 2004; Rosenzweig et al., 2003), others have broken supply chain integration into internal and external integration (Campbell and Sankaranl, 2005; Morash and Clinton, 1998; O’Leary- Kelly and Flores, 2002; Pagell, 2004; Petersen et al., 2005; Ragatz et al., 2002; Stank et al., 2001b; Stanley and Wisner, 2001; Zailani and Rajagopal, 2005), and some have taken an even broader perspective, including multiple dimensions (Droge et al., 2004; Gimenez and Ventura, 2005; Koufteros et al., 2005; Narasimhan and Kim, 2002; Stank et al., 2001a; Vickery et al., 2003). Hence, each of the dimensions represents an important aspect of supply chain integration; however, there is overlap between the dimensions, making it difficult to untangle their relationships.

Generally, supply chain integration's dimensions are normally divided into three dimensions: customer, supplier, and internal integration. Customer and supplier integration is commonly referred to as external integration, which is the degree to which a manufacturer partners with its external partners to structure inter-organizational strategies, practices, and processes into collaborative, synchronized processes (Stank et al., 2001b). Customer integration involves core competencies derived from coordination with critical customers, whereas supplier integration involves core competencies related to coordination with critical suppliers (Bowersox et al., 1999). While internal integration focuses on activities within a manufacturer, generally, it's the degree to which a manufacturer structures its own organizational strategies, practices, and processes into collaborative, synchronized processes in order to fulfill its customers' requirements (Cespedes, 1996; Kahn and Mentzer, 1996; Kingman-Brundage et al., 1995) and efficiently interact with its suppliers.

However, other previous studies have divided supply chain integration into two main types: internal integration and external integration (Mustafa Kamal & Irani, 2014; Vijayasathya, 2010). Internal integration and external integration play different roles in supply chain integration. While internal integration recognizes that departments and functions within a manufacturer should function as part of an integrated process, external integration recognizes the importance of establishing close, interactive relationships with customers and suppliers. Both perspectives are important in allowing supply chain members to act in a concerted way to maximize the value of the supply chain (Huo, Qi, Wang, & Zhao, 2014). Based on previous studies, we investigate three dimensions of supply chain integration: customer integration, supplier integration, and internal integration (Ataseven & Nair, 2017; Flynn, Huo, & Zhao, 2010).

2.3.1 Information Sharing Integration

Information integration refers to the extent to which information is exchanged among members across the supply chain (Rai et al., 2006). It reflects the degree of information transparency and direct, real-time information availability. Lee and Whang, (2004) generally agrees that information integration is the foundation of supply chain integration. Information integration occurs when a firm works together with suppliers to exchange information and develop a coordinated information flow and system (Panetto and Moline, 2008; Yeung et al., 2009). It requires a firm and suppliers to develop interoperable systems by connecting and integrating core elements from enterprise resource planning systems, data warehouses and other enterprise applications into a common platform via computer networks (Chen, Doumeingts, and Vernadat, 2008).

Through the standardization of data models, joint development of applications and direct communications with suppliers via computer networks, a firm can build performance metrics associated with task execution and outcomes and learn about critical changes in environments (Frohlich and Westbrook, 2001), which allow the firm and its suppliers to coordinate production and delivery, improve forecasting and planning (Alfalla-Luque, Medina-Lopez, and Schrage, 2013). Providing information such as (scheduling, planning, shipment notices and sales forecasting) to suppliers enables a firm to improve inventory management and replenishment planning (Lai et al., 2012), in turn, helps the firm reduce operating costs, transaction risks and coordination costs and improve productivity. According to Lee and Whang (2004) capability for all supply chain partners to have access to share information on a timely basis is key to improving supply chain performance.

Therefore, information sharing is critical for operational and business performance. Specifically, information sharing facilitates product delivery, new market exploration, and new product/services promotion (Devaraj et al., 2017). With the availability of real-time and rich content information, firms can sense and respond to market uncertainties rapidly and extensively. Hence, through sharing information in the supply chain, a firm can quickly detect the problems related to customer demands, especially when customers want to receive information directed toward their special needs and interest at any time and place. Therefore, such information helped the firm proactively prepare for responding to such demand changes, which is critical for its operational performance.

Information sharing reduces demand uncertainty and the phenomenon of increasing variability of demand in a supply chain (Rai et al., 2006). Information sharing helps firms increase profits by reducing the cost of inventories and enhancing capital and cash flow utilization, thereby improving performance (Rai et al., 2006). In general, effective information sharing enhances mutual understanding, which reduces miscommunication and prevents unnecessary mistakes, hence, decreasing transaction costs across the supply chain (Wu et al., 2006). Increased information transparency allows firms to choose suppliers with lower prices, enabling them to produce and deliver products or services at lower cost (Chen et al., 2004).

2.3.2 Supplier Integration

Supplier integration occurs when a firm partners with its suppliers to structure inter-organizational strategies, develop synchronized processes and share information and knowledge (Flynn, Huo, and Zhao 2010). Hence, the upstream relationship of a firm and its suppliers is called supplier integration.

Supplier integration enables the collaboration of firms in sharing technical, operational and financial information as well as providing the suppliers with an opportunity to participate in decision making (Monks, 2014). In addition supplier integration has been considered to be a critical source of competitive advantage as it improves inter-enterprise operations (Stank, Daugherty, & Ellinger, 1999; Wang, Yeung, & Zhang, 2011). Supplier integration provides a unity of effort in meeting customer requirements for products (Narasimhan & Kim, 2002) and in responding to changes in markets (Zhao et al., 2013). Firms can acquire insights into suppliers' processes, capabilities and constraints (Yeung et al., 2009; Huo 2012), ultimately enabling more effective planning and forecasting, better product and process designs and reduced transaction costs (Zhang & Huo, 2013).

Integration with suppliers represents a change from adversarial to a cooperative attitude, commencing with product development, the supply of high-quality products, the processing and incorporation of changes in specifications, technology exchange and design support. Hence, the ways firms relate with suppliers have changed considerably (Teymoori & Ahmadi, 2010). Given that manufacturing firms are getting more and more focused on their core competence, their reliance on strategic supplier has increased. Among the changes, three key aspects of supplier relationships are highlighted here. First, the trend now is to build a long-term relationship with suppliers rather than short-term contracts. Second, in conjunction with the first point, firms now use fewer suppliers over a longer period of time rather than keeping a large base of suppliers which allow them to change suppliers for almost every contract. The benefits of having low price resulted from creating competition among suppliers are now changed into low total cost of ownership due to long-term and large volume of purchases (Rajabzadeh, et al 2008).

Supplier activities include activities such as placing strategic activities with suppliers, involving suppliers' capability to generate new products during the design stage, production planning, and inventory management, having a rapid response order processing system with suppliers, installing a supplier network that ensures reliable delivery, and exchanging information with suppliers.

2.3.3 Customer Integration

Customer integration is downstream supply chain integration and involves obtaining technological, marketing, production and inventory information from customers to be used to improve products by the company (Halley and Beaulieu 2009). Customer satisfaction can be realized by producers using the information got together with what the various customers need. The idea of customer integration creates a link with the customers and hence their preferences are clearly understood. As posited by Baulcomb (2013) it can be done by ensuring that opinions of customers are factored in during production of goods. Methods and ways are employed in enhancing manufacturer and customer coordination.

To achieve customer integration, there should be seamless links between the organization and its customers, both parties should be able to access accurate and real time information. There should be seamless links between them in terms of business processes as well as strong supplier-customer relationships (Frohlich and Westbrook, 2001). Supply chain integration is a performance-improving approach that develops seamless linkages between the various actors, levels, and functions within a supply chain to optimize customer service. The objectives of supply chain integration are to improve efficiency and reduce redundancy while also enhancing product availability.

Supply chain integration strives to better connect demand with supply, which can both improve customer service and lower costs. However, it is not always possible to simultaneously achieve all these various objectives; a designer may need to make tradeoffs and balance competing priorities while working toward the ultimate goal of better serving customers.

2.3.4 Logistical Integration

According to Mwau (2012) logistical integration is performed in all the departments from receipt of materials to distribution. It involves integrating internal functions across departments under the control of the manufacturer to meet the customers' needs. This can be achieved by the collaborative and organized manner which a firm's functions work together to meet the customer needs. The middle function departments involved include production, marketing, logistics, marketing, sales, procurement and distribution. The functions perform as a unit to drive efficiency and improve the overall performance. According to Whang, (2008) joint planning, shared information, functional coordinated teams and collaborating to ensure products and services are not overdue and that they meet customer expectations. According to Stock et al (2014), logistics integration refers to specific logistics practices and operational activities that coordinate the flow of materials from suppliers to customers throughout the value stream. Six critical areas of competence that top firms deploy to achieve supply chain integration have been characterized in a framework introduced by Bowersox, Gloss, and Stank (1999). The six competence areas include customer integration, internal integration, material and service supplier integration, technology and planning integration, measurement integration, and relationship integration.

Each competency comprises unique functional capabilities (the knowledge and achievement essential to developing logistical competency) that reflect the

organizational knowledge and experience essential to developing logistical distinctiveness (Bowersox, Gloss, and Stank, 1999). Increasing competition not only guides organizations to improve their internal operations process control and inventory management) but also focuses on the integration of suppliers and customers in the entire processes of chain. Thus, suppliers' involvement in delivering value to customers causes competitive capabilities such as quality, delivery, flexibility and cost (Prajogo & Olhager, 2012).

2.4 Value Creation

Value creation is a firm's interpretation and response to customer requirements with the delivery of superior products in the value offering and the extent of perceived value customers receive. Generally, value creation is based on four indicators, namely value added of product quality, cost efficiency, product service assurance, and customer response (O'Cass & Sok 2013). Jianu (2007) states that value creation is the primary aim of any business entity. Hence, value creation is a major objective of business firms. Therefore, a firm must create value for its shareholders; some insist that value must be created not just for shareholders but also for all stakeholders. Creating value for customers helps sell products and services, while creating value for shareholders, in the form of increases in stock price, insures the future availability of investment capital to fund operations. Value creation describes the bundle of products and services that creates value for a specific customer segment. The value creation is the reason why customers turn to one company over another. It solves a customer problem or satisfies a customer need.

Each value creation consists of a selected bundle of products and/or services that caters to the requirements of a specific customer segment. Porter (1985) develops a framework of value chains, which is known as Porter analysis in creating value in the organization

category. Moreover, Porter (1985) conducted value chains analysis by studying company activities that have a direct effect on value creation and supporting activities so that they affect the value and eventually affect performance. Tsai and Ghoshal (2014) explain that organizations need to create new products and unique products, specificize their products, reallocate resources, combine new resources, and combine existing resources in new markets. According to O'Cass and Sok (2013), it emphasizes that the value creation concept in an organization is a determinant variable of the company's innovation activity.

Moreover, managers and employees have important roles in creating value. The result of the study showed that innovation capability has a positive effect on the organization's ability to bargain value and eventually affects performance. Clarke and Fuller (2011) tested the role of multi-organization Cross Sector Social Partnership (CSSP), which focused on strategic collaborative management on performance. Some researchers state that value creation is the main key to generating product innovation, which eventually affects the enhancement of business performance (Viljakainen and Toivonen 2014; Sorensen and Jensen 2015). Another study conducted by Lefaix- Durand et al. (2015) explains the inter-firm relationship model and value creation. The value creation process model can be established through cooperative processes in the internal business. Inter-firm relationships are a new trend in the present business environment, such as market orientation, time-based competition, supply-chain management, and strategic partnerships in business. Others may be similar to existing market offers, but with added features and attributes.

The three components of interest in value creation in buyer-supplier relationships are service or product line capability, client-specific knowledge, and client-specific economies of scope (Anderson & Narus, 2015). Product quality or product line

capability is the baseline ability of a supplier of services or products to deliver value to a customer. It is defined by the customer's perceived value of a product or service and can be estimated as the maximum amount a customer is prepared to pay for a product or service. It is important to highlight that this is not the effective value of the good but a superior value that encompasses the benefits the customer perceives in that good, such as innovation or product utility (Anderson & Narus, 2015). Customer knowledge and client-specific economies of scope represent a supplier's level of general capability. Weng and Huang (2012) tested the effect of the ability to integrate customer knowledge, the ability of customer knowledge creation, and the ability to develop customers's relationships on the performance development of new services.

The result of the empirical study of Weng and Huang (2012) showed the ability to absorb customers's knowledge has a positive correlation with the performance development of new services, and the ability to integrate customers knowledge completely mediates the relationship between the ability to absorb customer knowledge and the performance development of new services. Cost efficiency is a basis for creating value since cost advantage results from a reduction in costs associated with activities in a value chain. Product service assurance is important in creating value in organizations. According to Gurau (2014), the value creation concept is closely related to internal activities in creating value for the customers. The organization's internal activities include design, product, market, delivery, and other activities that support the creation of a product.

Customer response is significant in most organizations, and creating value for customers is a concern to all kinds of businesses and provides support to organizations for the assurance and improvement of quality. Banyte and Dovaliene (2014) investigate the correlations between customer engagement into value creation and customer

loyalty. Moreover, the result showed that the relationship between customer engagement, value creation, and customer loyalty is analyzed in an integrated manner, i.e., through direct and indirect relationships between the two constructs. Some value creation may be innovative and represent a new or disruptive offer.

2.5 Theoretical Review

Three theories have provided the theoretical underpinning of the research focusing on supply chain integration, value creation, and organization performance. These are resource-based view theory (RBV), Knowledge Based Theory and Resource Dependency Theory (RDT). The study first describes each of the theories, followed by a discussion of their differences and criticisms. Then the study present empirical evidence.

2.5.1 Resource-Based View (RBV) Theory

This is the main theory that underpins this study. Resources Based View theory was proposed by Barney (1991) and Wernerfelt (1984). The RBV theory emphasizes that a firm's internal resources and capabilities including supply chain integration and value creation are key determinants of competitive advantage and firm performance. In this study, supply chain integration is viewed as a strategic resource that enables firms to optimize operations, enhance efficiency, and create value, which ultimately improves firm performance. Value creation, which is the mediating variable, aligns with the RBV perspective that firms must leverage unique capabilities (e.g., cost efficiency, product differentiation, innovation) to sustain long-term competitive advantage. The theory supports the idea that manufacturing firms can improve performance by effectively integrating supply chain activities and leveraging value-adding processes.

The premises of the resource-based view is that successful firms develop distinctive capabilities on which their future competitiveness was based; which capabilities are often unique to each firm, and may also be implied and intangible in nature. Unlike the other approaches, the resource based view suggests that firm performance is mainly determined by internal rather than external variables (Barney, 1991). Firms 'follow heterogeneous historical paths and as a result, create different qualifications that affect their capabilities in different ways (Wernerfelt, 1984). According to the RBV theory, successful firms in an industry are successful because they can access a range of resources and thus gain competitive advantages. In this context, "resources" refers to all tangible and intangible assets, such as cash, loans, capabilities and qualifications, organizational processes, firm attributes, information, and knowledge (Wernerfelt, 1984).

RBV believes that a firm's resources and capabilities are its most important assets so the primary concern of RBS is about obtaining access to another firm's core competencies to gain competitive advantage. The resource-based view (RBV) as a basis for the competitive advantage of a firm lies primarily in the application of a bundle of valuable tangible or intangible resources at the firm's disposal (Tushman and Anderson, 2006). To transform a short-run competitive advantage into a sustained competitive advantage requires that these resources are heterogeneous in nature and not perfectly mobile. Effectively, this translates into valuable resources that are neither perfectly imitable nor substitutable without great effort (Barney, 1991). If these conditions hold, the bundle of resources can sustain the firm's above average returns. This theory is relevant to the study on supply chain integration, value creation and performance because firms consist of a collection of heterogeneous resources and that these resources are the source of competitive advantage (Barney, 1991).

In other words, generating a competitive advantage depends on what unique internal resources a firm possesses. These resources can be tangible or intangible. Improving firms' performance involves the engagement of supply chain integration, supply chain coordination, value creation and improved product quality. This also enhances competitive advantage and this depends on the position of the organization in terms of management support, planning, information, market and products, rather than the internal resources possessed by the firm. Hence, RBV represents an important departure from this view. RBV suggests that firms are composed of heterogeneous resources which contribute to differentiate firms from each other (Barney, 1991).

While RBV has been widely accepted, it has faced criticism on several fronts. Priem and Butler (2001) argue that RBV is tautological, as it assumes that resources leading to competitive advantage must already be valuable without specifying how firms can acquire or develop such resources. RBV focuses primarily on internal resources and capabilities, ignoring external factors such as market dynamics and competition (Foss & Knudsen, 2003). The theory assumes that resources are static and fail to explain how firms develop or renew their resources over time in a dynamic business environment (Eisenhardt & Martin, 2000).

In conclusion, this theory leverages upon the fact that in order to drive firm performance, an organization needs to develop a distinct supply chain integration (supplier integration, customer integration, information integration, operational coordination and logistical integration and value creation through cost leadership and differentiation that pushed their financial performance, customer satisfaction, operational performance and competitiveness. One of the ways of achieving this is through having an integrated supply chain.

