SUPPLY CHAIN INTEGRATION AND EFFICIENCY OF LARGE MANUFACTURING FIRMS IN MOGADISHU, SOMALIA.

BY

HAILE HASSAN

A Research Project Submitted In Partial Fulfilment Of The Requirements For The Award Of The Degree Of Master Of Science In Supply Chain Management, School Of Business University Of Nairobi

2021

DECLARATION

STUDENT'S DECLARATION

I would like to make a declaration that this is my original work and it has not been submitted to any learning institution apart from the University of Nairobi for the sole purpose of examination.

Signature: ..... **Date.** 30/11/2021

HAILE HASSAN

D676723/2017

SUPERVISOR'S DECLARATION

This project has been submitted with my authorization as the University Supervisor for examination purpose.

Signature..... **Date**..25/11/2020.....

DR. OMBATI OGORO THOMAS.
LECTURER,
DEPARTMENT OF MANAGEMENT SCIENCE,
THE UNIVERSITY OF NAIROBI.

ii

DEDICATION

To my late father, Mohamed Hassan Raage, and my beloved mother Kiin Said Barre, for their support and inspiration both emotionally and financially. Their unending support in the quest of pursuing this master's degree and being a cause of inspiration to me will forever be appreciated

And to my brother from another mother and my classmate Dennis Oduor Oketch, thank you for always being there for me the most when all seemed lost. You supported me with all that you had and believed in me when most people didn't. I will forever be indebted to you. Thanks for your words of encouragement, prayers and always giving me hope when all seemed lost

ACKNOWLEDGEMENT

My foremost gratitude goes to Allah for all that I have accomplished in life and for granting me good health and will to finish the course.

My Supervisor, Dr Thomas Ombati and Mr. Onserio Nyamwange are also acknowledged for their guidance, commitment and being dedicated to help in giving insights and suggestions that shaped this study and made it as it is, am grateful

To my brothers Abdullah Ahmed, Abdirazak Mohamud and Bashir Mohamed, thank you for your words of encouragement and standing with me emotionally and financially. Am forever grateful

I would also like to acknowledge my class mates with special mention of Dennis Oketch and Abass Roble. Thank you for always being with me throughout this journey from its inception to completion. You are a blessing.

ABBREVIATIONS AND ACCRONYMS

TAM	Technology Acceptance Model
SCM	Supply Chain Management
SC	Supply Chains
GDP	Gross Domestic Product
UNDP	United Nations Development Programme
SCI	Supply Chain Integration
WFP	World Food Programme
RDT	Resource Dependency Theory
VMI	Vendor Managed Inventory
SRM	Supplier Relationship Management

TABLE OF CONTENT

LIST OF FIGURES

LIST OF TABLES

ABSTRACT.

The study's goal was to see how supply chain integration affected the supply chain efficiency of large manufacturing firms in Mogadishu, Somalia. The study had three specific objectives: to determine supply chain integration activities of the large manufacturing firms in Mogadishu, Somalia, to evaluate the extent to which large manufacturing firms in Mogadishu, Somalia have adopted Supply Chain Integration and to ascertain the correlation between Supply Chain Integration and Supply Chain Efficiency of Large Manufacturing Firms in Mogadishu, Somalia. The study used descriptive research design, with all Large Manufacturing Firms listed by the Ministry of Commerce and Industry in Mogadishu as the study's population. Census was carried out on all the 33 large manufacturing firms in Mogadishu, Somalia. The study used primary data drafted by questionnaires which were administered through electronic email by use of google forms. The findings indicate that Large Manufacturing Firms in Mogadishu, Somalia, adopted Supplier Integration, Internal Integration and Customer Integration to a large extent. The results also reveal that Supply Chain Integration has an affirmative and substantial relationship with Supply Chain Efficiency as noted by the p values of less than 0.05, and that Supply Chain Integration adoption positively influences cost and resource utilization in Mogadishu, Somalia's large manufacturing firms as indicated by the p value of below 5%. Supply Chain Integration is recommended for Large Manufacturing Firms in Mogadishu, Somalia, since it has been shown to positively influence Supply Chain Efficiency. The study was limited methodologically as only primary data was used and there is no way of ascertaining that the targeted respondents are the ones who actually participated in the study. The managers and decision n makers can use the outcome of the study to establish supply chain integration practices that influences supply chain efficiency and adopt them in their manufacturing firms to enhance efficiency. The study's drawback is that it focused on large manufacturing enterprises in Mogadishu, thus the findings aren't applicable to other medium or small manufacturing enterprises. This therefore does not guarantee generalizability of findings in the manufacturing firms in Mogadishu but only represents the outcome of large manufacturing firms Future research should concentrate on the impact of supply chain integration on firm’s performance of small, medium and large manufacturing firms in Mogadishu Somalia to see if the results will be the replicated.

CHAPTER ONE: INTRODUCTION

1.1 Background of the study

Entities globally integrate their functions to ensure faster and efficient flow of information within business departments (Towill, 2012) with the aim of making them more responsive, reduce operational costs and enhance efficiency (Camden, 2004). As a result of supply chain integration, organizations are determined to avoid a situation where various departments have to run separate functions that cannot add value to the organization (Camden, 2004). Supply Chain integration is amongst the ways through which organizations can make their supply chains more effective and efficient (Salami, 2010). According to Salami (2010), in the contemporary world competition has shifted to supply chains compared to the conventional competition between companies which necessitate supply chain integration. Supply chain integration provides a platform for overall success in a way that isolating the function cannot (Ross, 1998). When the entire company understands the linkages between business capabilities, innovation objectives, suppliers and customer requirements, it stands to appreciate the value of integration (Verlezza, 2012).

Manufacturing firms in Somalia is at a developing stage as most of the firms which were initially there were affected by the civil war and thus the government is trying to revive the industry (Mohamed, Isak & Roble, 2019). Somalis conflict that lasted for three decades has been a drawback on growth of the country, however, the manufacturing industry has grown and shown resilience as they are key players in the country's economy as per the IMF report (2019). The industry is rapidly growing and partially boosted from remittances from the diaspora. The unavailability of resources, pressing security factors and factors which are uncompetitive have derailed the growth and hindered industrial expansion across the country (Miyamoto & Chiofalo, 2017). Many manufacturing firms are coming up and bringing competition to the existing ones and as a result the need for integrating supply chains is essential to ensure companies develop their competitive edge to realize efficiency in their supply chains and the operations (Nenova, 2004).

There exist numerous theories which backs the implementation of supply chain integration (SCI). The paper was however guided by Technology Acceptance Model Theory, Systems Theory and Resource Dependence Theory. Technology Acceptance Model suggests that whenever a new technology is presented to users, several factors like the culture and size of the organization,

financial capabilities and willingness by the top management will inspire their decision on how and when to adopt it (Alexandru, 2014). The theory is pertinent to the research as supply chain integration is all about Technology bringing the suppliers, focal firm and customers together who interact on a single platform. Systems Theory is of the view that a system is made up of substitute systems correlates with one another and the sub-systems relies, impacts and is impacted by the other (Steele, 2003). Resource Dependence Theory depends on the effect of resources that are external on an organization's behavior (Pfeffer & Salancik, 1978).