2.5.2 Resource Dependence Theory

Resource dependence theory (RDT) is the study of how the external resources of organizations affect the behavior of the organization. The procurement of external resources is an important tenet of both the strategic and tactical management of any company. Nevertheless, a theory of the consequences of this importance was not formalized until the 1970s, with the publication of *The External Control of Organizations* (Pfeffer and Salancik 1978).

Resource dependence theory has implications regarding the optimal divisional structure of organizations, recruitment of board members and employees, production strategies, contract structure, external organizational links, and many other aspects of organizational strategy. Resource Dependency theory is important to the study because resource dependence reflects the importance to a firm of obtaining resources from another firm to accomplish objectives (Wisner et al., 2006). An underlying assumption of resource dependency theory is that most organizations are not self-sufficient; resulting in dependence upon other firms to obtain critical resources. Resource dependency theory is also significant whereby supply chain integration and value creation should actually be efficient and effective. Hence, organization need to be efficient to minimize resources in accomplish specific outcomes, and effective in designing supply chain quality management.

The criticism of the theory are that RDT focuses heavily on external resource dependence while underestimating firms' internal capabilities to adapt or innovate independently (Hillman et al., 2009). Critics argue that firms are not entirely passive entities constrained by resource dependencies; they can strategically manage dependencies through alliances, mergers, or diversification (Davis & Cobb, 2010). The

theory does not adequately address how resource dependencies evolve over time or how firms can mitigate risks through strategic responses (Casciaro & Piskorski, 2005).

Therefore, for the company/firm to survive competition and improve on performance, depends on how well it implements supply chain integration and value creation that meets customer preferences in terms of service, cost, quality, and flexibility, by designing a supply chain which was more effective and efficient than competitors.

2.5.3 Knowledge Based Theory

Knowledge based theory considers intangible resources of an organization. Knowledge based theory was developed by Grand (1997) who made significant contribution in the development of theory. The theory promotes the sharing of knowledge as key to value creation to both internal and external organizational supply chain collaborations. According to Grand (1997), knowledge-based theory is a source of competitive advantage and also exchange of knowledge increases an organization's supply chain value creation.

Knowledge based theory looks at several dimensions that assist an organization to achieve its goals i.e. new product development, organizational capabilities, innovation, and organizational learning (Grand, 1997). According to Alavi and Leinder (2001) information sharing play an important role in knowledge-based view of the firm in that information systems can be used to synthesize, enhance and expedite large scale intra and inter firm knowledge management. Knowledge based capabilities are considered to be the most strategically important ones to create and sustain competitive advantage (DeNisi, Hitt & Jackson, 2003). Hence, the ability of an organization to learn faster than its competitors is source of competitive advantage (Geus, 1988). Capabilities lead

to superior performances since they are specific to each organization (Rugman & Verbeke, 2002).

Critics argue that Knowledge Based Theory overstates the importance of knowledge while ignoring other critical factors such as financial, physical, and human resources (Spender & Grant, 1996). The theory lacks clear mechanisms to measure and manage knowledge assets effectively (Eisenhardt & Santos, 2002). Knowledge transfer is often difficult due to organizational culture and absorptive capacity constraints (Szulanski, 1996).

In conclusion, management, suppliers and retailers have knowledge in different domains and this knowledge can create a unique set of supply chain integration, supply chain coordination, value creation and improved quality product that can be applied to improve business processes and operations. Better relationship between an organization suppliers and retailers improved prospect of new product development.

2.6 Empirical Review

The sections provided studies with empirical findings, methodologies, samples, conclusions and summary of the effect of value creation on performance, effect of value creation on supply chain integration, effect of supply chain integration on performance and mediation effect of value creation on the relationship between supply chain integration and performance.

2.6.1 Effect of Value Creation on Organization Performance

Value creation is the primary aim of any business entity. Creating value for customers helps sell products and services, while creating value for shareholders, in the form of increases in stock price, insures the future availability of investment capital to fund operations. From a financial perspective, value is said to be created when a business

earns revenue (or a return on capital) that exceeds expenses (or the cost of capital) (Hitt & Hoskisson, 2007). According to Marete (2010), value creation in today's companies is increasingly represented in the intangible drivers like innovation, people, ideas, and brand. Value creation is increasingly being recognized as a management goal rather than strict financial measures of performance, many of which tend to place cost-cutting that produces short-term results ahead of investments that enhance long-term competitiveness and growth.

The first step in achieving an organization-wide focus on value creation is by understanding the sources and drivers of value creation within the industry, company, and marketplace. Understanding what creates value helped managers focus capital and talent on the most profitable opportunities for growth. "If customers value consistent quality and timely delivery, then the skills, systems, and processes that produce and deliver quality products and services are highly valuable to the organization (Kaplan & Norton, 2004). Generally, consistent alignment of actions and capabilities with the customer value proposition is the core of strategy execution (Kaplan & Norton 2004). Although the intangible factors that drive value creation differ by industry, some of the major categories of intangible assets include technology, innovation, intellectual property, alliances, management capabilities, employee relations, customer relations, community relations, and brand value.

According to Kaplan and Norton (2004), the link between these intangible assets and value creation is corporate strategy. It is important to note that investments made to enhance intangible assets (research and development, employee training, and brand building, for example) usually provide indirect rather than direct benefits. In this way, focusing on value creation forces an organization to adopt a long-term perspective and align all of its resources toward future goals. Further, Capon (2008) attributed co-

creation of value to the assumption that the interests of the firm and that of the stakeholder can be integrated in a way that improves both organizational and economic performance while increasing stakeholder satisfaction. Value theory, in the classical economic sense, is thought of as the process of transforming raw material into value creations that produce profit.

According to Smith (2010), value creation with view of a complementary connection between the interests of the stakeholder and the interest of the producer enhances organizational and economic performance. Certainly, until recently, there was no value principle in effect that proposed co-creating value by a process that demands relating to and communicating with stakeholders to determine how to produce outcomes that would maximize benefits for both the stakeholder and the company (thus maximizing both shareholder and stakeholder benefits) (Hitt and Hoskisson, 2007). Previous studies that studied the effect of value creation along supply chain performance on overall organization performance have reported widely dispersed and disjointed results. Hammervoll (2009) approached value creation from inter-organizational relationships perspectives. Similarly, Horvath (2001) examined value creation as it applies to collaborations in supply chains, which lead to efficiencies and cost savings across a wide range of business processes.

Generally, most successful organizations around the globe believe that businesses exist to create value for their customers, the employees in the organization, and their investors, while also believing that there is an indissolubly linkage between these three groups (Ketchen et al., 2008). Thus, the creation of a supportable value cannot be created for a group without its creation for other groups. According to Hammervoll (2009), a primary focus of value creation rests with the customers, but this cannot be achieved without the selection, development, and rewarding of the right employees

while also compensating investors with consistent, attractive returns. Capon (2008) explains for the customer that value creation entails making products and providing services that customers find consistently useful. In today's economy, such value creation is based typically on product and process innovation and on understanding unique customer needs with ever-increasing speed and precision.

Employees also value meaningful work, excellent compensation opportunities, and continued training and development. Creating value for investors means delivering consistently high returns on their capital. This generally requires both strong revenue growth and attractive profit margins. These, in turn, can be achieved only if a company delivers sustained value for customers. Managers are expected to address shareholder wealth, earnings growth, and return on assets, but the most successful firms understand that those measures should not be the primary targets of strategic management. Achieving attractive financial performance is the reward for having aimed at (and hit) the real target, such as maximizing the value created for the primary constituents of the firm. Paradoxically, it is when an organization thinks of itself as a financial engine whose purpose is to generate attractive financial returns that the company is least likely to maximize those returns in the long run (Capon, 2008).

Therefore, creating and delivering value for customers, employees, and stakeholders has been regarded as an important component for achieving organizational performance for many years. Vargo and Lusch (2011) even referenced Plato's comments made over 2000 years ago regarding the need for exchange. Anderson and Narus (2014) suggested that companies must first understand the customer's value (through market sensing and other market-oriented activities) to be able to create said value for their customers. Furthermore, they proposed that by providing value, firms perform better and exhort

additional rents; that is, firms gained additional revenue due to the value the companies delivered to their customers, employees, and stakeholders.

2.6.2 Effect of Supply Chain Integration on Value Creation

Supply Chain remains an integral part of any business, driving growth through efficient end-to-end (e2e) management of the key business processes, ranging from procurement, production, inventory, and transportation till final cash realization. With simulation of the supply chain requirements, a business learns about in-depth demand patterns and its capabilities to remain ahead of the competitive curve. Efficient supply chain management (SCM) translates into lower cost of goods sold (COGS) and/or establishes a unique leadership position through an iterative process of continuous improvements, driving growth eventually. As global markets grow increasingly efficient, competition no longer takes place between individual businesses but between entire value chains. Collaboration through intelligent e-business networks provided the competitive edge that enables all the participants in a value chain to prevail and grow. Collaboration requires individual participants to adopt simplified, standardized solutions based on common architectures and data models.

There has been a drastic increase in the pressure on organizations to find new ways to create and deliver value to customers through SCM and marketing initiatives. The goal of SCM and marketing integration is to create unique competitive advantages by linking together customer values with a more effective flow of products. The flow must always be refined and create a customer value proposition in a constantly changing market (Madhani, 2012). Firms create value as they develop collaborative relationships with other firms (Dyer & Singh, 1998; Ghosh & John, 1999). An increasing number of companies, including trade intermediaries, perceive that collaboration provides vital benefits by nurturing and managing creativity among their partners and gaining benefits

from their expertise (Sahay, 2003; Tyndall et al., 1998). Various explanations of value creation in supply chain relationships have been proposed.

In almost all industries and organizations today, the growing integration of the global economy has provided the opportunity for substantial performance and increased profitability. Industries are realizing that they no longer have complete control over their market success since they rely heavily on the performance of their supply chain. Thus, in order to survive, they must supply what customers want to buy, and they must survive competition. A firm's overall SCI is the difference between the value it offers to customers and its cost of creating that customer value. According to the Institute of Management Accountants, IMA (2016) value creation helps firms assess performance in SCI in three areas: first, through identification of sources of profitability and understanding the cost of their internal processes; second, by identifying opportunities for creating and sustaining superior differentiated products; and finally, by understanding the relationships and associated costs among external suppliers and customers.

Therefore, if performance is to be measured in terms of value created, samples of organizations that have homogeneous concepts of value must be selected. Value may be tangible or intangible, operational or financial. While public companies seek the creation of shareholder value through an increase in market value and dividend payments as their ultimate objective, according to Blyth, Friskey, & Rappaport (2006), private companies' value creation may be a combination of both financial and non-financial objectives. Where material owners are also the managers of an organization, value creation for shareholders is more likely to include non-financial outcomes, Jensen & Meckling (1976).

2.6.3 Effect of Supply Chain Integration on Performance

Lee and Whang (2004) contend, the capability for all supply chain partners to have access to shared information on a timely basis is therefore key to improving supply chain performance." Therefore, information sharing is critical for operational and business performance. Specifically, information sharing facilitates product delivery, new market exploration, and new product/service promotion (Devaraj et al., 2007; Rai et al., 2006). In the current market, this process is more salient due to the open, real-time, and rich content features of online information. With the availability of real-time and rich content information, firms can sense and respond to market uncertainties rapidly and extensively (Lee and Whang, 2004). For example, through sharing information in the supply chain, a firm can quickly detect the problems related to customer demands, especially when customers want to receive information directed toward their special needs and interests at any time and place. Such information helped the firm proactively prepare for responding to such demand changes, which is critical for its operational performance.

Information sharing reduces demand uncertainty and the phenomenon of increasing variability of demand in a supply chain. This outcome is known as the "bullwhip effect" (Rai et al., 2006). Information sharing helps firms increase profits by reducing the cost of inventories and enhancing capital and cash flow utilization, thereby improving business performance (Rai et al., 2006). In general, effective information sharing enhances mutual understanding, which reduces miscommunication and prevents unnecessary mistakes, thereby decreasing transaction costs across the supply chain (Frohlich, 2002; Lee and Whang, 2004; Wu et al., 2006). Increased information transparency allows firms to choose suppliers with lower prices, enabling them to

produce and deliver products or services at lower cost (Chen et al., 2004; Wu et al., 2006).

This process, in turn, creates a positive effect on the business performance of a firm. Scholars suggest that coordinating supply chain activities, such as procurement, auction, replenishment, payment, product change, and collaborative product design, result in cost-effective, speedy, reliable, and less error-prone supply chain operations (Lee, 2000; Lee and Whang, 2004). Specifically, operational coordination enables firms to streamline and automate their operational activities across the supply chain (Lee and Whang, 2004; Liu et al., 2010). It facilitates the design and manufacture, as well as the quick and reliable delivery of products and services when and where needed (Sanders, 2008). Furthermore, operational coordination allows firms to share the rights to share the rights to reengineer business processes and routines across organizational boundaries. The reapportionment of decision roles, rights, and responsibilities enhances the understanding of management decisions and the sharing of risks and resources.

Furthermore, the supply chain becomes more responsive to market changes, enabling supply chain members to jointly explore new markets and develop new products and services (Frohlich, 2002; Lau et al., 2010; Sanders, 2008). In addition to its positive effects on operational performance, operational coordination improves business performance. Specifically, operational coordination streamlines and automates complex activities of the supply chain (Lee and Whang, 2004; Liu et al., 2010). Such streamlining and automation enable firms to reduce the investment cost for specific human resources and facilities, such as specific offices or agents to handle contacts and communication (Lee and Whang, 2004; Sahin and Robinson, 2002). Furthermore, operational coordination enables the well-coordinated movement of inventories across the supply chain, which shortens lead time and reduces the bullwhip effect, thereby

increasing cash flow to improve business performance (Lee and Whang, 2004; Sanders, 2008). Moreover, operational coordination promotes resources, knowledge, and risk sharing across the supply chain. This activity reduces development and time- related costs to (re)design new business processes and improves profit margins in product development (Lau et al., 2010).

2.6.4 Mediating Effect of Value Creation on the Relationship between Supply Chain Integration and Firm Performance

Supply Chain Integration (SCI) has been widely recognized as a key driver of firm performance, enabling organizations to streamline operations, enhance efficiency, and improve responsiveness to market demands (Ivanov & Dolgui, 2023). However, existing studies have largely focused on the direct relationship between SCI and firm performance, overlooking the critical role of value creation as a mediating factor (Gunasekaran et al., 2022). Value creation serves as the link between SCI and firm performance by transforming supply chain efficiency into tangible business outcomes such as cost efficiency, innovation, and customer satisfaction. This study argues that SCI alone does not guarantee improved firm performance unless firms actively engage in value creation strategies, making it a crucial mediator in this relationship.

Firms that achieve higher levels of supply chain integration often experience greater operational efficiency and better coordination among suppliers, customers, and internal departments (Kariuki et al., 2024). However, for these benefits to translate into superior firm performance, companies must create value by leveraging their integrated supply chains to optimize costs, differentiate products, and enhance service delivery (Ochieng & Ndungu, 2023). For example, a firm may integrate its supply chain partners, but if it fails to utilize this integration to reduce lead times, enhance product quality, or implement cost-saving strategies, the expected performance improvements may not

materialize. Thus, value creation acts as a mechanism that converts supply chain efficiency into competitive advantage, strengthening the indirect relationship between SCI and firm performance.

The Resource-Based View (RBV) Theory supports the argument that value creation is a critical mediator in the SCI-performance relationship. RBV suggests that firms achieve competitive advantage by effectively utilizing their internal resources and capabilities (Barney, 1991). SCI provides the framework for efficient resource utilization, but the extent to which firms can leverage these resources to create value determines their ultimate success (Muriithi et al., 2024). This aligns with empirical findings by Njuguna and Kimani (2023), who established that manufacturing firms with strong supply chain integration but weak value creation strategies struggle to achieve sustainable performance improvements. Their study revealed that value-driven firms outperform competitors by integrating innovation, cost leadership, and customer-focused strategies within their supply chains.

Additionally, the Resource Dependence Theory (RDT) reinforces the need for firms to focus on value creation. RDT suggests that organizations depend on external supply chain relationships for resources, but without a strong value creation strategy, this dependence does not necessarily result in improved performance (Wekesa et al., 2023). Firms that actively create value through supplier partnerships, lean manufacturing, and market-driven innovation are more likely to benefit from supply chain integration than those that merely focus on transactional efficiencies (Christopher & Holweg, 2021). This underscores the mediating role of value creation, as firms must strategically transform their supply chain capabilities into performance-enhancing assets.

Empirical studies further support the mediating effect of value creation in SCI-performance relationships. Ambe and Maleka (2022) found that firms in South Africa that adopted supply chain integration practices without a clear value creation focus did not achieve significant performance improvements. In contrast, companies that aligned their SCI efforts with value-driven strategies such as customization, process innovation, and cost optimization experienced higher revenue growth and market competitiveness. Similarly, Ivanov and Dolgui (2023) demonstrated that digital supply chain integration alone does not guarantee improved firm performance unless organizations create value through data-driven decision-making, predictive analytics, and automation. These findings highlight the critical need for firms to view SCI as an enabler rather than a direct determinant of performance.

Another compelling argument for value creation as a mediator is its role in enhancing customer satisfaction and brand loyalty, which are key performance indicators in competitive markets. Munyua et al. (2022) argue that supply chain integration alone does not inherently lead to increased customer satisfaction unless firms create value through faster delivery times, improved product quality, and enhanced customer engagement. Their research on Kenyan manufacturing firms revealed that companies that strategically create value by leveraging their supply chains to offer differentiated products and superior service experienced higher market retention rates and profitability. This further reinforces the assertion that value creation strengthens the link between SCI and firm performance by ensuring that efficiency gains translate into meaningful customer and financial outcomes.

Despite the growing evidence supporting value creation as a mediator, many studies still treat SCI as a standalone driver of performance, failing to recognize that firms that do not actively engage in value creation may not experience the full benefits of supply

chain integration (Kimenyi & Were, 2024). This study contributes to existing knowledge by empirically testing the indirect effect of SCI on firm performance through value creation, addressing the research gap identified in previous literature. By employing hierarchical regression analysis and the Hayes PROCESS macro model, this study will provide quantitative evidence on how value creation enhances SCI-driven performance improvements.

Thus, the relationship between supply chain integration and firm performance is not purely direct; rather, it is influenced by the extent to which firms engage in value creation. Without strategic value creation efforts, SCI remains a logistical and operational framework with limited impact on competitive advantage and profitability. This study, therefore, posits that value creation is the missing link that transforms supply chain efficiencies into sustained firm performance. By examining the mediating role of value creation, this research will offer new insights for manufacturing firms on how to leverage SCI for maximum impact, contributing to both theoretical understanding and practical applications in supply chain management.

2.7 Knowledge Gap

Previous studies have been conducted in relation to supply chains (Öztayşi & Sürer, 2014; Charkha & Jaju, 2015; Wibowo & Sholeh, 2015; Sellitto et al., 2015; Prasetya et al., 2017; Romano and Vinelli, 2001; Jagan Mohan Reddy et al., 2019), in which the performance of two different supply chains in the garment industry was investigated. One is a traditional chain with no formal integration, and the other has involvement of upstream and downstream partners in activities of the focal firm. The study found that the supply chain, which has integration and cooperation among members, is better able to meet the expectations of customers. Masindet & Ogollah (2014) conducted a study on the influence of total quality management practices on the supply chain performance

of cement manufacturing firms in Kenya. A descriptive survey design was used to analyze the data. Descriptive statistics methodology of data analysis was used, and frequency distributions, percentages, and frequency tables were used to summarize and relate variables in the study. Correlation analysis was also used to analyze the data.

The study also found out that continuous improvement, employee involvement, customer orientation, and management commitment were significantly related to supply chain performance in cement manufacturing firms in Kenya. The study concluded continuous improvement, employee involvement, customer orientation, and management commitment were key to the supply chain performance of cement manufacturing firms in Kenya. This study filled the gap by investigating how supply chain integration affects value creation and firm performance by investigating supply chain supplier integration, information, customer, and logistical integration as the key variables of SCI. This study also filled the gap by employing the Hayes model to analyze the data.

Ondiek (2016) conducted a study on supply chain quality management practices and performance of pharmaceutical distributors and wholesalers in Mombasa, Kenya. The study used a mixed-methods research design. The study filled the gap by using manufacturing firms and a descriptive survey research design. Moenga (2015) conducted a study on supply chain management practices and challenges for the SMEs in Kenya, a Case Study of the SMEs in the Tea Industry in Kenya. Data was collected from forty-eight respondents using semi-structured interviews, a structured questionnaire, and examination of documents. The data was collected using structured questionnaires, and also a face-to-face interview was conducted on selected respondents on the other challenges that face the sector. The data was tabulated for analysis, which included mainly descriptive statistics and factor analysis. The study found out that the

SME sector appreciates good supply chain management practices but has not put the same into practice. The sector has not established long-term relationships with its suppliers.

The sector was found to face several challenges that threaten its long-term growth and survival, the most worrying challenge being the continued rising operating costs, adverse climatic changes, and unpredictable working environment. This study filled the gap by using questionnaires as the main research instruments. Kepha, Shalle, and Oduma (2016) conducted a study on the role of supplier management on procurement performance in the manufacturing sector in Kenya: a case of east African breweries, Kenya. The specific objectives covered supplier integration, supplier quality management, supplier collaboration, and supplier training. Data was edited, coded, and analyzed by using the statistical package for social sciences (SPSS version 21) and presented through tables and graphs. The study findings indicated that 81% of change in procurement performance at EABL can be explained by four variables, namely buyer-supplier integration, supplier quality management, supplier collaboration, and supplier training. Supplier performance management is key to procurement performance as suppliers are integrated into organizations activities. The study filled the gap by using both descriptive and inferential statistics and looked at how supply chain integration affects value creation and firm performance.

Table 2.1 Summary of Key Knowledge Gaps

No.	Author(s)	Title	Objective	Methodology	Major Findings	Knowledge Gaps
1	Ochieng & Ndungu (2023)	Competitive Advantage through Value Creation: The Mediating Role of Supply Chain Integration	To examine the role of value creation in supply chain integration strategies.	Survey of 120 manufacturing firms in Kenya, regression analysis.	Found that supply chain integration improves firm performance but did not establish how value creation mediates this relationship.	Did not analyze the specific mechanisms through which value creation mediates SCI-performance relationships.
2	Gunasekaran et al. (2022)	The Role of Supply Chain Management in Value Creation and Firm Performance	To explore the impact of supply chain integration on firm competitiveness.	Case study of global manufacturing firms, structural equation modeling (SEM).	Supply chain integration leads to better operational efficiency but has inconsistent effects on financial performance.	Lacked empirical analysis of value creation as a mediating factor.
3	Muriithi et al. (2024)	Value Creation Strategies and Firm Performance in Kenya's Manufacturing Sector	To assess how value creation strategies impact firm performance.	Cross-sectional study using regression analysis on 200 Kenyan firms.	Value creation significantly enhances firm performance, particularly through innovation and cost efficiency.	Did not explore how supply chain integration enables value creation.
4	Njuguna & Kimani (2023)	The Role of Supply Chain Coordination in Firm Competitiveness: Evidence from Sub-Saharan Africa	To evaluate the impact of supply chain coordination on competitive advantage.	Mixed methods approach, survey and interviews with supply chain managers.	Firms with strong supplier-customer coordination reported higher efficiency and market responsiveness.	Did not consider value creation as an explanatory variable for performance improvements.

5	Kariuki et al. (2024)	Supply Chain Integration and Firm Performance: A Study of Kenyan Manufacturers	To analyze the influence of SCI on organizational efficiency.	Survey of 180 manufacturing firms, PLS-SEM analysis.	SCI enhances performance, but its impact varies depending on firm size and industry.	Did not examine which specific dimensions of SCI (supplier, customer, logistics, or information integration) contribute most to value creation.
6	Christopher & Holweg (2021)	Supply Chain Digitalization and Business Performance	To investigate how digital integration influences supply chain management.	Longitudinal study of European firms, panel data regression.	Digital supply chain integration improves real-time decision-making and agility.	Limited focus on how digital transformation interacts with value creation in SCI-performance linkages.
7	Kimenyi & Were (2024)	Challenges of Supply Chain Integration in African Manufacturing Industries	To identify barriers to effective supply chain integration.	Survey of 150 African firms, qualitative content analysis.	Found major barriers include weak supplier relationships, high costs, and poor infrastructure.	Lacked analysis of strategies firms can use to enhance value creation despite supply chain constraints.
8	Wekesa et al. (2023)	Supply Chain Efficiency and Performance of Kenyan Manufacturing Firms	To evaluate the role of supply chain efficiency in firm competitiveness.	Cross-sectional study using correlation analysis.	Supply chain efficiency improves market share and profitability.	Did not assess the indirect role of value creation as a pathway to improved firm performance.
9	Ivanov & Dolgui (2023)	Digital Supply Chain Integration and Performance Resilience	To explore the role of technology in improving supply chain integration.	Case study approach, comparative analysis of global firms.	Digital supply chains enhance responsiveness but require high initial investment.	Did not examine how digital SCI contributes to value creation for firm competitiveness.
10	Ambe & Maleka (2022)	Supply Chain Integration and Value Creation in African Manufacturing Firms	To assess the relationship between SCI and firm growth in Africa.	Survey of 250 firms in South Africa, multiple regression analysis.	Firms that integrate suppliers and customers experience higher revenue growth.	Did not consider the mediating effect of value creation in SCI-performance relationships.

2.8 Conceptual Framework

The conceptual model in Figure 2.1 below is in support of the arguments raised by the literature review that value creation positively mediates the relationship between supply chain integration and firm performance of manufacturing firms in Nairobi County. The figure below is emphasizing the interconnection between supply chain integration, value creation, and firm performance. It implies that SCI (the independent variable) positively influences firm performance (the dependent variable) through value creation (the mediator).

The model describes how the dimensions of SCI (supplier integration, customer integration, logistical integration, and information sharing integration) influence firm performance and considers the mediating effects of value creation. It shows how supplier integration, customer integration, logistical integration, and information sharing integration influence firm performance, respectively, and how the firm's value creation (service/product line capability, client-specific knowledge product line capability, and client-specific economies of scope) mediate the relationships between the SCI and aspects of firm performance such as profitability, market share, customer satisfaction, and growth in sales.

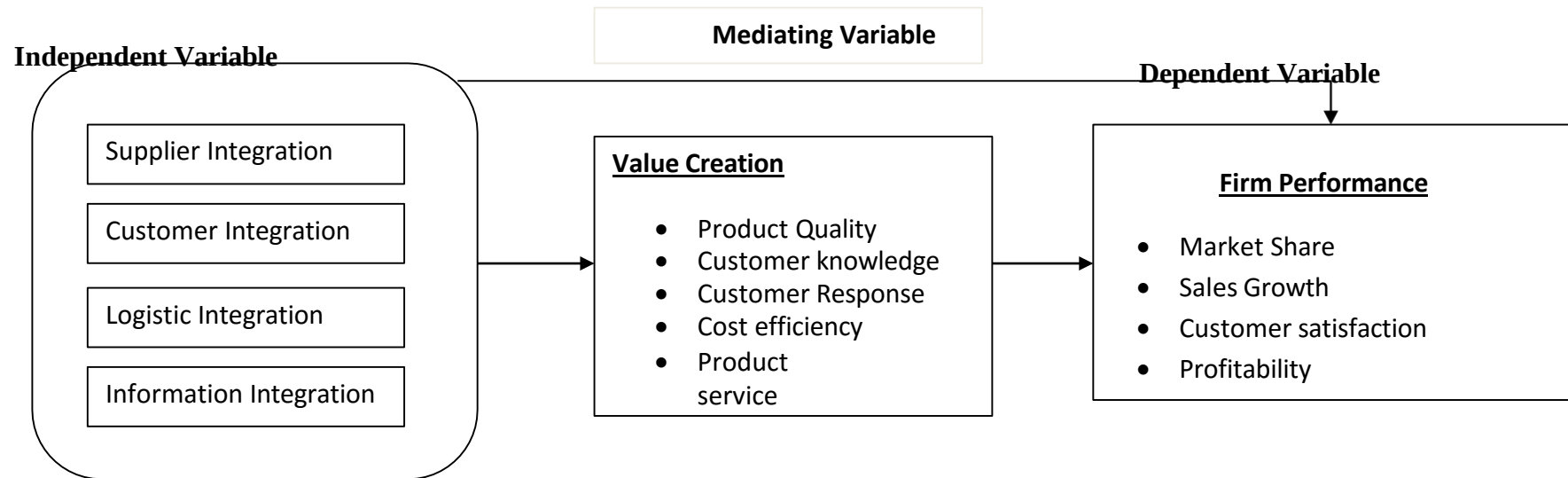


Figure 2.1: Conceptual Framework

Source Data, Researcher (2023)

CHAPTER THREE

RESEARCH METHODOLOGY

3.0 Introduction

This chapter describes the methodology of the study. It presents an overview of the, research design, study area, target population and sampling techniques which were used. Data collection methods and data analysis has been discussed, measurement of variables, reliability, validity, and ethical considerations.

3.1 Research Design

According to Sekaran and Roger (2011), research design is a master plan that specifies the methods and procedures for collecting and analyzing needed information. The study adopted an explanatory survey research design of cross-sectional nature. Explanatory research design analyses the cause- effect relationship between two or more variables (Leavy, 2017; Rahi, 2017). Hence, the design was appropriate to the study since the study sought to establish a cause-effect relationship. The emphasis of explanatory studies is to study a situation or problem in order to establish whether causal relationships that exist between the variables in the study as recommended by Saunders, Lewis and Thornhill, (2011). The design was suitable because it minimized biasness through probability sampling and at the same time maximized the reliability of data collection by allowing the utilization of questionnaires and inferential statistics in establishing the significance of the relationships between the variables (Hair et al., 2005).

3.2 Study Area

The study was conducted in Nairobi County, Kenya. Nairobi is the capital and largest city of Kenya. The city is generally known as the Green City in the Sun. At an elevation of 1,680 meters, the city is located in Kenya's south central region (5,510 ft). According

to the 2019 census, the city proper has a population of 4,397,073, while the metropolitan region has a population of 9,354,580. According to the 2019 census, there were 4,397,073 people living within 696 km² of Nairobi's administrative area (269 sq mi) (Rashid, 2016). According to the licensing record provided by the Nairobi County Licensing Office (2023), there are 251 manufacturing firms registered by the ministry of industrialization (2022). The county of Nairobi was chosen since there are various manufacturing firms and no similar study has been conducted in the study area.

3.3 Target Population

The target population for this study comprised of manufacturing firms operating in Nairobi County, Kenya and registered by the ministry of industrialization (2023) in Nairobi County, Kenya (KNBS, 2022). Specifically, the study focuses on 251 manufacturing firms engaged in various sectors, including food processing, textiles, chemicals, and metal production, among others. The unit of analysis included key personnel involved in supply chain management, value creation, and overall firm performance, such as supply chain managers, procurement officers, operations managers, and finance officers. The respondents were chosen since they have information of activities undertaken within the companies and involve supply chain integration in the firm. The target population is as shown below in Table 3.1. The diverse selection is advocated by various authors as a favorable practice for improving the validity and reliability of the study (Ketokivi and Schroeder, 2014; Wang and Feng, 2012; Chen, Cao, Wang, Luo, & Xu, 2020).

Table 3.1 Target Population

Target Group	Target Population
Supply Chain Managers	251
Procurement Officers	251
Operations Officers	400
Finance Officers	353
Total	1,255

Source: Manufacturing Companies HR Records (2023)

3.4 Sampling Design and Procedure

In determining the sample size and selecting the respondent, the study utilized the following sampling design:

3.4.1 Sample Size

According to Cooper & Schindler (2006), a sample size must be large enough to be representative of the universe's population. The sample size determines the statistical accuracy of the findings. Sample size is a function of changes in the population parameters under study and the estimation of quality that is needed (Wenger, 2000). The study sample size was computed using the Nassiuma's Formulae (2000) formula, which was modified by Saunders et al. (2003) to calculate sample sizes since the target population was known.

$$n = \frac{NC^2}{C^2 + (N - 1)e^2}$$

Where:

- n = Sample size (?)
- N = Population size (1255)
- C = Coefficient of variation (0.3)
- e = Margin of error (0.02)

Therefore;

$$n = \frac{1255 \times 0.3^2}{0.3^2 + (1255 - 1)0.02^2} = 190.29 \cong 191$$

Out of the total 1,255 participants a sample of 191 was selected based on Nassiuma's (2000) formulae.

3.4.2 Sampling Procedure

Sampling procedure comprised the use of a portion of a population to make inferences about the whole population (Zikmund, Babin, Carr, & Griffin, 2010; Jaques et al., 2022). Out of the targeted population of 1,255 employees from 251 manufacturing firms in Nairobi County, Kenya, the study utilized a sample size of 303 employees. The study utilized a multi-stage sampling design since it allowed the study to segregate the population into several mutually exclusive strata, which aided in increasing the sample statistical efficiency by providing adequate data for analyzing sub-populations and allowing the researcher to use different research methods and procedures in different strata.

The study distributed the selected manufacturing firms within 17 sub-counties. The 17 sub-counties were selected purposefully. In addition, the sample size of 303 employees was chosen systematically from the 251 manufacturing firms. Hence, the study chose the n th manufacturing firm by Therefore, $n = 5$ th. After choosing the first manufacturing firm the other one was chosen after $n = 5$. The study future utilized purposive sampling to select one employee from the four departments; finance; procurement; operations and supply chain in the selected firms.

3.5 Types and Sources of Data

The study used primary data. Primary data are information collected during the study. In other words, primary data are information that a study must gather because no one

has compiled and published the information in a forum accessible to the public. In addition, it generally takes the time and allocate the resources required to gather primary data only when a question, issue or problem presents itself that is sufficiently important or unique that it warrants the expenditure necessary to gather the primary data. Primary data are original in nature and directly relates to the issue or problem and current data.

3.6 Data Collection Instruments

Data collection instrument refers to the tools employed in collection of data for the study (Oso & Onen, 2008). The study used self-administered questioner. The questioners were structured and it was used to collect data for independent, moderator, mediator and dependent variable. The questionnaire was close ended questions because they are easier to administer and analyze since each item is followed by an alternative answer. The closed- ended questions ensure that the respondent stay focus within the study objectives (Saunders et al., 2014). The study utilized questionnaires for data collection since it considered being economical method and it provides standardized and structural questions into variables for data analysis. The questions for the variables of interest in the study were adopted from previous studies that have been developed and tested. However, the wording and style of presentation were modified to fit the context and scope of study. The instrument was simplified to make it easy for the target respondents to comprehend the questions thus enabling them to give reliable information.