1.1.1 Supply Chain Integration

Supply Chain Management (SCM) has become known over the past years as a way of ensuring that efficiency is achieved among all the members involved in the chain starting with suppliers all through to the clients. Integration of the SC is critical to entities as it helps in bringing together the stakeholders of the entity like the vendors, customers and even the employees of a firm (Tan, 2001). Organizations are to easily manage their supply chain by integrating their functions across their different supply chin departments like procurement, manufacturing department and logistical functions to ensure the final product reaches the end user in an efficient way (Lambert & Cooper, 2008).

Supply chain integration has different arrays of descriptions according to Vickery, Jayaram, Droge and Calantone, (2003). Often, the term has been used to describe the level to which a company has removed existing internal barriers in their internal processes and the level which information is shared between suppliers and the company, customers and back (Ballou, 2007). However, this description does not have a significant focus on strategy. Based on a strategic view, integrating the SC is the dynamic manner in which companies work together with their vendors and clients to enable them develop, communicate and fulfill and add customer value (Morgan & Monczka, 2006). Companies which respond to this call have had a competitive edge and have realized it is a strategic move which helps them to achieve SC efficiency (Vickery et al., 2003). The core aim of integration is to make sure that a supply chain achieves agility, responsiveness and is sufficient (Stephens, 2001).

Integration of the SC is a combination of two practices which preceded it to develop a process that is distinct and as the ability to develop a single process that restores the initial process (Ellram & Cooper, 2013). The concept of integrating the supply chain (Flynn, Huo and Xhao, 2010) is the

administration of a variety of functions in the supply chain into an integrated program. As a result, successful integration coordinates the entire proceedings of a supply chain to a flawless course by connecting the customers and suppliers across their network of supply. Ellram and Cooper (2013) further points out that for supply chain integration to be complete, there should be integration at three levels namely supplier integration, internal integration and integrating customers. They explain that Supplier integration integrates the firm's suppliers, internal integration integrates the internal departments of the firm and customer integration integrates the customers that an entity has. This means that there is a single platform that all the three above interacts with each other and thus this is how the researcher intends to measure integration of the SC.

SCI has a number of benefits as observed by Ellram and Cooper (2013). The duo points out that an efficiently managed and integrated supply chain leads to reduced cost of operation, responsive supply chains and helps in managing risks. Vickery et al. (2003) further states that responsiveness refers to the firm's capability to rapidly transform in capacity provisions as an environment varying purpose. As a result, it results to development of the link between fulfillment and demand. Cost is reduced by eliminating unnecessary and repetitive services done by different people. Supply chain integration allows for multiple work, which would otherwise be done by several people, to be done by a single person thus saving the cost which is transferred to the customer in terms of lower prices (Freeman & Cavinato, 2010). Companies are increasingly ensuring that there is supply chain integration to help in minimizing risks and achieving supply chain efficiency (Ellram & Cooper, 2013).

1.1.2 Supply Chain Efficiency

SCI is a critical factor for realizing efficiency in the SC. Gaining supply chain efficiency necessitates the events that are value adding with unique advantages that are comparative and are provided by the diverse players who are part of the chain (Bolstorff & Rosenbaum, 2007). To realize this, managers of supply chains are to identify and control all the players along the supply chain like the suppliers, internal departments and consumers that influence the efficiency of the chain in procurement, processing and distribution (Wang, Chan & Pauleen, 2010). Controlling the supply chain players to achieve efficiency requires suppliers and customer integration**.** To be able to realize good cooperation to improve the joint chain of demand, there is need to understand the

customers' needs along with providing them what they need so as to realize highly satisfied clients and efficient chains (Lee, 2000).

Supply chain efficiency is how a company can run and manage its supply chain starting with the vendors to the end users in an efficient way (Shepherd & Günter, 2010). Shepherd & Günter (2010) explain that to realize an efficient supply chain, it needs to be cost efficient, time efficient and be able to utilize its resources. The study therefore used these to measure the SC Efficiency. Costs in the SC is made up of all the costs that are incurred in operating a supply chain and thus should be minimized to achieve efficiency (Vencataya, Seebaluck & Doorga, 2016). Supply chain Responsiveness takes into consideration the velocity through which materials are provided to the customers through the supply Chain (Zhu & Sarkis, 2004). The entity should take as little time as possible to meet the demand of the customer when called upon. Zhu and Sarkis (2004) supplements the argument that responsiveness is the ability of an entity to rapidly transform capacity provisions, position as an environment varying purpose.

Arzu and Erman (2010) explain that flexibility in Supply chain is the need for an agile supply chain in its reaction to changes in the market place to be able to maintain their market place edge according to Gunasekaran and Kobu (2007). Flexibility requires an entity to develop services and products of diverse levels of quality, modifications in designs as observed by Vencataya, Seebaluck and Doorga (2016). Good supplier and customer relations is responsible for sharing of information flow and reliable demand from the flow of information that results to enhanced efficiency as noted by Zhu and Sarkis (2004).

1.1.3 Large Manufacturing firms in Mogadishu

Firms that engage in manufacturing are entities which engage in the transformation of raw materials to either finish or semi-finished items by use of labor, tools and machines. They are made up of food production, production of equipment's and machines and production of chemical and textile materials (Briens & Williams, 2004). Manufacturing is responsible for making or processing raw items into finished items by use of operations that are to a large scale industrial. According to Mohamed, Isak & Roble (2019), Manufacturing is a vital industry in Somalia and it significantly contributes to the nation's economic development. Manufacturing as a process occurs when components or materials are transformed into consumable products through a system

(Levinson, 2018). During manufacturing process, the inputs passing through a system is continuously transformed into final products that are sold to consumers (Domberger, 1998). In economic terms, however, a stable manufacturing sector is one of the indicators of growing and resilient economy and thus the need for supply chain integration. At the same time, manufacturing industry closely interrelates with all other sectors in any economy and for it to have an impact, its supply chain needs to be efficient and effective (Briens & Williams, 2004).

Prior to the civil war in 1991, there were 53 publicly-owned small, medium and large manufacturing companies in Somalia, but the war has left none of them working (Ahmed, 2015). The manufacturing sector has gained momentum with Somali Diaspora making investments of small-scale plants. In Mogadishu, there are 33 large manufacturing plants, which produce mineral water, plastic bags, foam mattress, and pillows, detergent and soap, aluminum, stone processing, and fishing boats as per the listing by the commerce Ministry and Industrialization (2018). The Somali manufacturing sector is responsible for 10% of the Gross Domestic Product (GDP), 2% of formal employment and 0.01% exports (Ministry of Commerce and Industry Report, 2018). The UNDP, bright manufacturing investment has extended to Mogadishu expressing confidence in the performance of the economy. For instance, a facility worthy $8.3 million for bottling coca cola products was erected in Mogadishu in 2004 (UNDP Report, 2012). Investors are also encouraged to invest in the economy and the government encouragement has attracted overseas straight investments like Dole Fruits and General Motors. The state is encouraging the growth of manufacturing industry by granting custom duty relief on tools and machineries and are also cushioned with 50% of reduced duty through the import of raw materials docking at the port of Mogadishu as explained by Mohamed, Isak and Roble (2019). By so doing, the government is attracting foreign investments as it is cheaper to import machines and raw materials for manufacturing.

1.2 Research Problem

According to Lee, "effectively incorporating the supply chain conceptually allows participants to enjoy a significant competitive advantage as a result of improvements in cost reduction and responsiveness, leading to enhanced profitability and performance" (2009). Furthermore, efficient supply chain integration entails establishing long-term and tight working ties with customers and suppliers, as well as forming interactive interactions and working together to manage common

problems and build future plans (Ritzman, 2012). Successful strategy integration necessitates sufficient time and continued operation of the many actors in supply chains, who place a high value on quality guarantee, services delivered in a timely manner and cost reduction. As a result, a given firm's success in the SC is dependent on others performance, as well as their ability and readiness to coordinate events in the SC as explained by Kouvelis, Chambers and Wang (2006). Vaidya and Hudnurkar (2012) concluded that supply chain collaboration across the supply chain plays a significant role for achieving supply chain efficiency by an entity

In manufacturing firms, supply chains have become complex and with many stakeholders who needs the attention of the company at the same time (Kouvelis, Chambers & Wang, 2006). Due to this, different players, decisions, processes and information have to be arranged in a manner that serves the needs of the suppliers, the firm and the customers in a seamless and effective manner as observed by Lee (2009). Since competition has moved to supply chains from individual companies, it is vital for the manufacturing firms to ensure that their supply chains work efficiently like a well-oiled engine (Zhu & Sarkis, 2004). Most manufacturing firms are finding it difficult to coordinate with both the suppliers and the customers at the same time and thus it was observed that there is a lot of unnecessary movement, bullwhip effect due to the distorted information from one party to the other, too much complaints from the customers and suppliers and lack of transparency in processes (Croom, Romano & Giannakis, 2000). Due to this challenge, firms have established that supply chain integration can be able to make them curb these challenges and reduce complexities in the supply chains and achieve supply chain efficiency (Ritzman, 2012). There is also need for accountability of resources, effective communication and improved productivity in the manufacturing firms and thus the need for supply chain integration (Johnson, Alexander, Spencer & Neitzel, 2004).

Studies both globally and locally have indicated that implementation of SCI effectively improves operational and organization performance and SC efficiency as a whole. Globally, Chaudhuri, Boer and Taran (2018) established that integration internally and management of risk across the SC directly impacts flexibility in manufacturing as risk management in the supply chain significantly moderates the relation between flexibility and external integration. Yu, Luo, Feng and Liu (2018) studied supply chain integration of information, flexibility, and operational performance. It was established that External information integration enhances performance in

operations and integration of information significantly impacts flexibility of an entity both proactively and reactively. (Yu et al., 2018). Martinelli and Tunisini (2019) on integrating Customer in supply chains established that integrating the customers in the chain enhances supply chain efficiency and boosts customer satisfaction.

Locally, Ahmed (2014) studied SCI and how it interacts banking company's performance ability. The key finding was that SCI has an influence on performance. Abdallah (2015) examined the connection between management of the interaction with suppliers and how this determines performance of supply chains using evidence from WFP. The study found out that management of Supplier Relationships influences organizational performance. Rucha and Abdallah (2017) assessed Supply Chain Integration and humanitarian SC performance with focus on World Food Program and revealed a noteworthy correlation amongst performance and integration of supply chain. These studies however focused on organizational performance and not efficiency.

From the above-mentioned studies, it is clear that most of the studies measured operational performance, competitive advantage or organizational performance against supply chain integration but none focused on establishing how Supply Chain Integration Impacts Supply Chain Efficiency in Somalia's Manufacturing Industry. This therefore created a gap for this study which the researcher filled. The purpose of the study was to ascertain the influence of integrating supply chains on supply chain efficiency of manufacturing firms in Mogadishu, Somalia. It therefore provided responses for the following queries. To what extent have the manufacturing firms in Mogadishu adopted SCI? What are the supply chain integration activities that have been adopted by manufacturing firms in Mogadishu, Somalia? and what is the correlation between SCI and Supply Chain Efficiency of manufacturing firms in Mogadishu, Somalia?

1.3 Research Objectives

The research achieved three specific objectives namely;

i. To determine supply chain integration activities of large manufacturing firms in Mogadishu, Somalia
ii. To find out the extent of adoption of supply chain integration by large manufacturing firms in Mogadishu, Somalia
iii. To establish the relationship between supply chain integration and Supply Chain Efficiency of large manufacturing firms in Mogadishu, Somalia

1.4 Value of the Study

This research will assist the decision makers in manufacturing entities to gain knowhow on the relevance of managing their supply chains and integrating all the relevant players of the chain to achieve effectiveness and efficiency. The top management can make integration decisions on an informed perspective. The findings will help managers of the corporations to make come up with management decisions and helps them to focus their attention on areas which they need to integrate more to enable meet customer satisfaction and have an efficiently run supply chain.

Manufacturing firms in Somalia can gain from the study's outcome. With an established significant link between the supply chain integration and efficiency, improvements can be fronted to make sure that profitability and cost minimization has been realized in the business. Other manufacturing firms which have not yet integrated their supply chains can use this as a benchmark to see how they can go about integrating their operations to achieve supply chain efficiency.

This research paper will give room for subsequent research on SCI since it will be able to give limitations and recommendations for future studies. Other scholars may utilize the study's outcome to enhance their research work. Researchers who wish to do more studies about the integration of Supply Chains and their effects on efficiency in supply chains of manufacturing firms would use the information to do a literature review for future studies. Manufacturing firms is vital constituent of any economy and most researchers across the world would be interested to see how supply chain integration would make the industry more prosperous.

CHAPTER TWO: LITERATURE REVIEW

2.1 Introduction

This segment reviewed numerous papers previously done by diverse scholars. The subdivisions of this section include Theoretical Framework, Conceptual Framework and a wider view on supply chain integration.

2.2 Theoretical Framework

Supply chain Integration is crucial to an entity that has numerous networks to be connected. It is also crucial in allowing the firm to integrate wholly internally, with its clients and vendors (Wisner, 2001). The research was steered by Technology Acceptance Model (TAM) Theory, Knowledge Based Theory, Systems Theory and Resource Dependence Theory.

2.2.1 Technology Acceptance Model

This model was first proposed by Davis in 1986. The model has been vital in explaining technological behaviors (Chen, Shing-Han & Chien-Yi, 2011). The Technology Acceptance Model (TAM) is a theory on models of information systems on how the users accept and utilizes information technology (Chen et.al, 2011). The users whenever they are presented with a new technology, several elements affect their decision making on how they make use of it (Alexandru, 2014). The factors include size of the company, organizational structures and pressure emanating from within (internally) and outside (customers and suppliers) the company. Luaren and Lin (2005) make use of the model to better understand integration of customers by use of technology. Researchers made use of the model in their studies as their perception is based on the adoption of technology in an organization as part of innovation. Based on Yan et al (2009), the model is used widely across the information technology framework and provides a theoretical contribution to the acceptance or rejection of the technology. The model is focused on explaining the attitude on the intention utilize technology (Nysveen et.al, 2005). TAM makes use of five variables that include; perceived use, perceived simplicity of use, behavior towards using, behavioral intent and actual use as noted by Davis et al. (1989).