3.7 Data Collection Procedures

The research sought a research approval authority letter from the University and National Commission for science, technology and Innovation, so as to facilitate the study collection of data. The researcher recruited and trained seven (7) research

assistants who assisted in data collection during the pilot study and the actual study. The research assistant picked had specialization in the field of management science and had a minimum Bachelor Degree in Business Administration. The research assistant were trained in on the subject matter and they were taken through the questioner to enable them be familiar with the instrument.

3.8 Measurement of Study Variables

3.8.1 Dependent Variable – Organization Performance

The dependent variable is the process outcome that is predicted or explained by the other variables in the model. In the study, the dependent variable is organizational performance. The dependent variable was firm performance as shown on Appendix I. The measurements of firm performance were measured using 6 items adapted and derived from the balanced scorecard borrowed from Kaplan (2010), Richard et al (2009) and Santos and Brito (2012). Richard et al (2009) found that performance encompasses three specific areas of firm outcomes. These are financial performance (profits, return on assets, return on investment, etc.); product market performance (sales, market share, etc.) and shareholder return (total shareholder return, economic value added, etc.).

Out of the items used by Richard at al (2009), the study used these (6) measurements of firm performance as market share, market growth, sale growth, customer satisfaction, reputation and profitability. The study therefore also adapted the scales and measures used by Santos and Brito (2012). The 9 scales multidimensional model of firm performance measures that were used in this study were: - growth of sales, market share, profitability, financial liquidity, return on investment, financial liquidity, customer satisfaction, employee satisfaction, environmental performance and social performance (Santos & Brito, 2012). The firm performance of manufacturing firms was

also measured using five-point Likert scale type scale from 1 = strongly disagree to 5 = strongly agree (Appendix I).

3.8.2 Independent Variable - Supply Chain Integration

The independent variables were based on the measurements of supply chain integration, which include supplier integration, customer integration, logistical integration and information integration which was modified, derived and adapted from Zhou and Benton (2007) and Cai et al (2010). All scales that were used in this study have been validated in previous literature and all items are adopted from previous measures, they are modified to suit the context of this study. All the independent variables have been measured on a five-point Likert type scale ranging from 1 = strongly disagree to 5 = strongly agree (Appendix I).

3.8.3 Mediating Variable - Value Creation

The mediating variable is value creation and its measurements were integrated and adopted from Nuryakin et al (2018) and O'Cass and Sok (2013). The instrument consisted of product quality, customer knowledge, customer response, cost efficiency and product service assurance.

Value creation is a firm's interpretation and response to customer requirements with the delivery of superior product in the value offering and the extent of perceived value customers receive. The measurements of value creation utilized five-point Likert scale ranging from 1 = strongly disagree to 5 = strongly agree. Four items were captured in relation to value creation.

3.9 Validity and Reliability of the Research Instrument

Validity is achieved by aligning the content of the questioner with the study objectives (Mastura, & Mahmud, 2022; Van Tonde & Ehlers, 2011). Reliability It assesses a

research study's consistency, accuracy, reproducibility, and credibility (Chakrabartty, 2013).

3.9.1 Validity of the Research Instrument

The amount to which an instrument measures what it claims to measure is commonly characterized as validity (Blumberg, Cooper, & Schindler, 2005). The validity of a research instrument determines how well it measures what it was supposed to measure (Robson, 2011). In general, validity refers to the extent to which instruments accurately measure the constructs that they are designed to assess. The four types of validity tests are as follows: content validity, face validity, constructs validity, and criterion-related validity (Creswell, 2005; Pallant, 2011). To establish content validity, the variables under the study were identified from the past empirical review on organizational performance, supply chain integration and value creation.

3.9.2 Reliability of the Research Instrument

A measurement that produces consistent findings with equal values is said to as reliable (Blumberg et al., 2005; Ning et al., 2020). Reliability is used to assess the consistency of measures presented to the same persons at various periods, as well as the equivalency of groupings of items from the same test (Kimberlin & Winterstein, 2008). A pilot study was carried out in manufacturing firms within Nakuru County. The data from the pilot study was utilized to calculate the research instrument's dependability. However, the respondents from pilot-tested businesses, on the other hand, were not included in the study since they would have introduced evaluation bias.

Cronbatch's alpha coefficient approach was used to determine the items' internal consistency. The approach is appropriate since it just requires one administration of the test (Cozby, 2003). Given that Cronbatch's alpha values of 0.80 and 0.95 are considered

to have very high reliability owing to relatively tiny error, and hence the results are repeated (Zikmund et al., 2013), a coefficient of 0.62 is considered acceptable in social science research (Hair et al., 2010). The items in the study were judged trustworthy since they had a reliability coefficient of 0.7 or higher; however, Hair, Anderson, Tatham, and Black (2006) consider reliability coefficients of 0.6 to less than 0.7 to be moderate and suitable for use in research.

3.10 Pilot Study

Feng and Yamat (2019), piloting is important because it helps to identify ambiguities of the items and vague questions for improvement. According to Scarlett (2012) pilot test is conducted to evaluate the questionnaire developed in order to find out if potential inconsistencies or errors exist or if there are questions that need clarification so as to improve the research instruments. A pilot study was conducted before the main study in Nakuru County. The data collected from the pilot study were not used in final research. Additionally, the respondents from the pilot-tested organization were not also included as part of the study, as this would have introduced assessment biasness. Crombach's alpha coefficient was used in determine internal consistency. The method is appropriate owing to the fact that it requires only one administration of the test (Cohen & Swerdlik, 2005). It is also appropriate where items have got choices (Cozby, 2003). Given, from the previous studies that α between 0.80 & 0.95 are considered to have very good reliability because it implies very minimal error hence the results are replicable (Zikmund et al., 2013).

Although coefficient of 0.60 are acceptable in social sciences research (Hair et al., 2010). In this study, the items were considered reliable since they yield a reliability coefficient of 0.70 and above. The figure is usually considered desirable for consistency levels (Fraenkel & Wallen, 2000).

Table 3.2: Reliability Results for Pilot Study

Variables	Cronbatch's Alpha	Cronbatch Alpha Based on Standardized Items
Organizational Performance (OP)	.739	.740
Supply chain integration (SCI)	.807	.810
Value Creation (VC)	.839	.840

Source: Survey Data, 2023

3.11 Model Specification

The overall multiple linear models used to test the hypotheses for the main effect was expressed as follows;

$$Y = \alpha + \beta_{11}\chi_1 + \varepsilon \quad (\text{M.1})$$

The model (M.1) established the effect of supply chain integration on organization performance as shown above.

$$Y = \alpha + \beta_{12}\text{Me} + \varepsilon \quad (\text{M.2})$$

The model (M.2) established the relationship between value creation and organization performance as shown above.

$$\text{Me} = \alpha + \beta_{13}\chi_1 + \varepsilon \quad (\text{M.3})$$

The model (M.3) established the relationship between supply chain integration and value creation as shown above.

$$Y = \alpha + \beta_{14}\chi_1 + \beta_{24}\text{Me} + \varepsilon \quad (\text{M.4})$$

Model (M.4) is multiple regression analysis with (χ_1) and (Me) predicting Organization performance.

where χ_1 is supply chain integration, ε is the error term, β_{11} , β_{21} , β_{31} , β_{13} , β_{14} and β_{24} are coefficient of determination of regression analysis

The study employed Baron and Kenny (1986) approach to establish the mediating effect of frugal innovation on the relationship between environmental uncertainty and organization performance. Frugal innovation is considered a mediator since it extends the relationship between environmental uncertainty and organization performance. According to Baron and Kenny (1986) for one to establish the mediating effect the independent variable must affect the mediator. Secondly, the independent variable must affect the dependent variable; thirdly, the mediator has to have an effect on the dependent variable. The four steps of mediation followed by the study are listed below (Salhi et al., 2019; Koubaa & Jarboui, 2017; Kenny et al., 1998):

- (1) Step 1: the independent variable must affect the dependent variable (M.1)
- (2) Step 2: the independent variable must affect the mediating variable (M.2)
- (3) Step 3: the mediating variable to affect the dependent variable (M.3)
- (4) Step 4: to determine if the mediating variable completely mediates XY, the effect of X on Y Controlling for Me should be zero (estimate and test path c') (M.4).

where, Y is organization performance, α is the constant, χ is supply chain integration, Me is value creation, $\beta_1 - \beta_2$ are the coefficient regression or change induced in Y by each χ and ε is the error term.

Table 3.3: Statistical Tools for Hypotheses Testing

	Hypotheses	Test Statistics	Decision Point
H ₀₁	There is no significant relationship between supply integration and organizational performance.	β , ρ - values, R^2 F-Values , t- Values	Sig. at $p \leq .05$, or $t \pm 1.96$
H ₀₂	There is no significant relationship between customer integration and organizational performance.	β , ρ - values, R^2 F-Values , t- Values	Sig. at $p \leq .05$, or $t \pm 1.96$
H ₀₃	There is no significant relationship between logistic integration and organizational performance.	β , ρ - values, R^2 F-Values , t- Values	Sig. at $p \leq .05$, or $t \pm 1.96$
H ₀₄	There is no significant relationship between supply chain integration and organizational performance.	β , ρ - values, R^2 F-Values , t- Values	Sig. at $p \leq .05$, or $t \pm 1.96$
H ₀₅	There is no significant relationship between supply chain integration and value creation.	β , ρ - values, R^2 F-Values , t- Values	Sig. at $p \leq .05$, or $t \pm 1.96$
H ₀₆	There is no significant relationship between value creation and organizational performance.	β , ρ - values, R^2 F-Values , t- Values	Sig. at $p \leq .05$, or $t \pm 1.96$
H ₀₇	Value creation does not mediate the relationship between supply chain integration and organizational performance.	β , ρ - values, R^2 F-Values , t- Values	Sig. at $p \leq .05$, or $t \pm 1.96$

Source: Survey Data, 2023

3.12 Regression Model Assumptions

Regression analysis describes the statistical relationship between variables (Guerard, 2013) whereas a regression model is used for estimation purpose (Baron & Kenny, 1986; Campbell & Campbell, 2008). The data were fitted into a regression model under certain assumptions, however, if such assumptions are violated, the results may be unreliable, biased and inconsistent. As a result, erroneous findings were reached, as well as recommendations for further research. The following assumptions were examined:

- i. **Normality tests:** Normality assumes that the data sets are normally distributed (Hair et al., 2010). The normality of data was tested using degree of Skewness and Kurtosis for each of the variables in the study as descriptive

statistics indicated. The study also used the Kolmogorov-Smirnov tests to check for normality because it is suitable for larger sample size (Ghasemi & Zahediasi, 2012). The rule of thumb is that if the tests are significant, the data is not normally distributed, thus, p values must be greater than 0.05 ($p > .05$) for the data to be normal distributed (Hair et al., 2010; Osborne, & Waters, 2019).

- ii. **Linearity:** It assumes that all independent variables must have a linear relationship with the dependent variable. Thus linearity is acknowledged as the degree to which the dependent variable changes as a result of variation in the predictor variables (Hair et al., 2010). This assumption was assessed through the use of Analysis of Variance (ANOVA). A typical threshold for rejection of a null hypothesis is 0.05. That is, if you have a p -value less than 0.05, you would reject the null hypothesis in favor of the alternative hypothesis that at least one mean is different from the rest.
- iii. **Homoscedasticity:** Homoscedasticity assumes that the variance of the dependent variable is the same across the ranges of independent variables (Schutzenmeister et al., 2012; Osborne & Waters, 2002). The present study reduced the chances of violating the assumption by ensuring that the data utilized in testing the hypotheses is normally distributed. In this regard, Levene's test statistics was employed to check for homoscedasticity. The decision criteria is that the Levene's test statistic value should be greater than 0.05 ($p > .05$), (Hair et al., 2010).
- iv. **Multicollinearity:** Multicollinearity occurs when two or more variables are highly correlated thus affecting the estimation of the regression parameters in the model (Hair et al., 2009). It makes an assessment of the regression

coefficients unknown, thus frustrating interpretations (Gujarati, 2003) and yield incorrect results (Palaniappan, 2017). Previous studies indicate that there is a problem of multicollinearity if the values of correlations among variables are $> .9$ (Hair et al., 2010). And the value of VIF is > 10 (Stevens, 2009). The study used the correlation matrix and VIF to check for multicollinearity.

- v. **Independence of error terms:** in social science research assumed to be independent with each other (Chatterjee & Hadi, 2012). Non- Independence of error in regression model yields biased estimates of standard error and significance. Although the estimates of the regression coefficients may remain unbiased it may still be inefficient. The study used Durbin-Waston range from 0 to 4 such that the residuals are not correlated if the Durbin-Waston statistic is approximately 2. Furthermore, the acceptable range for Durbin-Waston tests is between values of 1.5 and 2.5.

3.13 Ethical Considerations

Before the research was undertaken permission was sought from the relevant authorities; first, a letter of introduction was obtained from the dean, School of Business and Economics, Moi University. Finally, permission from the selected the selected counties was sought from the relevant authorities so as to allow the study to be carried out.

To ensure the confidence of the respondents and to ascertain high response rate the cover letter was attached (Appendix V) so as to explain to the respondents further on the importance and reasons for carrying out the study. The researcher purely used the information collected for the purpose of this study and will not forward to any other party. The information from any individual were treated with high degree of

confidentially without disclosing the respondents identity, and being open minded as possible and express opinions as they were given. The researcher did not modify anything and will be also be very appreciative of all the literature that will be contributed in any way to this research.

CHAPTER FOUR

DATA ANALYSIS, PRESENTATIONS AND INTERPRETATION

4.1 Overview

The rationalization and justification for adopting the statistical techniques and data analysis procedures were outlined in the last chapter. The current chapter provides findings on the effect of supplier integration on organization performance, information integration on organization performance, and the effect of customer integration on the organization performance of selected manufacturing firms Nairobi County, Kenya. It also provides results on the mediating effect of value creation on the relationship between supply chain integration and organizational performance of selected manufacturing firms Nairobi County, Kenya. This chapter opens with a section on the response rate of the participants, data preparation, descriptive statistics, factor analysis, correlation, and inferential statistics.

4.2 Response Rate

The use of a survey questionnaire to collect first-hand information is common in social sciences studies (Edwards et al., 2009; Meyer et al., 2020). It's normally utilized because of its financial viability if the researcher is to collect data from large and geographically isolated populations. Therefore, in this regard, the response rate is an imperative yardstick of survey quality as it ensures accurate and valid results of the survey (Bobbie, 2013; Hair et al., 2019). A total of 191 questionnaires were administered to the respondents. Out of the 191 questionnaires, 167 questionnaires were filled completely, correctly and returned. Evidently, from table 4.1 below, the response rate of this study was approximately 87.43%, which is way above the conventionally accepted rate of 30% (Sekaran & Bougie, 2013).

Table 4.1 Response Rate

Response Rate	Frequency	Percent
Issued Questionnaires	191	100
Filled and returned	167	87.43

Source: Survey Data, 2023

4.3 Data Preparation and Processing

This is a pre-analysis stage that consists of screening and cleaning the data, assessing normality, and analyzing reliability. The data screening and cleaning process normally involves an inspection of the collected data and the correction (or removal) of any errors that could potentially have substantial impacts on the analysis result (Osborne, Nasi & Powell, 2021; Osborne, 2013). Data preparation and processing often include an examination of missing values, the identification of substantial errors, and the management of raw data for an appropriate use of the analysis and assessment of normality and outliers (Tabachnick & Fidell, 2014).

4.3.1 Examination of Missing Data

First, the study identified and rectified missing values in the dataset. It is generally suggested that researchers may remove particular cases if they have more than 50% of the value missing (Haire et al., 2010). These cases can have substantial impacts on the rest of the observations (Tabachnick & Fidell, 2014). Following this suggestion, the study omitted the cases with more than 50% of missing values.

After the removal of the cases, the study also treated the cases with less than 50% of the missing values. To treat such missing values, three options are always available and suggested: List-wise exclusion: by removing the case from analysis if any data is missing in the case; Pair-wise exclusion: removal of the case if only they are missing the data required for specific analysis; Replacing with the mean involves the calculation of the mean value for variables and applying the mean to the missing value. Among the

three techniques, the study adopted the pair-wise exclusion method, considering its advantage over the rest since it has fewer problems with convergence (factor loading estimates are relatively free from bias) and is easy to implement (Hair et al., 2010).

4.3.2 Examination for Outliers

Outliers refer to cases or observations with values for variables that are substantially different from those in other cases (Hair, Ringle & Sarstedt, 2013; Byrne, 2010; Hair et al., 2010). The outliers are said not to be representative of the population. They can distort statistical tests and thus work against the objective of the study. Outliers can be checked from a univariate, bivariate, and multivariate perspective. The study performed a multivariate test for outliers, as the study uses a multivariate analysis that investigates multivariate outliers that have extreme scores on two or more variables. This is as opposed to univariate outliers that have an extreme score on a single variable (Kline, 2010, 2005). A common approach to the detection of multivariate outliers is the computation of the squared Mahalanobis distance (D^2) for cases (Hair et al., 2010). Squared Mahalanobis distance (D^2) measures the distance in standard deviation units between a set of scores for one case and the sample means for all variables.

The (D^2) assesses the extent of the dissimilarity of each observation or case (in terms of its distance from the mean center of all observations) across a cross-section of variables. An outlying case (the higher D^2 values relative to the other case) will have a D^2 value that stands distinctively apart from all other D^2 values. As a rule of thumb, Hair et al. (2010) suggested identifying any case in which the D^2/df value exceeds three or four in large samples (where the sample size is > 200) as an outlier. Following Hair et al. (2010) suggestions, the dataset was examined for the presence of multivariate outliers using D^2 as a measure of distance and computed as D^2/df . All the cases were not equal to or exceeding three, suggesting they were not outlier cases. Hence, no case

was dropped from further analysis. Thus, 167 cases were used in all subsequent analyses to be performed as part of this study.

4.4 Descriptive Statistics

The section describes the data collected through survey questionnaires and organizes, summarizes, and describes such data (Kaushik & Mathur, 2014; Talib et al., 2011). Therefore, descriptive analyses were performed to provide a general and comprehensive picture of the data collected. Consequently, in this study, the data collected were presented in tables and graphs in preparation for further analysis and interpretation. Additionally, means and standard deviations for all the variables were generated from the data. The mean of the data represents the midpoint of the data distribution, whereas the standard deviation indicates how well the data was spread out (Field, 2009; Saunders et al., 2007). The researcher was interested on the responses of the respondents and their descriptive statistics represented information related to the effect of supply chain integration on value creation and performance of manufacturing firms in Nairobi County, Kenya.

The respondents were asked to indicate their response on a 5 point likert scale. 5= Strongly Agree, 4 = Agree, 3 = No Idea, 2 = Disagree, 1= Strongly Disagree. Frequencies and percentages for each response were noted and the findings are presented below;

4.4.1 Descriptive Statistics of Performance of Manufacturing Firms

The researcher sought the opinion of the respondents on the performance indicators of manufacturing firms and how they influence performance they include company's profit margin, wider market share, customer satisfaction, company's sales growth and

company's reputation. In order to assess the construct validity of firm performance construct, 5 items were examined and the results were as presented in Table 4.2.

Table 4.2 Descriptive Statistics Results for Performance of Manufacturing Firms

	Statements		SA	A	NI	D	SD	Total	Mean	Std.D
i.	The company's profit margin has increased hence increased profitability	Freq	38	65	28	35	1	167	3.62	1.073
		%	22.8	38.9	16.8	21.0	6.0	100		
ii	The company has a wider market share/market growth	Freq	48	55	11	29	24	167	3.44	1.429
		%	28.7	32.9	6.6	17.4	14.4	100		
iii	The company ensures that the customers are satisfied with the products and services	Freq	33	66	16	34	18	167	3.37	1.301
		%	19.8	39.5	9.6	20.4	10.8	100		
iv	The company's sales has grown	Freq	74	30	2	46	15	167	3.61	1.492
		%	44.3	18.0	1.2	27.5	9.0	100		
v	The company's reputation has positively improved	Freq	21	54	48	39	5	167	3.28	1.052
		%	12.6	32.3	28.7	23.4	3.0	100		

Source: Survey Data, 2023

The respondents were requested to respond to the statement that the company's profit margin has increased hence increased profitability. The results as presented in Table 4.1 indicates that majority of the respondents 103 (61.7%) rated the statement positively and 36(27.1%) of the respondents disagreed on the statement. It was also found out that company's profit margin has increased hence increased profitability influences performance with a mean of 3.62 and std.Dev of 1.073. The respondents were asked to express their view on company has a wider market share/market growth. The findings shows that majority 103 (61.6%) of the respondents agreed that the company has a wider market share/market growth while 53 (31.8%) of the respondents disagreed to

the statement as shown by a mean of 3.44 and std.Dev of 1.429. Further the respondents were requested to respond to the company ensures that the customers are satisfied with the products and services.

The study findings presented also shows that 99(59.3%) of the respondents agreed to the statement that the company ensures that the customers are satisfied with the products and services whereas 52(31.2%) of the respondents were of a contrary opinion with a mean of 3.37 and std.Dev of 1.301. It was also established that majority 104 (62.3%) of the respondents agreed that the company's sales has grown while 61(36.5%) of the respondents disagreed that the company's sales has grown as shown with a mean of 3.61 and std.Dev of 1.492. Finally, the descriptive statistics findings presented shows that 75(44.9%) of the respondents agree that the company's reputation has positively improved while 44(26.4%) disagreed (Mean=3.28, std.Dev=1.025). The findings were interpreted to mean that profit margin and growth are relevant for the existence of a firm and need to be included in any attempt to measure performance of any firm.

Therefore, manufacturing firms that have in place customer, information and supplier integration enjoy high profits and this is indicated by majority of the respondents who agreed that the company's profit margin has increased hence increased profitability and has the highest mean of 3.62. The above findings are in agreement with the findings of Han et al (2013) who found out that supply chain integration such as logistics integration and information sharing helps firms increase profits by reducing the cost of inventories and enhancing capital and cash flow utilization, thereby improving performance. The effectiveness and efficiency in the achievement of objectives measured in terms of profit margin.

4.4.2 Supplier Integration

The study sought to identify how supplier integration affects firm performance and the respondents were asked to give their opinion. The construct of supplier integration variable was assessed using 5 items from the questionnaire and the findings are presented in Table 4.3 below. The findings presented in Table 4.3 shows that majority 111(66.5%) agreed to the statement that the company has a good level of collaboration in product design to enhance performance of the company and 47(28.1%) disagreed on the statement as shown with a mean of 3.56 and Std.D of 1.685. It was also clear that 136(81.4%) of the respondents agreed that the company collaborates with key suppliers to improve on profitability while 2(1.2%) disagreed on the opinion as shown with a mean of 4.14 and Std. D of 0.705. According to the findings, 97(58.1%) of the respondents agreed that the suppliers sees the relationship with the company as being a long term one while 49(29.4%) disagreed on the statement as shown with a mean of 3.66 and Std.D of 1.467.

Table 4.3 Descriptive Statistics Results for Supplier Integration

	Statements		SA	A	N	D	SD	Total	Mean	Std.D
i.	The company has a good level of collaboration in product design to enhance performance of the company	Freq	72	39	9	4	43	167	3.56	1.685
		%	43.1	23.4	5.4	2.4	25.7	100		
ii	The company collaborates with key suppliers to improve on profitability	Freq	55	81	29	1	1	167	4.14	0.705
		%	32.9	48.5	17.4	0.6	0.6	100		
iii	The suppliers sees the relationship with the company as being a long term one	Freq	79	18	21	33	16	167	3.66	1.467
		%	47.3	10.8	12.6	19.8	9.6	100		
iv	The company ensures that there's early supplier involvement hence expanding on market share	Freq	23	86	15	6	37	167	3.31	1.379
		%	13.8	51.5	9.0	3.6	22.2	100		
v	There is prompt level of communication with suppliers to improve on sales growth	Freq	32	65	19	27	24	167	3.32	1.341
		%	19.2	38.9	11.4	16.2	14.4	100		

Source: Survey Data, 2023

It was also clear that 109(65.3%) of the respondents agreed that the company ensures that there's early supplier involvement hence expanding on market share while 43(26.4%) disagreed on the statement that the company ensures that there's early supplier involvement hence expanding on market share. This is shown with a mean of 3.3.1 and std.D of 1.379. The findings also established that 97(58.1%) of the respondents agreed that there is prompt level of communication with suppliers to improve on sales growth while 51(30.6%) of the respondents disagreed on the statement (Mean=3.32, std.D=1.341). The findings revealed that within manufacturing firms in Nairobi County collaboration with suppliers is the main thing to improve their profitability and had the highest mean of 4.14 which implied that the key goal of manufacturing firms in relation to their performance is collaborating with key suppliers in order to achieve effective and efficient flows of products and services to provide maximum value to the customer.

The findings concur with the those of Ghorbani and Khodadadian (2014) study on the analysis of the impacts of suppliers integration and customers integration on new product performance through mediating role of manufacturing flexibility and service ability investigates the important role of suppliers integration on manufacturing flexibility, service ability, customers integration and finally new product performance regarding trust theory among Iran Khodro's employees. The findings revealed that supplier integration through collaboration has a significant impact on new product performance.

4.4.3 Customer Integration

The study sought to identify how customer integration affects firm performance and the respondents were asked to give their opinion. The sub-constructs of supplier integration variable were assessed using 5 items from the questionnaire and the findings are

presented in Table 4.4 below. Table 4.4 shows that 109(65.3%) of the respondents agreed that the company has established more frequent contacts with major customers while 32(19.2%) disagreed to the statement with a mean of 3.89 and std.D of 1.323. It was also established that 97(58.1%) of the respondents agreed that major customers of the company are linked with information network and the respondents who disagreed to the statement were 70(41.9%). This statement was established to influence performance with a mean of 2.93 and std.D of 1.553.

According to the findings 100(59.9%) of the respondents agreed that major customers have shared market information with the company and those who disagreed were 37(22.2%) as shown with a mean of 3.72 and std.D of 1.504. The findings further indicated that 93(55.7%) of the respondents agreed that major customers share demand forecast with the company and those with contrary opinion to the statement were 62(37.1%) as shown with a mean of 3.46 and Std.D of 1.442. It was also clear that majority 135(80.8%) of the respondents agreed to the statement that customer relationship management is maintained within the company and those who disagreed were 29(17.4%). From the responses obtained, the findings were interpreted to mean that in order to bring about improvement of performance in manufacturing firms in Nairobi county, integration of customers must be highly valued since it results to quality increases, lower costs of development, defects become fewer, and shorter time.

Table 4.4 Descriptive Statistics Results for Customer Integration

	Statements		SA	A	NI	D	SD	Total	Mean	Std.D
i.	The company has established more frequent contacts with major customers	Freq	83	26	26	21	11	167	3.89	1.323
		%	49.7	15.6	15.6	12.6	6.6	100		
ii	Major customers of the company are linked with information network	Freq	20	77	0	12	58	167	2.93	1.553
		%	12.0	46.1	0.0	7.2	34.7	100		
iii	Major customers have shared market information with the company	Freq	84	16	30	12	25	167	3.72	1.504
		%	50.3	9.6	18.0	7.2	15.0	100		
iv	Major customers share demand forecast with the company	Freq	60	33	12	47	15	167	3.46	1.442
		%	35.9	19.8	7.2	28.1	9.0	100		
v	Customer relationship management is maintained within the company	Freq	78	57	3	12	17	167	3.99	1.305
		%	46.7	34.1	1.8	7.2	10.2	100		

Source: Survey Data, 2023

Customer relations has a major impact on performance since it prefers to have good relations with its customer by allocating, scheduling and dispatching the right product at the right time to the customers as indicated by majority of the respondents that customer relationship management is maintained within the company and as shown by a mean of 3.99 hence this improves the performance in the firms. The findings concur with the findings of Shavazi, Moshabaki, Hoseini&Naiej (2013) who examined the relationship between customer relationship management and different measures of performance in Iran and found out that through supply chain integration in terms of customer relations/integration, organizations have been able to reduce cost, lead times, inventory levels improved productivity and product quality thereby leading to customer satisfaction. The findings further revealed that CRM has positive impact on growth reduced costs and hence improved organizational performance.

4.4.4 Logistical Integration

The opinion of the respondents was sought and the study looked at the following sub-constructs of logistical integration and how it influences performance of manufacturing firms. The results of the findings were as presented in Table 4.5. As presented in Table

4.5, majority 103(61.8%) of the respondents were of the opinion that inter-organizational logistics activities are closely coordinated and those who disagreed on the statement were 22(13.2%). Inter-organizational logistics activities also influenced performance with (Mean=3.85, Std.D=1.144). The study findings also showed that 108(64.7%) of the respondents agreed that the company's logistics activities are well integrated with suppliers logistics activities while 48(28.8%) disagreed to the statement with a mean of 3.45 and std.D of 1.373.

Table 4.5 Descriptive Statistics Results for Logistical Integration

	Statements		SA	A	NI	D	SD	Total	Mean	Std.D
i.	Inter-organizational logistics activities are closely coordinated	Freq	66	37	42	17	5	167	3.85	1.144
		%	39.5	22.2	25.1	10.2	3.0	100		
ii	The company's logistics activities are well integrated with suppliers logistics activities	Freq	40	68	11	24	24	167	3.45	1.373
		%	24.0	40.7	6.6	14.4	14.4	100		
iii	The company has a seamless integration of logistical activities with suppliers	Freq	13	45	72	18	19	167	3.09	1.069
		%	7.8	26.9	43.1	10.8	11.4	100		
iv	The company's logistical integration is characterized by excellent distribution, transportation and warehouse facilities	Freq	49	76	7	1	34	167	3.63	1.437
		%	29.3	45.5	4.2	0.6	20.4	100		
v	The inbound and outbound distribution of goods with suppliers is well integrated	Freq	15	90	18	28	16	167	3.36	1.152
		%	9.0	53.9	10.8	16.8	9.6	100		

Source: Survey Data, 2023

Additionally, it was also clear that majority 58(34.7%) of the respondents agreed that the company has a seamless integration of logistical activities with suppliers and 37(22.2%) disagreed on the statement as shown with a mean of 3.09 and std.D of 1.069. The findings further shows that 125(74.8%) of the respondents gave a positive response to the statement that the company's logistical integration is characterized by excellent distribution, transportation and warehouse facilities while 35(21.0%) disagreed on the statement (Mean=3.63, std.D=1.437). The findings also indicated that 105(62.9%) of

the respondents were of the opinion that the inbound and outbound distribution of goods with suppliers is well integrated and those who were contrary to the statement were 44(26.4%) with a mean of 3.36 and std.D of 1.152. The above findings are in agreement with the findings of Han et al (2013) who found out that supply chain integration such as logistics integration helps firms increase profits by reducing the cost of inventories and enhancing capital and cash flow utilization, thereby improving performance.

4.4.5 Information Integration

The respondents were requested by the researcher to give their opinion on the influence of information sharing integration on firm performance. The main constructs were reviewed using 5 items from the questionnaire and the findings are as presented in Table 4.6. Table 4.6 shows that majority 100(59.9%) of the respondents were of the opinion that the company shares sensitive information that includes financial, production, design and competitions with customers while 52(31.2%) of the respondents disagreed to the statement (Mean=3.63, std.D=1.462). The findings also showed that 100(59.9%) of the respondents agreed that the suppliers are provided with any information that might help in enhancing customer satisfaction.

While, those who did not agree to the statement were 31(18.6%) with a mean of $M = 3.51$ and std.D of 1.058. The findings also showed that 80(47.9%) were of the opinion that exchange of information takes place frequently, informally and timely and 53(31.8%) disagreed to the statement as shown with a mean of 3.17 and std.D of 1.308. It was clear that the company has frequent face to face communication with suppliers was agreed by the respondents representing 103(61.7%) and those who were contrary to the statement were 36(21.6%) with a mean of 3.62 and Std.D of 1.073. The study revealed that information integration through sharing with plays a significant role on performance of manufacturing firms. This show that effective integration through

information sharing to the suppliers and customers on a timely manner enhances performance and this is created through the high level of information technology usage in sharing information to enhance customer satisfaction as shown by the highest mean of 3.63.

Internal integration through information leads to overall performance sharing and this is achieved by the organization providing real-time status information on commodities/services, financial, production, design and competitions with customers, improving the timeliness of paper-based ordering and reporting, and improving the timeliness and accuracy of deliveries to customers and all this improves the performance of the organization. The findings agree with the findings of Li et al (2009) conducted a study on the impact of IT implementation on supply chain integration and performance and concluded that supply chain information integration in organizations causes better decisions, capacity allocation, production and materials planning through increased transparency, demand, supply and inventory. The study showed that information sharing acts as a key component in achieving organizational performance.

Table 4.6 Descriptive Statistics Results for Information Integration

	Statements		SA	A	NI	D	SD	Total	Mean	Std.D
i.	The company shares sensitive information that includes financial, production, design and competitions with customers	Freq	74	26	15	36	16	167	3.63	1.462
		%	44.3	15.6	9.0	21.6	9.6	100		
ii	The suppliers are provided with any information that might help in enhancing customer satisfaction	Freq	25	75	36	23	8	167	3.51	1.058
		%	15.0	44.9	21.6	13.8	4.8	100		
iii	Exchange of information takes place frequently, informally and timely	Freq	27	53	34	28	25	167	3.17	1.308
		%	16.2	31.7	20.4	16.8	15.0	100		
iv	The company has frequent face to face communication with suppliers.	Freq	38	65	28	35	1	167	3.62	1.073
		%	22.8	38.9	16.8	21.0	0.6	100		

Source: Survey Data, 2023

4.4.6 Value Creation

The respondents were asked to indicate how value creation affects the performance of firms. The constructs were reviewed using a five point likert scale and Table 4.7 shows descriptive statistics of frequencies, percentages, mean and standard deviations for each of the five (5) items that measured value creation. Table 4.7 shows that majority 104(62.3%) of the respondents were of the opinion that the company ensure that speed of services are provided to the customers to improve on sales growth and those who disagreed to the statement were 16(9.6%) with a mean of 3.65 and std.D of 1.114. It was clear that majority 108(64.7%) of the respondents were of the opinion that the company provides its customers with response on time hence increasing the performance while 13(7.8%) disagreed to the statement (Mean = 4.09, Std.D = 1.052).