The theory is pertinent to the subject under study as there can never be an operational supply chain integration devoid of acknowledging technology. Technology eases and enhances the possibility

of integrating both internally and externally (supplier and the customers) and to enhance seamless flow of information. The framework is also relevant to the current study as firms will only integrate technology in its supply chain if it's perceived to be beneficial. TAM is therefore adopted as an anchoring theory.

2.2.2 Knowledge Based Theory

The theory ventures into a number of dimensions which assists the company to realize its objectives, for instance, developing of new products, capability of the organization, learning across the organization and innovation (Grant, 1996). Information technology according to Alavi and Leinder (2001), plays a significant role whenever systems of information are used to develop and enhance the company's management of knowledge. The theory considers resources that are intangible in an organization. Von Krogh and Grand (2002) participated in the theories development and notes that it promotes knowledge sharing which is a principle in the creation of value internally and externally across the supply chan. The knowledge-based theory is the basis of competitive edge and exchange of knowledge enhances value creation across an entity's supply chain and efficiency according to Grant (1996).

This theory is applicable to the paper as suppliers and retailers bear knowledge in a variety of domains which creates a unique set of information that is strategic which may be used to enhance the business operations after integration of the supply chains. Suppliers and companies enjoy better relationships along with their customers as an outcome of integrating supply chain as it enhances coming up with innovative products and their acceptance by the users. All supply chain members have different knowledge based on their areas of expertise and once all of them are integrated, the firm can be able to achieve supply chain efficiency.

2.2.3 System Theory

According to Martinelli (2001), system theory perceives an occasion as a totality rather than the individual constituents of its various systems. A system is made up of subsystems that interact with one another and are dependent on, affect, and are impacted by each other (Steele, 2003). A company is reliant on the surrounding in which it functions, taking into account vendors, competition and clients as explained by Mason (2007). Different supply chain factors are incorporated into the theory, resulting in a single Supply Chain Network (Fowler, 2000).

Yourdon (1989), Weinberg (1975), Miller (1978), and von Bertalanffy (1978) pioneered systems development for efficiency. In a global configuration, components interact differently, with influencing systems distinguished based on the environment, outputs, and inputs across the system. Performance of the supply chains bring the complex systems components together to develop a big supply chain system. Holistic perspectives look not the shaping of supply chain performance.

Integration of supply chains is using sub systems that are made up of the human, financial, information and material resources to develop a bigger system of networks across the supply chain (Fowler, 2000). They are interdependencies that are identified so as to better understand supply chain dynamics to improve planning, coordination and execution of private SC. The theory is designed to explain the dynamics that define supply chain integration in a systematic manner (Senge, 2009). For example, for efficient Supply Chain Integration, the structure, culture, and people inside the company, as well as the existing IT infrastructure across the SC, must all be taken into account (Mason, 2007). As a result, the system thinking theory gives a thorough knowhow of the impact of various SCM enablers on enterprise outcomes such as performance and efficiency.

2.2.4 Resource Dependence Theory

Jeffrey Pfefer developed the theory in 1978 in Stanford University along with Gerald Salancik, who was an American theorist (Pfeffer & Salancik, 1978). It looks into the effects of an organization's external resources on the organization's behavior. This brings to light the management's reliance on acquisition of external resources. The resource dependence hypothesis has implications for production methods, organizational strategy, staff recruitment, exterior links, ideal structure of the firm, shareholders and other things.

Resource dependence shows the importance of acquisition of resources by an entity from outside entities to be able to realize their objectives (Wisner et al., 2006). The theory ascertains that majority of companies are not reliant on their resources as a result, they rely on others to get their resources. Domenica (2002) sates that for a company to grow an efficient supply chain and enhance their effectiveness in their supply chains and realize competitive edge, it is essential to integrate their supply chains. Efficiency is the use of minimum resources to release a company's objectives while effectiveness refers to the design of channels of distribution.

2.3 Supply Chain Integration

Integration of the SC is composed of internal associations between the internal business units in a company and the association with outside players, including suppliers and customers (Hofmann, 2005). It makes use of entities that are involved directly in the process of value addition that are important for realizing a better and efficient stream of resources from the company to the users (Beamon, 2009). Supply chain integration therefore consists of integration of Suppliers, integration of internal processes and integration of customers.

2.3.1 Supplier Integration

The upstream association of a firm and its vendors is termed as supplier integration. The two work together to share operational, financial and technical information and provides an opportunity to the suppliers to be part of the decision making (Monks, 2014). The sharing of information and relationship between parties is significant as suppliers will become knowledgeable in the supply of materials to the company. The shared information results to an enhanced product, better factory utility, capability of suppliers and improves the structure of cost (Lysons & Farrington, 2006). Supplier integration can also entail the use of SRM technologies and software in managing of the relationship between the vendor and the firm. Using Vendor Managed Inventory (VMI) where an agent of the supplying entity lives at the firm and monitors the stockpiles, advising the firm on how to reorder and at what quantities, is one way of integrating the suppliers (Whang, 2008).

The indicators of supplier integration to be adopted by the study includes the entity cultivating proper working relationship with their vendors, involving the vendors in the design as the development stages of innovative products, mutually sharing rewards and risks with suppliers, carrying out trainings and seminars to educate the suppliers and maintaining a data base of all the firm's key suppliers (Whang, 2008; Monks, 2014; Lysons & Farrington, 2006)

2.3.2 Internal Integration

Mwau (2012) determines that internal integration is conducted across the functions or branches from receiving of supplies to distribution of supplies. It is made up of internal functions integration across the departments being controlled and managed by the manufacturing entity to satisfy client's needs. This is achieved by collaborating and organizations functioning in an organized manner so as to satisfy clients. The functional departments across the production process include

sales, marketing, distribution, procurement and logistics. (Carter, 2011). The functions undertaken as a unit provide for efficiency and enhance performance of an organization. Several elements that are essential as put forward by Whang (2008) include information sharing, coordinating of functional teams and collaboration to ensure the services and products are provided at the right time to sustain the expectations of customers.

The indicators of internal integration, based on literature, includes embracing cross functional management, conducting periodic interdepartmental meetings internally, different departments constant co-ordination to enhance success, sharing of all the relevant information among all the departments and integrating data internally which is made possible by adopting information technology systems (Carter, 2011; Whang, 2008; Vickery et al., 2003)

2.3.3 Customer Integration

Integration of customers is the downstream integration of the SC and is about obtaining of the information on marketing, production and technological use from the customers to be used to enhance the development of new products (Halley and Beaulieu 2009). Satisfaction of customers can be achieved by producer's utilizing the information obtained from customers based on what they need. Customer integration concept provides a link to customers as their preferences are understood with ease. According to Baulcomb (2013), customer integration can be attained by ensuring that customer's views are considered during the production of products. Several methods are used to improve coordination between a manufacturer and their customers. Integration of the customers results to enhanced customer demand response, cycle time reduction, visibility of transactions, cost reduction and enhanced satisfaction levels of services offered (Bargchi & Larsen, 2002). Client's integration increases their value by responding to their needs by systematically and frequently measuring if they're satisfied and tracking their commitment levels to meeting the needs of customers as concluded by Vickery et al. (2003).