The findings also revealed that majority 114(68.2%) of the respondents agreed that the company ensures that cost efficiency is maintained to improve on performance and those who disagreed to the statement were 53(31.8%) with a mean of 3.55 and standard deviation of 1.421. It was established that 106(63.4%) of the respondents agreed that the company designs its products and services according to customers preferences and knowledge to increase sales growth while 37(22.2%) disagreed on the statement as shown with a mean of 3.58 and std.D of 1.377. Finally on the issue of the company products are of high quality to improve on profitability, 89(53.2%) of the respondents agreed and the one who disagreed were 59(34.4%) with a mean of 3.25 and std.D of 1.520.

Table 4.7 Descriptive Statistics Results for Value Creation and Firm Performance

	Statements		SA	A	NI	D	SD	Total	Mean	Std.D
i.	The company ensure that speed of services are provided to the customers to improve on sales growth	Freq	36	68	47	16	0	167	3.65	1.114
		%	21.6	40.7	28.1	9.6	0.0	100		
ii	The company provides its customers with response on time hence increasing the performance	Freq	87	21	46	13	0	167	4.09	1.052
		%	52.1	12.6	27.5	7.8	0.0	100		
iii	The company ensures that cost efficiency is maintained to improve on performance	Freq	52	62	0	32	21	167	3.55	1.421
		%	31.1	37.1	0.0	19.2	12.6	100		
iv	The company designs it products and services according to customers preferences and knowledge to increase sales growth	Freq	52	54	24	13	24	167	3.58	1.377
		%	31.1	32.3	14.4	7.8	14.4	100		
v	The company products are of high quality to improve on profitability	Freq	47	42	19	24	35	167	3.25	1.520
		%	28.1	25.1	11.4	14.4	21.0	100		

Source: Survey Data, 2023

The above findings were interpreted to mean that creating and delivering value for customers, employees and stakeholders has been regarded as an important component for achieving organizational performance. This is as shown by majority of the respondents who indicated that the company provides its customers with response on time hence increasing the performance and had the highest mean of 4.09. The findings are in an agreement with the findings of Marete (2010) who found out that value creation is increasingly being recognized as a better management goal than strict financial measures of performance, many of which tend to place cost-cutting that produces short-term results ahead of investments that enhance long-term competitiveness and growth.

4.5 Reliability Tests

Reliability is the extent to which variables are consistent with what they were supposed to measure (Hair et al., 2019; Hair et al., 2006). An instrument is said to be reliable if it is administered to different groups of respondents and yields a consistent result. The reliability of the item for study was assessed by determining the item's Cronbach's alpha

coefficients. Cronbach's alpha measures reliability using coefficients ranging from 0 to 1.0. The instruments were considered reliable if the reliability coefficient was above 0.7 thresholds (Sujati & Akhyar, 2020; Fraenkel & Wallen, 2000). The generally acceptable level of Cronbach's alpha is above 0.7, and it may decrease to 0.6 in exploratory research (Hair et al., 2006). However, the desired minimum level of Cronbach's alpha for the study was 0.7. In addition, the determination of which item to remove or delete so as to improve the reliability of the questionnaire should always be based on the individual items Cronbach's alpha (Raykov, 2007).

The Cronbach's alpha reliability coefficients for the independent variables in the study were supplier integration (0.729), customer integration (0.781), logistical integration (0.708) and information sharing integration (0.795). The mediator variable's (Value creation) reliability alpha coefficients was 0.864 and the dependent variable's (firm performance) Cronbach's alpha coefficient for reliability was 0.809. From Table 4.8 below, all the items were important to the construct, since if they were removed, they could lower the overall reliability of the construct of the study (Sujati & Akhyar, 2020; Hair et al., 2019).

Table 4.8 Cronbach Alpha Reliability Tests

Construct	Number of items	Cronbach alpha coefficients
Supplier integration	5	0.729
Customer integration	5	0.781
Logistical integration	5	0.708
Information sharing integration	4	0.795
Value creation	5	0.864
Firm Performance	5	0.809

Source: Survey Data, 2023

4.6 Test of Regression Assumptions

According to Williams, Grajales, and Kurkiewicz (2013), it is important to test for assumptions when multiple linear regressions are used to test hypotheses. Testing assumptions enables the researcher to identify the relevant study model that guarantees impartial, reliable, and efficient estimates (Yu, 2010). Before a complete analysis can be performed, the basic assumption of linear regression concerning the original data must be made (Sevier, 1957). Ignoring the regression assumption contributes to wrong validity estimates (Antonakis & Deitz, 2011). When the assumptions are not met, the results may result in type I and II errors or an underestimate of the significance of the effect size (Osborne & Waters, 2019).

Meaningful data analysis relies on the researcher's understanding and testing of the assumptions and consequences of violations. Regression analysis requires at least two independent variables, which can be normal, ordinal, or interval/ratio level variables. The assumptions of regression analysis that are identified as primary concerns in the research include linearity, independence of errors, homoscedasticity, normality, and collinearity.

4.6.1 Test of Normality

Multiple regressions assume that variables have normal distributions (Darlington, 1969; Osborne & Waters, 2019; 2002); this means the errors are normally distributed and that a plot of the values of the residuals will approximate a normal curve (Keith, 2006). The assumption is based on the shape of a normal distribution and gives the researcher knowledge about what values to expect (Keith, 2006). Non-normally distributed variables can distort relationships and result in significant tests of the studied variables (Osborne & Waters, 2002; 2019). To identify the distribution and whether the data

comes from a normal distribution or not, the study used Kolmogorov- Smirnov tests (Shapiro and Willk, 1965).

Normality was detected by looking at the p-value of the Kolmogorov-Smirnov test. In this respect, if the p-value (sig. value) of the Kolmogorov-Smirnov test is greater than 0.050, the data is normal. If it is below 0.005, the data significantly deviates from a normal distribution. According to Osborne and Waters (2002; 2019), the Lilliefors test based on the significant correction used to test if it comes from a normally distributed population was applied. To test the normality of the study data, the Lilliefors test was used to test if the data comes from a normal distributed population, using the following two testable hypotheses:

H₄₀: The data does not come from a normally distributed population

H₄₁: The data come from a normally distributed population

Therefore, since the p-values for all the variables were more than 0.05, the normality of the data was confirmed (Tabachnick & Fidel, 2013). The results of the K-S with Lilliefors correction normality tests for all the variables are shown in Table 4.9. It is clear that all the variables (organization performance, environmental uncertainty, frugal innovation, and managerial support) all had a p-value greater than 0.05, which indicates a normal distribution of data. The alternative hypothesis was rejected, and it was concluded that the data come from a normal distribution.

Table 4.9 Test for Normality for the Variables

	Kolmogorov-Smirnov (KS) test		
	Statistic	Df	Sig.
Organization performance	.1427	167	.131*
Supply chain integration	.1345	167	.079*
Value creation	.1545	167	.154*

*This is a lower bound of true significance. a Lilliefors Significance Correction; *p > 0.05

Source: Research Data, 2023

4.6.2 Tests of Linearity

Linearity defines the dependent variables as linear functions of the predictor (independent) variable (Han, 2023; Darlington, 1968). Multiple regressions accurately estimate the relationship between dependent and independent variables when the relationship is linear in nature (Osborne & Waters, 2019).

The chance of non-linear relationships is high in social sciences studies; therefore, it is essential to examine analyses for linearity (Osborne & Waters 2002). If linearity is violated, all the estimates of the regression, including the regression coefficient, standard errors, and tests of statistical significance, may be biased (Keith, 2006). Therefore, if the relationship between the dependent and independent variables is not linear, the result of the regression analysis will underestimate or overestimate the true relationship and increase the risk of type I and type II errors (Osborne & Waters, 2002; 2019). Linearity tests were undertaken using variance analysis (ANOVA). If ANOVA is used to evaluate the linearity assumption, the rule of thumb is that if the p -value is less than 0.05 and the linearity deviation of the p -value is greater than 0.05, the relationship between the two variables is said to be linear (Hair, Risher, Sarstedt, & Ringle, 2019; Garson, 2012; Haire et al., 2013).

Table 4.10 shows that organization performance is a function of environmental uncertainty, frugal innovation, and managerial support. All the relationships show that the variables are linear and can therefore be considered reliable for regression analysis. The results for each relationship are explained as follows: The result in Table 4.10 depicts that there is a linear relationship between supply chain integration and organization performance [$F(1, 290) = 76.53, p < 0.05 (p = 0.00)$]. Additionally, the findings depicted a linear relationship between value creation and organization performance [$F(1, 290) = 80.26, p < 0.05 (p = 0.000)$]. The findings showed a

significant linear relationship between all the independent variables and dependent variables (organization performance), thus non-violation of the assumption. This further connotes that the linearity of the predictor variables with respect to the dependent variable is linear and allows further analysis.

Table 4.10 Linearity Test

		Sum of Square	df	Mean Square	F	Sig
Organization performance *supply chain integration	(combined)	255.54	291	.878	3.034	.000
	Linearity	22.153	1	22.153	76.53	.000
	Deviation from linearity	114.55	44	.395	1.363	.075
Organization performance *value creation	(combined)	210.68	291	.724	2.456	.000
	Linearity	23.674	1	23.674	80.26	.000
	Deviation from linearity	93.38	290	.322	1.091	.323

Source: Research Data, 2023

4.6.3 Test of Multicollinearity

Before doing a multivariate analysis, a multicollinearity test was performed to determine if the independent variables in the regression model are substantially associated with one another. In general, there should be no relationship between the explanatory variables in the study in a decent regression model (Katidjan et al., 2018). Multicollinearity tests were established by determining the variance inflation factor (VIF) and tolerance values provided (Hair et al., 2014). VIF values less than 10 and tolerance greater than 0.2 indicate that multicollinearity does not exist (Baba et al., 2018; Stevens, 2009; Kutner et al., 2005). The results, as shown in Table 4.11, showed that VIF statistic values were within the recommended range of VIF values of < 10 and tolerance $1/\text{VIF}$, while the tolerance values were more than 0.2 (Lavery, Acharya, Sivo & Xu, 2019; Stevens, 2009). Hence, there is no evidence of an issue with multicollinearity amongst the explanatory variables in the study.

Table 4.11: Statistical Results of Multicollinearity Test

	Collinearity Statistics	
	Tolerance	VIF
Organization performance	.753	1.327
Supply chain integration	.784	1.276
Value creation	.637	1.570

Source: Research Data, 2023

4.6.4 Test of Independence of Errors

Statistical tests assume that there is a sample of independent observations, meaning that the value of one observation does not affect the value of another observation. If the error terms are not independent of each other, the statistical predictive power of the variables may be misleading, so error terms are assumed to be independent. This assumption was checked using the Durbin-Watson statistic, which should range between 1.5 and 2.5 for independent observation (Kang, 2021; Garson, 2012; Durbin & Watson, 1950; 1951). The result depicted in Tale 4.12 showed that the Durbin-Watson statistic value was 1.702, which is within the recommended range of 1.5 and 2.5 for independent observation (Turner, 2020; Garson, 2012). This implies that the assumption was not violated. Hence, the value observed does not affect the value of the other value.

Table 4.12: Statistical Results for Independence of Error Terms

Model Summary					
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.652 ^a	.425	.419	.39364	1.702
Dependent Variable – Organization Performance					
Independent Variable – Information integration, Supplier integration, logistical integration, Customer integration, value creation					

Source: Research Data, 2023

4.6.5 Test of Homoscedasticity

Homoscedasticity, or constant variance, is a standard assumption in regression models. A violation of this assumption can lead to inefficient estimation or incorrect inference (Hattab & Ruppert, 2023; Ruppert, Wand, & Carroll, 2003). Homoscedasticity is commonly referred to as the assertion that the response variable has the same variance across a range of values for predictor variables. The study utilized Levene's variance equality statistics to test this assumption. If Levene's test statistic is found to be significant ($p < 0.05$), the assumption of homoscedasticity is said to be violated (Hattab & Ruppert, 2021; Martin & Bridgmon, 2012; Ruppert et al., 2003). As shown, Levene's test coefficients for all variables obtained in the analysis were more than 0.05, as indicated in table 4.13 below. It indicates there was no violation of the homoscedasticity assumption.

Table 4.13: Statistics Results of Homoscedasticity

	Levene's Statistics	df1	df2	Sig.
Supplier integration (SI)	1.788	1	166	.082
Customer Integration (CI)	1.550	1	166	.445
Logistical Integration (LI)	1.948	1	166	.095
Information Integration (II)	1.050	1	166	.400
Value Creation (VC)	1.104	1	166	.326
** p < 0.05				

Source: Research Data, 2023

4.7 Correlation Analysis

Correlation analysis shows the nature and magnitude of the relationship between variables. Correlation analysis is the basis for regression analysis and is therefore key to establishing relationships. The concept has been described as the degree of association between variables (Shi, Drton, & Han, 2022; Mukaka, 2012).

In addition, it quantifies the magnitude of the linear relationship between a pair of variables (Mallik & Satpathy, 2022; Bewick, Cheek, & Ball, 2003; Bewick et al., 2003). The study analyzed the relationships that are inherent among the dependent, independent, moderator, and mediating variables. Statistically, the correlation coefficient typically ranged between -1.0 and +1.0, so that if the correlation (r) is positive, there is a strong relationship, whereas if the correlation (r) is negative, the association between the variables is negative (Samuel & Okey, 2015; Rebekic et al., 2015).

The results regarding the correlation analysis are summarized and presented in Table 4.14 below. The Pearson correlation results in Table 4.14 showed that supplier integration was positively and significantly associated with organizational performance ($r = 0.465$, $p < 0.01$). It is expected that supplier integration will influence organizational performance by 46.5% based on the coefficient of determination; hence, it is suitable for predicting firm performance. Supply chain integration is widely advocated as one of the important factors to attain superior supply chain performance.

In the same vein, customer integration was positively and significantly associated with organizational performance ($r = 0.301$, $p < 0.01$). It is expected that customer integration will influence organization performance by 30.10% based on the coefficient of determination; hence, it is suitable for predicting organization performance. The finding indicates that an increase in customer integration results in the creation of differentiated competitive advantage, which results in a positive change in organization performance.

In addition, results indicated that logistical integration was positively and significantly correlated to organization performance ($r = 0.399$, $\rho < 0.01$). It is expected that logistical integration will influence organization performance by 39.9% based on the coefficient of determination; hence, it is suitable for predicting firm performance. Similar findings were established by Georgina and Daniel (2015), hence, using warehousing; transportation, customer response and physical distribution management positively correlate with organizational performance. Further, information integration was positively and significantly associated with organizational performance ($r = 0.407$, $\rho < 0.01$). It is expected that information integration will influence organizational performance by 40.7% based on the coefficient of determination; hence, it is suitable for predicting firm performance. Drawing on the coordination theory, this study theorizes that supply chain information integration and coordination can increase organizational performance.

Similar findings were established by Wong, Lai, Cheng & Lun, (2015). Lastly, the results indicated that value creation was positively and significantly correlated to organization performance ($r = 0.346$, $\rho < 0.01$). It is expected that value creation will influence organization performance by 34.6% based on the coefficient of determination; hence, it is suitable for predicting organizational performance. The findings concurs with a study conducted by Liu et al (2014) on the effects of supply chain integration and market orientation on firm performance in China who found out that supply chain integration such as operational coordination, customer relations, logistics and information sharing are positively associated with operational performance and business performance.

Table 4.14 Overall Correlation Analysis Results

	OP	SI	CI	LI	II	VC
Performance (OP)	1					
Supplier integration (SI)	.465*	1				
Customer Integration (CI)	.301	.196*	1			
Logistical Integration (LI)	.399**	.179*	.086	1		
Information Integration (II)	.407**	.155*	.158*	.021	1	
Value Creation (VC)	.346**	.105	.317**	.335**	.021	1

*. Correlation is significant at the 0.05 level (2-tailed),
 **. Correlation is significant at the 0.01 level (2-tailed).

Source: Survey Data, 2023

4.8 Regression Results

The regression analysis was conducted to check the model fit and assess the predictive power of the models, such as forced entry, the hierarchical method, and stepwise methods (Field, 2009). The study used the hierarchical regression model because it shows precisely what happens to the regression model when different predictors' variables are added. As a result, the researcher was able to systematically consider the contribution of each independent and mediating factor in describing the predictive power of the model.

4.8.1 Regression Result for Direct Effect

Multiple linear regression analyses were carried out to regress independent variables; Information integration, Supplier integration, logistical integration, Customer integration with organization performance. The results in Table 4.15 depict that Information integration, supplier integration, logistical integration, customer integration accounted for approximately 39.4% of the overall variance in organization performance ($R^2 = .343$, adjusted $R^2 = .332$).

Additionally, the ANOVA method showed the combined estimation of all independent variable as shown in Table 4.15 below were statistically significant ($F = 15.196$, $p < 0.05$). The model was fit to predict organizational performance through Information

integration, Supplier integration, logistical integration, Customer integration. Table 4.15 shows results of the relationship between supplier integration and organizational performance. The results depicts a coefficient estimate of supplier integration that is positive and statistically significant on performance [$\beta = .33, \rho < 0.05$ ($p=0.000$)]. The result is an indication that supplier integration is positively associated to organizational performance. Therefore, a 1% increase in supplier integration will lead to 33% increase in organization performance. Additionally, table 4.15 shows results of the relationship between customer integration and organizational performance.

The results depicts a coefficient estimate of competitive turbulence that is positive and statistically significant [$\beta = .87, \rho < 0.05$ ($p=0.040$)]. The result is an indication that customer integration is positively associated to organizational performance. Therefore, a unit increase in customer integration will lead to 0.87 unit increase in organization performance. Hence, the interaction between external supply chain (customer and suppliers) integration improve the performance and customer satisfaction, and overall supply chain and organizational performance. The results also presented in table 4.15 depict a positive and significant association between logistics integration and organization performance, based on the coefficient [$\beta = .37, \rho < 0.05$ ($p = 0.000$)]. The result is an indication that logistic integration is positively associated to organizational performance. Generally, logistics integration plays an important role in supporting organizations as they strive for more efficient management systems, thus enhancing overall organizational performance.

Finally, the results presented in table 4.15 depict a positive and significant association between information integration and organization performance, based on the coefficient [$\beta = .65, \rho < 0.05$ ($p = 0.000$)]. The result is an indication that information integration is positively associated to organizational performance. Therefore, a unit increase in

information integration will lead to 0.65 units increase in organization performance. Hence, the stronger the integration, the higher will be the performance. Drawing on the coordination theory, this study theorizes that supply chain information integration increase organizational performance.

Table 4.15: Effect of Supply Chain Integration on Organization Performance

	Unstandardized coefficients	standardized coefficients		Sig.	VIF	Tolerance
	B	Beta	t			
(Constant)	.462(.106)		4.349	.000**		
Predictor Variables						
Supplier integration (SI)	.33(.020)	.118	1.622	.000**	.924	1.082
Customer Integration	.87(.022)	.300	3.987	.040**	.851	1.175
Logistical Integration	.37(.019)	.139	1.938	.000**	.865	1.156
Information Integration	.65(.020)	.224	3.274	.001**	.959	1.042
Model Summary						
R	.522					
R Square	.343					
Adjusted R Square	.332					
F Change	15.196**					
Durbin-Watson	1.548					
^a Dependent Variable: Organization Performance						
Note(s): the table presents the regression between study variables [Information integration, Supplier integration, logistical integration, Customer integration]: **p-value < 0.05; Obs= 167; Standard errors are given in parentheses.						

Source: Survey Data, 2023

4.8.2 Testing Direct Hypothesis

Hypothesis 1 (H₀₁) stated that supplier integration has no significant effect on organization performance of manufacturing firms in Nairobi County, Kenya. The findings in Table 4.15 confirm a positive and significant association between supplier integration and performance. Based on the coefficient [$\beta = .33$, $\rho < 0.05$ ($p=0.000$)], the null hypothesis (H₀₁) was rejected. It was concluded that supplier integration is positively associated with overall organizational performance. Further a unit change supplier integration will lead to 0.33 unit increase in organization performance. Frizelle and Efstathiou (2003) established that supplier integration plays a vital role in reducing

production costs. Hence, high-level of supplier integration involves few suppliers which translate to economies of scale in general, with overall performance. However, findings of this study contrast Swink et al. (2007); Frohlich and Westbrook (2001) established that supplier integration is negatively associated with performance.

Hypothesis 2 (H₀₂) *stated that customer integration has no significant effect on performance of manufacturing firms in Nairobi County, Kenya.* The findings in Table 4.15 confirm a positive and significant association between customer integration and performance. Based on the coefficient [$\beta = .87, \rho < 0.05$ ($p=0.040$)], the null hypothesis (H₀₂) was rejected. It was concluded that customer integration is positively associated with overall organizational performance. Further, a unit increase in customer integration will lead to 0.87 units increase in performance. Thus, Customer integration provides understanding of market expectations, which helps firms become more responsive to customer needs and requirements (Swink, Narasimhan, & Wang, 2007; Swink, & Nair, 2007; Swink, Sant'Ana Gallo, Defee, & da Silva, 2024), leading towards superior performance outcomes.

Moreover, customer integration helps manufacturers enhance the understanding of customer preferences (Swink et al., 2007), which can make manufacturers more responsive to their customers' needs. Close customer integration makes it easier for manufacturers to meet customers' requirements effectively and efficiently. By surveying customer needs, involving customers in product design, and receiving feedback on product quality and performance, manufacturers provide high-quality and low-price products to customers with great responsiveness, which in turn leads to customer satisfaction.

Hypothesis 3 (H₀₃) *stated that logistic integration has no significant effect on performance of manufacturing firms in Nairobi County, Kenya.* The findings in Table 4.15 confirm a positive and significant association between logistic integration and organizational performance. Based on the coefficient [$\beta = .37, p < 0.05$ ($p=0.000$)], the null hypothesis (H₀₃) was rejected. It was concluded that logistic integration is positively associated with overall organizational performance. Further, a unit increase in logistic integration will lead to 0.37% increase in organization performance. Thus, logistics integration affects operational performance through quality, delivery, cost effectiveness, innovation and service level; and business performance indicators such as profitability, liquidity, ROA, ROI, market share and products sold (Schoenherr & Swink, 2012; Flynn et al., 2010).

Hypothesis 4 (H₀₄) *stated that information integration has no significant effect on organization performance of manufacturing firms in Nairobi County, Kenya.* The findings in Table 4.15 confirm a positive and significant association between information integration and organizational performance. Based on the coefficient [$\beta = .33, p < 0.05$ ($p=0.001$)], the null hypothesis (H₀₁) was rejected.

It was concluded that information integration is positively associated with overall organizational performance. Further, a unit change information integration will lead to 0.33 unit increase in organization performance. Drawing on the coordination theory, this study theorizes that supply chain information integration increase organizational performance. This result is also consistent with the conclusions drawn by Huo, Han, and Prajogo (Citation2016) and Vafaei-Zadeh et al. (2020).

4.9 Mediating Effect of Value Creation on the Relationship between Supply Chain Integration and Organization Performance

Table 4.16 below shows the direct total effect of testing the mediating effect of value creation on the relationship between supply chain integration and organizational performance of manufacturing firms in Nairobi County, Kenya. The study findings revealed that supply chain integration had coefficients of estimate that was significant based on the coefficient [$\beta_1 = 0.499$, $p < 0.05$ ($p > |t| = 0.0390$)] on overall organization performance. The findings also depicted that a coefficient of path $a = 0.3902$ on the effect of supply chain integration on value creation was significant based on the coefficient [$\beta_1 = 0.3902$, $p < 0.05$ ($p > |t| = 0.000$)]. While path $b' = 0.589$, the effect of value creation on organization performance was also significant based on the coefficient [$\beta_1 = 0.589$, $p < 0.05$ ($p > |t| = 0.000$)]. Finally, the coefficients of the indirect effect of supply chain integration on organization performance [$c' = 0.3191$, $P < 0.05$ ($p > |t| = 0.000$)] was significant, controlling for value creation. Additionally, the coefficient of the effect of value creation on organization performance [$\beta_1 = 0.4620$, $p < 0.05$ ($p > |t| = 0.005$)] was also significant based on model 4a.

The four steps of mediation were followed (Kenny et al., 1998; Salhi et al., 2019; Koubaa & Jarboui, 2017), and thus we established that value creation mediates the relationship between supply chain integration and overall organization performance. Since all the steps were significant, we attribute the effect to be partial mediation.

The study model (M.4) is equivalent to:

$$Y_{it} = \alpha + \beta_{14}\chi_4 + \beta_{24}Me = \alpha + \Theta z \rightarrow Mey + \beta_{24}Me = \beta_{11} * \beta_{24}$$

Additionally, to establish the mediating index we adopt the 2*2 condition process analysis design Igartua and Hayes, (2021). Where $\Theta x \rightarrow y = ab$ at [5000 bootstrap]

sample, the index $0.18027 = [0.3902 \times 0.4620]$, the indirect effect at 5000 bootstrap ranged from CI (0.1101, 0.4039). Generally, an increase of 0.18027 units of value creation, on average, resulting from increase in supply chain integration is associated with higher organizational performance. Boost trapping was performed to determine the mediating effect, and the results presented in Table 4.16 were at confidence intervals of 99 and 95 percentiles calculated, but the study only looked at the 95% confident level.

Here we are looking to see if ZERO (0) lies within the interval range of the confidence interval. The study concludes that the indirect effect is significant, and the estimated effect was 0.1802, which lied between the interval range CI (0.1101, 0.4039). The mediating effect index (0.1802) was lying in the interval range and hence not equal to zero. Hence partial mediation exists. Therefore, we reject Hypothesis (H06), which states that there is no significant mediating effect of value creation on the relationship between supply chain integration and organizational performance.

Therefore, from the findings, it's established that value creation mediates the relationship between supply chain integration and organizational performance. The study findings are in line with previous studies that have indicated that value creation mediates the relationship between supply chain integration and organizational performance (Vanichchinchai, 2012; Copeland, Koller, and Murrin, 2015; Anderson & Narus, 2015). According to O'Cass and Sok (2013), it emphasizes that value creation is a determinant variable of a company's innovation activity. The result of the study showed that innovation capability has a positive effect on the organization's ability to bargain value and eventually affects performance.

Additionally, previous studies have established that value creation is the main key to generating product innovation, which eventually affects the enhancement of business performance (Viljakainen and Toivonen 2014; Sorensen and Jensen 2015). Another study conducted by Lefaix-Durand et al. (2015) explains the inter-firm relationship model and value creation. The value creation process model can be established through a cooperative process in the internal business. Inter-firm relationships are a new trend in the present business environment, supply-chain management, and strategic partnership. Therefore, the higher the integration in supply chain functions, the greater the information exchange between supply chain participants and the greater the potential to enhance a firms' performance relative to firms that give little attention to value creation.

Table 4.16: Mediating Effect of Value Creation on the Relationship between Supply Chain Integration and Organization Performance

Model 4	Coefficients				
	B	t	Sig.	LLCI	ULCI
(Constant)	.9633(.1749)	5.5080	.0000**	.6191	1.3076
Predictor Variables					
supply chain integration	.3191(.0431)	7.4030	.0000**	.2343	.4039
Value creation	.4620(.0384)	12.016	.0000**	.3863	.5376
Direct Effect of χ_4 on Y	Effect				
	.4993(.049)	7.961	.0390**	.2343	.4039
Direct Effect of χ_4 on Me	Effect				
	.3902(.0618)	6.310	.0000**	.2685	.5119
BOOTSTRAP RESULTS FOR INDIRECT EFFECT					
	Effect	BoostSE	BootLLCI	BootULCI	
Mediating Index	.1802	.0372	.1101	.4039	
Model Summary					
R	.7126				
R Square	.5078				
F Change	148.5455*				

^a Dependent Variable: **Organization Performance**

Note(s): the table presents the regression between variables of the study to test mediating effect: ***p-value < 0.01; **p-value < 0.05; *p-value < 0.1; Obs= 167; Standard errors are given in parentheses. All numbers are rounded to four decimal places; Me is value creation; χ_4 is supply chain integration; NUMBER OF BOOTSTRAP RESAMPLES:5000

Source: Survey Data, 2023

CHAPTER FIVE

SUMMARY OF FINDINGS, CONCLUSION AND RECOMMENDATIONS

5.0 Introduction

This chapter presents the summary of the findings and how the results relate to both the theory and empirical evidence in the existing literature. Moreover, the chapter covers the conclusion, implications and suggestion for further research.

5.1 Summary of Findings

This study was informed by the growing empirical debate on supply chain integration, value creation and organizational performance interconnection. Thus, the study's general objective was to investigate the mediating effect of value creation on the relationship between supply chain integration and organizational performance of manufacturing firms in Nairobi County, Kenya. The study was guided by the resource-based view (RBV), the resource dependency theory and the knowledge-based theory. The study established several findings, which are summarized as follows: the study established a direct and positive significant effect of supply chain integration dimensions (supplier integration, customer integration, logistic integration and information integration) on organization performance. Further, the results revealed a direct and positive significant effect of value creation on organization performance. Lastly, the results revealed that value creation mediates the relationship between supply chain integration and organizational performance. The theoretical foundation and empirical results based on subjective and hypothesized hypotheses are discussed in detail as follows:

5.1.1 Relationship between Supplier Integration and Performance of Manufacturing Firms

The study results reported a positive and significant association between supplier integration and organizational performance. Based on the coefficient [$\beta = .33$, $\rho < 0.05$ ($p=0.000$)], it was concluded that supplier integration is positively associated with overall organizational performance. Therefore, supplier integration enhances organizational performance. Hence, high-level of supplier integration involves few suppliers which translate to economies of scale in general, with overall net reduction in material and product costs and overall organization performance. Thus, supplier integration is considered to be a critical source of competitive advantage as it improves inter-enterprise operations. Additionally, supplier integration provides a unity of effort in meeting customer requirements for products and in responding to changes in markets. Hence, supplier integration plays a vital role in reducing production costs.

5.1.2 Relationship between Customer Integration and Performance of Manufacturing Firms

The study results reported a positive and significant association between customer integration and performance. Based on the coefficient [$\beta = .87$, $\rho < 0.05$ ($p = 0.040$)], it was concluded that customer integration is positively associated with overall organizational performance. Generally, customer integration encompasses a firm's focal collaborative practices, such as knowledge sharing. Hence, customer integration provides information about market expectations, which makes firms more responsive to customer needs and requirements, therefore leading to superior performance outcomes.

Thus, customer integration will provide a deeper understanding of market expectations and opportunities, which will help firms, become more responsive to customer needs

and requirements, leading to superior organization performance outcomes. Therefore, the adoption of customer integration will enable manufacturing firms to survive, adapt, and sustain in the event of turbulence. Customer integration design enables manufacturing processes through supply chains to recover from inevitable risky events in an effective way.

5.1.3 Relationship between Logistic Integration and Performance of Manufacturing Firms

The study results reported a positive and significant association between logistic integration and organizational performance. Based on the coefficient [$\beta = .37, p < 0.05$ ($p = 0.000$)], it was concluded that logistic integration is positively associated with overall organizational performance. Thus, logistics integration affects operational performance through quality, delivery, cost effectiveness, innovation, service level, and business performance. Logistic integration enables a firm to improve procurement and logistics processes and optimize supply management. Hence, through logistics integration, a client firm can better understand each supply chain member's point of view, share valuable information, and achieve collective goals. Therefore, logistic integration will enable organizations to differentiate themselves by offering faster delivery, flexible order fulfillment options, and superior customer service. Effective logistics can improve market share, customer loyalty, and overall business performance.

5.1.4 Relationship between Information Integration and Performance of Manufacturing Firms

The study results reported a positive and significant association between information integration and organizational performance. Based on the coefficient [$\beta = .33, p < 0.05$ ($p=0.001$)], It was concluded that information integration is positively associated with

overall organizational performance. Drawing on the coordination theory, this study theorizes that supply chain information integration increases organizational performance. Thus, information integration enhances information exchange on strategies, goals, and performance standards related to environmental concerns with customers would benefit the manufacturer on their operation costs and green activities. Hence, too much investment in sharing information with customers may limit strategic choice in product development and lead to poorer profits and declining overall market share.

5.1.5 Mediation Effect of Value Creation on the Relationship between Supply Chain Integration and Performance of Manufacturing Firms

The study's findings revealed that value creation mediated the relationship between supply chain integration and manufacturing firm performance in Nairobi County. The study results reported a positive and significant association between supply chain integration and organizational performance. Based on the coefficient [$\beta_1 = 0.499$, $p < 0.05$ ($p > |t| = 0.0390$)] on overall organization performance. Additionally, the study results reported a positive and significant association between supply chain integration and value creation. Based on the coefficient [$\beta_1 = 0.3902$, $p < 0.05$ ($p > |t| = 0.000$)]. It is concluded that supply chain integration is positively associated with overall organizational performance. Hence supply chain integration, reduce process complexities, minimize delays, and eliminate redundancies.

While path $b' = 0.589$, the effect of value creation on organization performance was also significant based on the coefficient [$\beta_1 = 0.589$, $p < 0.05$ ($p > |t| = 0.000$)]. It is concluded that value creation is positively associated with overall organizational performance. Generally, value creation enhances communication regarding organization goals, performance, and assets with stakeholders. Thus, sustaining balance

between internal initiatives and stakeholder engagement. The decision-making process strengthens when these perspectives align, therefore improving organization performance. Finally, the coefficients of the indirect effect of supply chain integration on organization performance [$c' = 0.3191$, $P < 0.05$ ($p > |t| = 0.000$)] were significant, controlling for value creation. Additionally, the coefficient of the effect of value creation on organization performance [$\beta_1 = 0.4620$, $p < 0.05$ ($p > |t| = 0.005$)] was also significant based on model 4a.