Indicators of customer integration are having in place a data base of all our customers with all the relevant information, obtaining client's feedback to better a firm's services, having a dedicated team of customer service, processing and designing of products in a way that keeps satisfied clients and having a reward systems for customers to enhance loyalty (Baulcomb, 2013; Halley & Beaulieu, 2009; Bargchi & Larsen, 2002)

2.4 Supply Chain Efficiency

Getting more done with less can be termed as efficiency. It entails maximizing outputs like volume of services given while limiting inputs like quantity of investment or resources necessary to generate those services while preserving or enhancing quality (Delprato & Antequera, 2021) Supply chain efficiency is how a company can run and manage its supply chain starting with the vendors to the end users in an efficient way (Gavurova & Kubák, 2021). Supply chain efficiency is comprised of several factors like efficient delivery of service, productivity, cycle time reductions and minimization of daily expenses of the firm (Sahin, lgün, & Sönmez, 2021). Asset utilization (Al Yami, Ajmal & Balasubramanian, 2021), gone time as a result of downtime (Vrabková & Vaková, 2021) and reduction in departmental project duration (Gavurova & Kubák, 2021; Delprato & Antequera, 2021) are other supply chain efficiency metrics acknowledged in the wider literature but applicable in the context of manufacturing firms.

Auci, Castellucci and Coromaldi (2021) explain that to realize an efficient supply chain, it needs to be cost efficient, time efficient and be able to utilize its resources. The study therefore used these to measure the SC Efficiency. Costs in the SC is made up of all the costs that are incurred in operating a supply chain and thus should be minimized to achieve efficiency (Gavurova & Kubák, 2021). (Vencataya, Seebaluck & Doorga, 2016). Firms need to ensure that all the cost are minimized and saved in every little way possible in achieving its objectives. Supply chain timeliness takes into consideration the timeliness through which materials are provided to the customers and the time it takes for customers' orders to be met (Capgemini, 2016). The entity should take as little time as possible to meet the demand of the customer when called upon. Vrabková and Vaková (2021) supplements the argument that time efficiency ensures that very minimal time is taken for order fulfillment i.e the time that an order is placed to the time that an order is fulfilled. The lead time and cycle time needs to be shorter so as to ensure the objective of time efficiency is fulfilled as well as reduced turnaround times to finish events (Capgemini, 2016) are also measures of time efficiency. Al Yami, Ajmal and Balasubramanian, (2021) add that utilization of resources along the supply chain also enhances an efficient supply chain as resources are to be fully utilized and used well in meeting the entity's as well as the goals of the SC.

2.5 Supply Chain Integration and Supply Chain Efficiency

An effective integration of the supply chain allows the participants to realize competitive edge for enhancing responsiveness, reducing costs which results to an effective supply chain (Zhu & Sarkis, 2004). It implies making working relationships on a long-term basis with the suppliers and consumers, making of interactive relationships and cooperating to resolve common challenges to improve supply chain efficiency (Gunasekaran & Kobu, 2007). Successful Supply Chain Integration requires adequate time and cooperation between all the supply chain members. To be able to realize delivery of items on a timely manner, quality guarantee and minimizing costs (Kouvelis, Chambers & Wang, 2006). As a result, efficiency of a company's supply chain relies on how other firms perform and their readiness to integrate the supply chain activities (Kouvelis et al., 2006).

Several scholars have focused on integration of supply chains both locally and internationally. A study done by Chaudhuri, Boer and Taran (2018) on integrating supply chains, management of risks and flexibility in manufacturing established that Internal integrating and risk management in Supply Chains affect directly the flexibility in manufacturing while risk management in the supply chain moderates the relation between flexibility and external integration. Hierarchical regression was adopted and analysis of data from the Asian manufacturing entities in 2013-2014.

Rajaguru and Matanda (2019) aimed at establishing the importance of compatibility and integration of supply chain processes in enabling abilities in the supply chain and performance in companies. Findings show operational, technical and cultural supply chain facilities that facilitate integration of supply chins. The study shows the essence of resource integration across supply chain partners to enable raise capabilities of supply chain and enhance performance in operations of a company. Managers and executives responsible for supply chain operation in Australia's food and hardware retail business provided data for survey.

Luo, Feng and Liu (2018) studied information integration in supply chain, flexibility, and performance in operations. Integration of external information causes flexibilities both reactively and proactively that improve performance in operations and internal integration of information affects significantly flexibilities reactively and proactively (Yu et al., 2018). A systematic evaluation of past studies was undertaken utilizing a consolidated Methodology in this research.

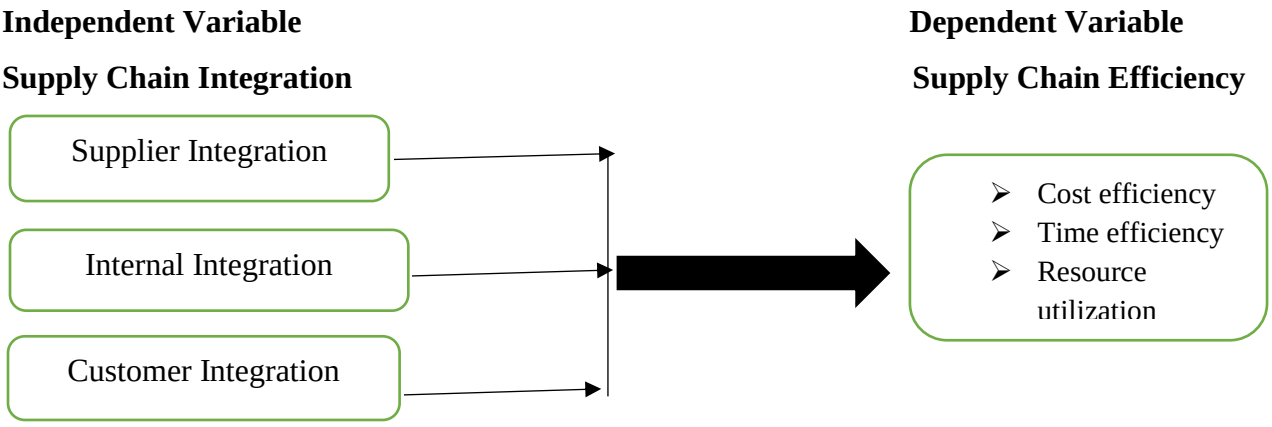
This methodology allows identifying, analyzing, synthesizing, reporting and discussing the results which emanates from the literature of integrating customers into the chain of supply.