The four steps of mediation were followed (Kenny et al., 1998; Salhi et al., 2019; Koubaa & Jarboui, 2017), and thus value creation partial mediates the relationship between supply chain integration and overall organization performance. Therefore, value creation mediates the relationship between supply chain integration and organizational performance. Therefore, value creation is the main key to generate product innovation which eventually affects the enhancement of business performance, while, inter-firm relationship model and value creation. Thus, value creation process can be established through cooperative process in the internal business to enhance organization performance.

5.2 Conclusion

The purpose of the study was to investigate the mediating effect of value creation on the relationship between supply chain integration and performance of manufacturing firms in Nairobi County, Kenya. From the findings it is conclusive that value creation is an important mediator on the relationship between supply chain integration and manufacturing firm performance. Therefore, value creation is the main key to generate product innovation which eventually affects the enhancement of business performance, while, inter-firm relationship model and value creation. In addition, from the study findings, it is conclusive that organization performance of manufacturing firms is

significantly influenced positively by supplier integration. Supplier integration is considered to be a critical source of competitive advantage as it improves inter-enterprise operations and organization performance.

Thus, the study concluded that supply chain integration is an important indicator of performance of manufacturing firms since its dimensions enables collaborate with key suppliers to improve on profitability, customer relationship management was maintained, inter-organizational logistics activities are closely coordinated and that suppliers are provided with any information that might help in enhancing customer satisfaction. Therefore, the study concluded that value creation had a mediating effect on the relationship between supply chain integration and firm performance of manufacturing firms in Nairobi County. The findings of this study have supported the theories under study, Resource Dependence, Resource Based View and Knowledge Based Theory since resources in the manufacturing should be utilized through incorporating supply chain integration and creating value and this can lead to fundamental success in terms of the performance of the organization.

The theories further helped the firms to have a good relationship with key suppliers by making sure the suppliers are meeting the demands of the company through supplier integration hence increasing performance. This study contributes to the operations management literature in two ways. First, the results reveal that the relationship between supplier integration and firm performance is contingent on internal integration.

5.3 Recommendations

Based on the findings of the study, the following recommendations in terms of practice, policy, theory, and scholarship were made:

5.3.1 Practice Recommendations

- i. The study recommends that in order for the manufacturing firms in Kenya to realize better performance, emphasis should be made on enhancing their SCI and value creation such as supplier, customer, logistic and information integration.
- ii. Customer relationship should be enhanced and continuously evaluated to ensure that both organizations attain symbiotic relationship to improve on performance in terms of customer satisfaction, growth and profitability.
- iii. The study recommends that management in manufacturing firms and other organizations should be committed in implementing SCI and value creation in order to enable the organization to focus on performance and improve services.
- iv. The study recommends that manufacturing firms should pay greater attention to the information sharing through the involvement of various departments and suppliers to improve on performance.
- v. The study recommends that manufacturing firms should adopt the customer integrations since these variables and performances are related.

5.3.2 Policy Recommendations

- i. Policymakers should introduce incentives such as tax breaks, subsidies, and grants for manufacturing firms that adopt SCI best practices. These incentives will encourage firms to invest in supply chain innovations.
- ii. Regulations should support inter-organizational collaboration in the supply chain. Policymakers should establish guidelines that promote fair competition, data sharing, and risk mitigation strategies among supply chain partners

5.3.3 Theoretical Recommendations

- i. Through the advancement of Resource-Based View (RBV), the study confirms that leveraging internal resources and integrating them into supply chain operations enhances competitive advantage. However, future research should explore how firms can dynamically develop and sustain resource-based advantages over time.
- ii. Findings highlight the role of knowledge sharing in supply chain value creation. This supports the Knowledge-Based Theory but also suggests the need for frameworks that better quantify and manage knowledge as a competitive asset.

5.4 Suggestions for Further Studies

In relation to further studies, the study suggests that future researchers need to carry out a study on the moderating influence on the relationship between supply chain integration and performance. The study further suggests that more research needs to be done on the same area but concentrate on other factors influencing performance of manufacturing firms and even the private and public sector such as banks, the service and government institutions for the purpose of comparison and to validate the generalizability of the findings.

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APPENDICES

Appendix I: Questionnaires for Procurement Officers

I am a student at Moi University, School of Business and Economics. I am conducting research on; EFFECT OF SUPPLY CHAIN INTEGRATION ON VALUE CREATION AND PERFORMANCE AMONG MANUFACTURING FIRMS IN NAIROBI COUNTY OF KENYA. Kindly complete the questionnaire to assist me collect data. Your information alongside others will help me in my research and was used strictly for academic purposes and was treated as confidential, therefore, do not write your name on the questionnaire.

INSTRUCTIONS

The questionnaire is made up of two sections A and B. Please answer each question by writing on the spaces provided or tick (✓) OR write your response on the boxes and spaces provided

Section A: General Information

To what extent do you agree with the following statements on effects of supplier integration on firm performance? Use 1-Strongly Disagree, 2-Disagree, 3-Neutral, 4-Agree and 5-Strongly Agree.

Statement	SD	D	UD	A	SA
The company has a good level of collaboration in product design to enhance performance of the company					
The company collaborates with key suppliers to improve on profitability					
The suppliers sees the relationship with the company has a long term alliance					

The company ensures that early supplier involvement hence expanding on market share					
There is prompt level of communication with suppliers to improve on sales growth					

Any other? Specify

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To what extent do you agree with the following statements on effects of supply chain customer integration on firm performance? Use 1-Strongly Disagree, 2- Disagree, 3- Neutral, 4-Agree and 5-Strongly Agree.

Statement	SD	D	UD	A	SA
The company has established more frequent contacts with major customers					
Major customers of the company are linked with information network					
Major customers have shared market information with the company					
Major customers share demand forecast with the company					
Customer relationship management is maintained within the company					

Any other? Specify

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To what extent do you agree with the following statements on effects of logistical integration on firm performance? Use 1-Strongly Disagree, 2-Disagree, 3-Neutral, 4-Agree and 5-Strongly Agree?

Statement	SD	D	UD	A	SA
Inter-organizational logistics activities are closely coordinated					
The company's logistics activities are well integrated with suppliers logistics activities					
The company has a seamless integration of logistical activities with suppliers					
The company's logistical integration is characterized by excellent distribution, transportation and warehouse facilities					
The inbound and outbound distribution of goods with suppliers is well integrated					

Any other? Specify

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To what extent do you agree with the following statements on effects of supply chain information integration on firm performance? Use 1-Strongly Disagree, 2- Disagree, 3-Neutral, 4-Agree and 5-Strongly Agree?

Statement	SD	D	UD	A	SA
The company shares sensitive information that includes financial, production, design and competitions with customers					
The suppliers are provided with any information that might help them to enhance customer satisfaction					

Exchange of information takes place frequently, informally and timely					
The company has frequent face to face communication with suppliers.					

Any other? Specify

.....

.....

To what extent do you agree with the following statements on effects of value creation on firm performance? Use 1-Strongly Disagree, 2-Disagree, 3-Neutral, 4- Agree and 5- Strongly Agree.

Value creation	5	4	3	2	1
The company ensure that speed of services are provided to the customers to improve on sales growth					
The company provides its customers with response on time reasonable hence increasing the financial performance of the company					
The company provides convenience and easy to use products to improve on customer satisfaction to improve on financial performance of the company					
The company designs it products and services according to customers preferences and knowledge to increase sales growth					
The company products are of high quality to improve on profitability of the company					

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Please indicate the extent to which you agree with the following statements by using a scale of 1 to 5 where 1= Strongly Disagree, 2 = Disagree, 3 = No Idea, 4 = Agree, 5 = Strongly Agree. Tick (✓) which option best describes your opinion with reference to the firm performance elements in manufacturing companies.

Firm Performance	5	4	3	2	1
The company's profit margin has increased					
The company has a wider market share					
The company ensures that the customers are satisfied with the products and services					
The company's sales has grown					
The company's reputation has positively improved					

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Appendix II: List of Registered Manufacturing Firms in Nairobi County

1. A Plus Pvc Technology Company Ltd
2. Abbey Kenya Limited
3. Achellis Material Handling Ltd.
4. Added Perfomance (K) Ltd
5. Adix Plastics Ltd
6. Afri Fashions Ltd.
7. Afri Piping Systems K Ltd
8. Africa Polysack Limited
9. Africa Spirits Limited
10. Afro Cables Industries Ltd
11. Afro Plastics (K) Ltd
12. Agriner Development Ltd
13. Agro Manufacturing Co Ltd
14. Al Habib Agencies Ltd
15. Al Mahra Industries Limited
16. Alison Products K- Ltd
17. Alloy Steel Casting Ltd
18. Alpha Woollens (K) Ltd
19. Altech Enterprises Ltd
20. Always Global Distributors Ltd
21. Amm Engineering Works Limited
22. Amsco Kenya Ltd
23. Angelica Industries Nairobi Limited
24. Annum Trading Company Limited
25. Apex Coating East Africa Limited
26. Arax Mill Ltd
27. Arihant Industries Ltd
28. ArveeWoodsky Limited
29. Arvees Fashions LtdSadolinPaints(E.A) Ltd
30. Ashut Engineers Ltd
31. Asili Plastics Limited
32. Asille Trading (E.A) Ltd
33. Asl Ltd
34. Asp Company Limited
35. Associated Battery Manufacturers
36. Associated Gasket Manufatures Ltd
37. Astral Pipes Limited
38. Auto Ancillaries Limited
39. Auto Number Plate Co.
40. Automotive & Industrial Battery Mfrs (K) Ltd
41. Autosterile (Ea) Ltd
42. Bag & Envelope Converters Ltd
43. Bags And Balers Manufactures Limited
44. Bakels East Africa Ltd
45. Bali Fashions
46. Basco Products (K) Ltd
47. Beiersdorf East Africa Ltd
48. Belfast Millers Ltd

49. Benflex Industries Ltd
50. Best In Tents
51. Best Personal Care
52. Bilco Engineering
53. Black And Beauty Products Ltd
54. Blantyre Steel Limited
55. Blessed Paints
56. Bloomingdale Limited
57. Blowplast Limited
58. Bobmil Industries Limited
59. Boc Kenya Limited..
60. Box Makers Limited
61. British American Tobacco (K) Ltd
62. Broadways Hardware and General Supplies
63. Brush Manufacturers Ltd
64. Bubanks Limited
65. Bunny Industries Ltd
66. Buyline Industries Ltd
67. Cabroworks East Africa Limited
68. Cadbury Kenya Limited
69. Candy Kenya Limited
70. Capitol Printers Ltd
71. Carton Manufacturers Ltd
72. Catalyst Chemicals Ltd
73. Central Glass Industries Ltd
74. Cerapack Products Ltd
75. Chalange Industries Ltd
76. Chandaria Industries Ltd
77. Chemsols Ltd
78. Chirag (K) Ltd
79. Chui Auto Spring Industries Ltd
80. City Engineering Works (K) Ltd
81. City Radiators
82. City Signs Ltd
83. Clay Works Ltd
84. Clear International Limited
85. Cmc Engineering Ltd
86. Coates Brothers (E.A.) Ltd
87. Coca Cola Juices Kenya Ltd
88. Colas East Africa Limited
89. Colourpackaging Limited
90. Concepts (Africa) Ltd
91. Confini Limited
92. Coninx Industries Ltd
93. Contractors Stop (Ea) Ltd
94. Cooper K-Brands Ltd
95. Crown Berger Allied Industries Limited
96. Crown Clothing (Kenya) Limited
97. Crown Industries Ltd
98. Crown Paints Kenya Limited

99. Crown Rock Shield (K) Limited
100. Crown Sea Enterprises Ltd
101. Crown Solutions Limited
102. Crywan Enterprises Ltd
103. Cut Tobacco [K] Ltd
104. Cway Kenya Foods & Beverage Co. Ltd
105. Dawa Limited
106. Deluxe Food Industries
107. Deluxe Inks Limited
108. Dentex Industries Ltd
109. Dera Chemical Industries (K) Ltd
110. Desbro Engineering Limited
111. Distinct Garment Factory
112. Diverse Investment Ltd
113. Diversey Eastern And Central Africa Ltd
114. Dodhia Packaging Limited
115. Dotwood Designs Ltd
116. Dubuit (K) Limited
117. Dunlop Industries Limited
118. Durable Weighine Scales
119. Dynaplas Limited
120. E.A Educational Publishers
121. Ea Foundry Works K Ltd
122. East Africa Cans And Closures Limited
123. East African Cables Limited
124. East African Syntans& Chemicals Ltd
125. East Coat and Industrial Ltd
126. Eastern Coating and Chemicals Ltd
127. Easy Clean Africa Ltd
128. Easy Paints Ltd
129. Economy Farm Products [K]Ltd
130. Ecs Limited
131. Edible Oil Products Ltd
132. Ekotech Limited
133. Elegance Packaging Ltd
134. Elex Products (Ea) Ltd
135. Elgon Kenya Ltd
136. Elite Tools Limited
137. Elite Trailers Ltd
138. Ellams Products Ltd
139. Elys Chemical Industries Limited
140. Embakasi Stone Supplies
141. Emco Billets & Steel Ltd
142. Emem Enterprises Ltd
143. Engineering Development Ltd
144. Envelope Manufacturing Enterprises Ltd
145. Eslon Plastics Of Kenya Limited
146. Eurocon Tiles Products Ltd.
147. Eveready Batteries (Kenya) Limited
148. Everlighting Manufacturing Co. Ltd

149. Excel Chemicals Ltd
150. Excel Packaging Limited
151. Export Institute
152. Falcon Signs Limited
153. Figerwood Ventures
154. Fine Fashions Ltd
155. Fine Spinners Ltd.
156. Fine Wood Works Limited
157. Fineline Industries Ltd
158. Finlay Brushware Ltd
159. Fit Tight Fasteners Ltd.
160. Five Star Industries Ltd
161. Flame Tree Africa Ltd
162. Flame Tree Brands Ltd
163. Flourish Company Ltd
164. Foam Mattresses Ltd
165. Forces Equipment (K) Limited
166. Frigorex (Ea) Ltd
167. Frontier Power Industries Ltd
168. Future Industrial And Trade Corporation Limited
169. Galaxy Paints Coating Ltd
170. Garden Pavings
171. General Motors (East Africa) Limited
172. General Printers Ltd
173. Gesto Pharmaceutical
174. Giloil Company Ltd
175. Glacier Products Ltd
176. Glaxosmithkline Limited
177. Global Merchants Ltd
178. Golden Biscuits (1985) Limited
179. Goldrock International Enterprise (K) Ltd
180. Goldstar Feeds Ltd
181. Grain Drop Products Limited
182. Grand Paints Ltd
183. Great Yaduo Industry Ltd
184. H Young And Co.[Ea]Ltd.
185. Haco Industries Kenya Limited
186. Haitian Building Material International Co Ltd
187. Halar Industries Ltd
188. Hans Apparel Ltd
189. Happy Eaters Ltd
190. Haria Cash Stores
191. Healthy Fruits & Juice Limited
192. Henkel (K) Ltd
193. Hi - Plast
194. Hi Tech Inks And Coatings Ltd
195. Highlands Bodies Ltd
196. Highlite Industries
197. Hill Product[K]Ltd
198. Hi-Plast Limited

199. Hogger Limited T/A Manufacturers Food Production
200. Hydro Heating And Suppliers
201. Ideal Manufacturing Co. Ltd
202. Impact Chemicals Limited
203. Impala Plastics Limited
204. Infinity Plastics Industries Ltd
205. Infusion Medicare Limited
206. Inks (K) Ltd
207. Inkson Industrial Co. Ltd
208. Interconsumers Products Ltd
209. Intertractor Company Limited (Branch)
210. Jambo Biscuits [K] Ltd
211. Jantech Engineering Ltd
212. Johangalt Chemicals Limited
213. Julijo Investment
214. Jumbo Chem (K) Ltd
215. Jumbo Quality Products Limited
216. K O B International Co. Ltd
217. K.Kay Engineering Services Limited
218. Kaluworks Ltd
219. Kam Industries Ltd
220. Kamba Manufacturers (1986) Limited
221. Kamdev Enterprises Ltd
222. Kamili Nature Brands Ltd
223. Kamili Packers Ltd
224. Kedsta Investments
225. Ken Steel Ltd
226. Kenafric Industries Limited
227. Kenapen Industries Limited
228. Kenbro Industries Ltd
229. Kengrow Ltd
230. Kenind Paints Ltd
231. Kenind Products Kenya Ltd
232. Kennat Inks & Chemicals Ltd
233. Kenpack Cartons Ltd
234. Kenpoly Manufacturers Ltd
235. Kens Metal Industries Ltd
236. Kentainers Limited
237. Kenwest Cables Ltd
238. Kenya Asia Industry Ltd
239. Kenya Builders And Concrete Co.Ltd
240. Kenya Canvas Ltd
241. Kenya Chemicals Limited
242. Kenya Clay Products Limited
243. Kenya Hydraulics Limited
244. Kenya Inks & Coatings Industries Ltd
245. Kenya Sweets Limited
246. Kenya Wine Agencies Ltd
247. Kim-Fay East Africa Limited
248. KimfayEastafrika Ltd

- 249. King Knit Ltd
- 250. King Plastic Industries Limited
- 251. Kingly Fashions Ltd

Source: Kenya Association of Manufacturers, 2022