Locally, Abdallah (2015) assessed the connection between relationship management between suppliers and its effect on ability of the firms to perform using a case of World Food Program in Somalia. The study had one objective which was to determine supplier relationship management in place. The design adopted was survey and respondents comprised of senior managers in the procurement department. In total, 87 subjects were experimented in the paper. The notable result was that information is shared between the organization and its suppliers. The study established that employees are continuously trained at WFP. It was concluded supplier relationship management has an impact on ability of an organization to perform. The paper fixated on supplier relationship unlike supply chain integration which creates a gap.

2.6 Conceptual Framework

A conceptual framework below illustrates the correlation between the independent and the dependent variables studied. The independent variable was Supply chain integration which is operationalized by integration of suppliers, internal processes integration and integration of customers while the Dependent variable is SC Efficiency operationalized by cost efficiency, time efficiency and resource utilization. It was hypothesized that the adoption of SCI will enhance supply chain efficiency.

Figure 2. 1 Conceptual Framework



Source; Modified from Martinelli and Tunisini (2019)

CHAPTER THREE: RESEARCH METHODOLOGY

3.1 Introduction

Chapter three covered the methodology employed in seeking answers for the research questions of the study. Explicitly, the chapter discussed the design that was adopted, outline the target population, lay out how data was collected and the targeted respondents and finally reveal how each objective was analyzed. These are discussed below.

3.2 Research Design

The research made use of a descriptive design in order to achieve the study objectives. Descriptive research is pertinent for the study as it helps in answering the “what” questions which the study used as well as in giving the current responses as it does not interfere with the outcome of the study due to the standardization of the questions. This allowed the researcher to have firsthand information with optimum control of other variables such as bias information that would interfere with validity of the findings (Burns, 2003). Descriptive research design is often explored to elaborate a population’s characteristic and since the research intended to answer the "what" questions, then it was the most suitable research design for this study (Cooper & Schindler, 2008). According to Zikmund et al. (2010), descriptive research design attempts to provide a description of what is happening or provide the lessons foe specific business activities. Descriptive research design is flexible enough to avail opportunities to consider various elements of the study problem (Krishnaswami, 2003) and since we wanted to ascertain the relationship between integrating Supply Chains and Efficiency, it is the most suitable design to use.

3.3 Population of the Study

Population of study is a collection of components and people who are under investigation (Yin, 2010). Target population refers to the population from whom information needed in the study is obtained from. The study’s targeted population were the large manufacturing firms in Mogadishu, which are 33 in number (Appendix II) as captured by the Ministry of Commerce and Industry (2019). The reason for studying the whole population is because the population is small and therefore there is no need to sample since it can be studied as a whole. The population was studied wholesomely and as a result, census method was used as it is appropriate (Kothari, 2004).

3.4 Data Collection

The study was majorly dependent on primary data. This data was obtained through structured ope-ended questionnaires. The questionnaire contained questions developed from the research' objectives. The Questionnaire was separated into three segments where A covered the biographic information, B had SCI dimensions and C featured supply chain efficiency parameters as per the objectives of the study. This questionnaire was done to make analysis easier and to help the researcher get more detailed responses from the subjects being studied (Kothari, 2008). The collection instruments were distributed using electronic mails. Procurement and/or Supply Chain Managers were the research respondents as they relate closely with the suppliers thus were best suited to answer questions on supplier integration, Operations Manager who were best suited to answer questions on internal integration as they work closely with all the internal employees to ensure smooth running of operations and Marketing/Distribution Manager who relate closely with the customers and deal with them one on one and thus best suited to cover customer integration or their equivalent in the manufacturing firms. The respondents were equally divided (11) in each of the three mentioned departments for partiality purpose. These respondents were chosen because they had complete information about the operations and practices of the firm and were knowledgeable on the subject under study. One respondent per category was enough as all of them will probably give the same response since they all work in the same department.

3.5 Data Analysis

Quantitative data analysis tool was employed in analyzing the data. According to Ogula (1998), data analysis entails the process of transforming raw information into a summary. The study used SPSS to feed quantitative data and utilized descriptive statistics to analyze it. The information was then organized into tables to highlight the correlation between SCI and efficiency. For objectives one (determining the supply chain integration activities adopted) and two (determining the level of adoption of supply chain integration), descriptive statistics were utilized, whereas for objective three (establishing the correlation amongst SCI and SC efficiency), regression analysis was utilized. To capture and explore the correlation amongst the Independent and the Dependent Variable, information was regressed.

The regression model for this study is shown below.

The study carried out three regression models for Cost efficiency, resource utilization and overall Supply Chain Efficiency

$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + e$

Where;

Y= Supply Chain Efficiency

X_1=Supplier Integration

X_2= Internal Integration

X_3= Customer Integration

β_0 = constant

e is the error term.

Summarized below is the data acquisition and analysis tools and Techniques. The table guided us in knowing how the paper's objectives were achieved methodologically.

Table 3. 1 Summary of Data Collection and Data Analysis

Objectives	**Questionnaire part**	**Technique of data acquisition**	**Analysis needed**
Background information	A	Structured Questionnaire	Descriptive Statistics
SCI	B	Structured Questionnaire	Descriptive Statistics
Supply Chain Integration and SC Efficiency	C	Structured Questionnaire	Regression analysis

Source; Research Data (2021)

CHAPTER FOUR: DATA ANALYSIS, FINDINGS AND DISCUSSIONS

4.1 Introduction

The outcome of the analysis, their explanations and discussion are presented in this chapter. The biographic information, Supply Chain Integration adoption levels, and a regressed analysis indicating the correlation between SCI and SC Efficiency will all be covered in this chapter

4.2 Response Rate

The targeted respondents were the 33 large manufacturing companies in Mogadishu, Somalia, and comprehensive data was gathered from 29 manufacturing companies, accounting for 87.88 percent of the respondents. This rate was considered satisfactory for analyzing the data.

Table 4. 1 Response rate

Rate	**Frequency**	**Percentage (%)**
Responded	29	87.88
Not responded	4	12.12
Total	**33**	**100**

Source; Research Data (2021)

4.3 General Information

The respondents' positions in the company, period of work in the position they held, and time the Large Manufacturing businesses have been operating in Mogadishu, Somalia were used to cover the general information. Table 4.2 portrays the position of respondents in the manufacturing entities in Mogadishu.

Table 4. 2 Position in the company

Position in the company	**Frequency**	**Percentage (%)**
Supply chain managers	10	34.48
Operations Managers	8	27.58
Procurement Officers	11	37.93
Total	**29**	**100**

Source: Research Data (2021)

The above results show that 34% represented supply chain managers, 28% represented operations managers while the remaining 38% were Procurement Officers. The results means that majority (62%) of those who filled the questionnaires were at a managerial position and were suitable and knowledgeable on the subject under study (Supply Chain Integration and Efficiency).

The outcome on the length of work is tabulated in 4.3

Table 4. 3 period of work

Period of work (years)	Frequency	Percentage (%)
0 -2	3	10.34
3 -5	5	17.24
5 -10	10	34.48
Over 10	11	37.93
Total	**29**	**100**

Source: Research Data (2021)

On the period that the respondents had worked in the firms, the majority (37.93 %) had been working in the Manufacturing firms for over 10 years. 34.48% for periods ranging from 5-10 years and 17.24% for 3- 5 years and the last 10.34% had served the Manufacturing firms for 2 years (0-2) and below. Hence, 82.76%, represented above three years of experience of those who responded meaning that they had adequate knowledge and were experienced enough to give answers to the queries.

The respondents were asked how long their Manufacturing Entity's had been in existence and how long they had been using supply chain integration, and the outcome are displayed in table 4.4 below.

Table 4. 4 Period of Existence and Supply Chain Integration

Period of existence (years)	Frequency	Percentage (%)
Less than 5	8	27.59
5 – 10	10	34.48
Over 10	11	37.93
Period of Integration		
Less than 5 years	9	31.03
5-10 years	13	44.83
Above 10 years	7	24.14
Total	**29**	**100**

Source: Research Data (2021)

According to the data, 27.59 percent of Manufacturing Firms have operated in Mogadishu for a time not exceeding 5 years, 34.48 percent have existed for 5 to 10 years and 37.93 percent have existed in business for more than a decade. This implies that the vast majority of Large Manufacturing Firms (72.41%) have been in existence for a period exceeding 5 years, indicating that they are capable to provide useful response to the study.

According to the data, 31.03 percent of manufacturing firms had integrated their supply chains for a period not exceeding 5 years, 44.83 percent had integrated for 5-10 years, and the remaining 24.14 had integrated for more than 10 years. The causes for the differences in the number of years that Manufacturing Enterprises have been integrated could be related to growth from single Manufacturing Firms to chains of firms from different locations, as well as competitiveness that spurred supply chain integration.

4.4 Supply Chain Integration Adoption

The goal of the paper was to see how far large manufacturing companies in Mogadishu, Somalia, had integrated their supply chains. Supplier, internal and customer integration were the three constructs of SCI and the outcome of the analysis are summarized in the subsequent tables

4.4.1 Supplier Integration

The aimed at finding out the extent of adoption of supplier integration by the large manufacturing firms in Mogadishu, Somalia. Based on the respective Mean and Standard Deviations, cultivating good relationships with Vendors (M= 3.95, SD= 0.729), maintaining a data base of all key Vendors (M= 3.55, SD= 0.974), and mutual distribution of rewards and risks with Vendors (M= 3.92, SD= 0.729) were all adopted to a large extent. Large Manufacturing enterprises in Mogadishu, Somalia, used trainings and seminars to educate suppliers (M= 3.22, SD= 0.98) and involved suppliers in designing and developing stages of innovated products (M=33.33, SD=1.797) to a moderate extent. General score indicate that supplier integration was adopted to a large extent by the manufacturing firms in Mogadishu hence it was important to be adopted to a large extent. This is tabulated in 4.5

Table 4. 5 Supplier Integration

Factor	Mean	Std. Dev
Cultivates good relationship with its Vendors	3.95	0.729
Maintain a data base of all our key Vendors	3.55	0.974
Carrying out trainings and seminars to educate our suppliers	3.22	1.981
Involve Vendors in designing and developmental stages of innovative products	3.33	1.797
mutually share rewards and risks with suppliers	3.92	0.729
Aggregate Score	**3.74**	**1.861**

Source: Research Data (2021)

4.4.2 Internal Integration

The study wanted to ascertain the level of adoption of internal integration by the large manufacturing firms in Mogadishu, Somalia. Carrying out interdepartmental meetings internally in intervals (Mean= 4.12, SD= 0.97), cross functional management (Mean= 4.01, SD= 1.09) and constantly departmental synchronization (Mean= 4.12, SD= 1.08) were used to a large extent as evidenced by the means and deviations. The use of ICT to accomplish Data integration internally (Mean= 3.70, SD= 1.15) and equal exchange of important information (Mean= 3.78, SD= 1.06) were adopted to a large extent. The aggregate score with the mean of 3.91 and SD of 1.10. This infers that internal integration was adopted to a large extent by the large manufacturing entities in Mogadishu and thus stressing on their relevance and contribution to efficiency. Internal Integration's mean and deviation are displayed in table 4.6.

Table 4. 6 Internal Integration

Factor	Mean	Std. Dev
Managing Cross-functionally in the organization	4.01	1.09
Periodic interdepartmental meetings among are commonly conducted internally	4.12	0.97
Co-ordination between the different departments is constant and successful	4.12	1.08
All the relevant information is equally shared among all the departments	3.78	1.06
Data integration among internal functions is achieved through use of information technology systems	3.70	1.15
Aggregate Score	**3.91**	**1.10**

Source: Research Data (2021)

4.4.3 Customer Integration

The study aimed at determining the level of adoption of customer integration by the large manufacturing firms in Mogadishu, Somalia. Having a data base of all customers with all relevant information (3.91, SD= 1.09), having a dedicated customer service team (3.62, SD= 1.16) and ensuring that the firm's processes and products are designed to increase customer satisfaction (3.54, SD= 1.19) were all adopted to a large extent with regards to table 4.5. Customer input was obtained to improve service (3.43, SD= 1.55), and a reward system for consumers was implemented to increase loyalty (3.41, SD= 1.99) to a moderate level, as indicated by their individual means and standard deviations. The overall mean of 3.58 and SD of 1.57 indicates large extent adoption of customer integration by the large manufacturing firms in Mogadishu implying that customers are important and need to be integrated by the firms as they play an integral role in enhancing efficiency

Table 4.7 gives the individual and general mean and standard deviation for Customer Integration

Table 4. 7 Customer Integration

Factor	Mean	Std. Dev
Having a data base of all our customers with all the relevant information	3.91	1.09
The organization obtains customer feedback to improve its service	3.43	1.55
The firm has a dedicated team of customer service	3.62	1.16
Processes and products of the firm are designed to enhance customer satisfaction	3.54	1.09
The firm has reward systems for our customers to enhance loyalty	3.41	1.99
Aggregate score	**3.58**	**1.57**

Source: Research Data (2021)

4.5 Supply chain integration and supply chain efficiency

The paper's third objective was to find out the correlation amongst SCI and SC efficiency. The information was fitted with a linear regression, and the results are shown below.

4.5.1 Supply Chain Integration and cost efficiency

Table 4.8 indicates the coefficient's outcome of cost efficiency and supply chain integration.

Table 4. 8 Coefficient of Cost efficiency

Coefficients[a]						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	3.220	1.857		1.734	.013
	Supplier Integration	.317	.425	.382	.745	.014
	Internal Integration	.126	.268	.055	.098	.020
	Customer Integration	.207	.274	.372	.756	.031

a. Dependent Variable: cost efficiency

Source: Research Data (2021)

$$Y_1 = 3.22 + .317X_1 + .126X_2 + .207X_3 \quad \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (i)$$

The findings show that the P value of all Supply Chain Integration (Supplier Integration (t=0.745, P0.05), Internal Integration (t=0.98, P0.05), and Customer Integration (t=0.756, P0.05)) is less than 5% (0.001 0.05), implying that Supplier, Internal and Customer integration all have a statistically noteworthy relationship with cost efficiency. This implies that Supply Chain Integration has an affirmative impact on costs efficiency.

Table 4. 9 Model Summary of Cost

Model	**R**	**R square**	**Adjusted R square**	**Std. Error of the Estimate**
I	. 805[a]	.740	.709	.65109

a. Predictors: (Constant), Supplier Integration, internal Integration, Customer Integration

Source: Research data (2021)

R square has a value of 74 percent, as indicated in table 4.9. This indicates that the regression model is relevant and that the adoption of SCI is responsible for 76% of cost efficiency. Table 4.10 summarizes the outcome of the ANOVA

Table 4. 10 ANOVA Analysis of cost efficiency

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	4.713	2	4.012	14.303	.003[b]
	Residual	3.574	26	.357		
	Total	**8.287**	**28**			

a. Dependent Variable: Cost efficiency
b. Predictors: (Constant), Supplier Integration, internal Integration, Customer Integration

Source: Research Data (2021)

Table 4.10 reveals that the calculated F value is 14.503 at 5% level of significance, whereas F crucial is 4.012, indicating that the model is statistically substantial. The value of P.003, which is less than 5%, corroborates this. As a result, Supply Chain Integration is an effective cost predictor and influencer of cost efficiency**.**

4.5.2 Supply Chain Integration and time efficiency

The association amongst SCI and time efficiency was determined by regressing the data and the outcome are tabulated 4.11.

Table 4. 11 Regression Coefficient of time efficiency

Coefficients[a]						
Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std. Error	Beta		
1	(Constant)	4.588	.957		4.792	.002
	Supplier Integration	.101	.219	.210	.459	.004
	Internal Integration	.091	.138	.331	.656	.003
	Customer Integration	.161	.141	.500	1.139	.001

a. Dependent Variable: time efficiency

Source: Research Data (2021)

$$Y_2 = 4.588 + .101X_1 + .091X_2 + .161X_3 \text{ ....(ii)}$$

The findings in table 4.10 show that the P values for Supplier Integration (t=0.459, P0.05), Internal Integration (t=0.656, P0.05) and Customer Integration (t=1.139, P0.05) are all less than 5% (0.05),

implying that Supplier, Internal and Customer Integration all have a statistical relevant correlation with time efficiency in large Manufacturing Firms in Mogadishu, Somalia. This implies that time efficiency is influenced by Supply chain Integration.

Table 4. 12 Model Summary of time efficiency

Model	R	R square	Adjusted R square	Std. Error of the Estimate
I	.779[a]	.683	.641	.50341

a. Predictors: (Constant), Supplier Integration, internal Integration, Customer Integration

Source: Research data (2021)

R square has a value of 68.3 percent, as present in Table 4.12. This indicates that the regression model is substantial, and that the adoption of SCI is responsible for 70% of the increases in time efficiency. Table 4.13 summarizes the findings of the ANOVA.

Table 4. 13 ANOVA Analysis of time efficiency

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	7.640	2	4.745	9.120	. 021[b]
	Residual	3.951	26	.095		
	Total	**11.591**	**28**			

a. Dependent Variable: time efficiency

b. Predictors: (Constant), Supplier Integration, internal Integration, Customer Integration

Source: Research Data (2021)

Table 4.13 reveals that the calculated value of F is 9.120, whereas F critical is 4.745, indicating that the model has a statistical relevance at 5% level of significance. The P value of 0.021 < 5%, corroborates this. Thus, SCI suitably predicts time efficiency and influences it.

4.5.3 Supply Chain Integration and resource utilization

The association between SCI and resource utilization was established and its tabulated in 4.14 below.

Table 4. 14 Regression Coefficient of resource utilization

Coefficients[a]						
Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std. Error	Beta		
1	(Constant)	5.065	1.502		3.372	.007
	Supplier Integration	.306	.344	.396	.890	.040
	Internal Integration	.261	.217	.593	1.206	.052
	Customer Integration	.318	.222	.612	1.404	.034

a. Dependent Variable: resource utilization

Source: Research Data (2021)

$Y_3 = 5.065 + .306X_1 + .261X_2 + .318X_3$ …….……..…...(iii)

From table 4.13, the results designate that the value of P (Supplier Integration (t=0.890, P<0.05) and Customer Integration (t=1.434) are less than 5% (0.001< 0.05) which indicates that Supplier Integration and Customer Integration has a statistically relevant association with resource utilization of Large Manufacturing Firms in Mogadishu, Somalia. The P Value of Internal Integration (t=1.206, P<0.05) is greater than 5% (0.052>0.05) implying that Internal Integration does not influence resource utilization of Manufacturing Firms in Mogadishu, Somalia.

Table 4. 15 Model Summary of resource utilization

Model	R	R square	Adjusted R square	Std. Error of the Estimate
I	609[a]	.712	.710	.59580

a. Predictors: (Constant), Supplier Integration, Internal Integration and Customer Integration

Source: Research data (2021)

R square has a value of 77 percent as revealed in table 4.15. This indicates that the regression is relevant and that the adoption of SCI is responsible for 77% of the increases in resource utilization. Table 4.16 summarizes the ANOVA outcome.

Table 4. 16 ANOVA Analysis of resource utilization

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	1.401	2	4.129	9.320	.014[b]
	Residual	2.339	26	.234		
	Total	**3.740**	**28**			

a. Dependent Variable: resource utilization
b. Predictors: (Constant), Supplier Integration, Internal Integration Customer Integration
Source: Research Data (2021)

Table 4.15 reveals that the calculated value of F is 9.320 at the 5% level of significance, whereas F critical is 4.129, indicating a significant model. The value of P 0.014 does not exceed 5%, and corroborates this. Thus, SCI is an effective resource utilization predictor and influencer.

4.5.4 Supply Chain Integration and Supply Chain Efficiency

Data for correlation of SCI and SC Efficiency was regressed and the outcome are tabulated in 4.17 below.

Table 4. 17 Coefficient of Supply Chain Efficiency

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std. Error	Beta		
1	(Constant)	4.545	1.502		3.452	.000
	Supplier Integration	.296	.344	.356	.680	.001
	Internal Integration	.281	.217	.573	1.351	.051
	Customer Integration	.358	.222	.517	2.312	.031

a. Dependent Variable: Supply Chain Efficiency
Source: Research Data (2021)

$Y = 4.545 + .296X_1 + .281X_2 + .358X_3$ …………………………………….…………….…...(v)

The findings tabulated in 4.17 show that the P value of Supplier Integration (t=0.680, P<0.05) and Customer Integration (t=2.312, P<0.05) is less than 5% implying an affirmative and significant correlation with Supply Chain Efficiency. Internal integration on the other hand (t=1.351, P<0.05) does not influence Supply Chain Efficiency which is evident by its P value of above 5 %

(0.051>5%). This therefore means that Supplier Integration and Customer Integration influence Supply Chain Efficiency while Internal Integration does not Influence Supply Chain Efficiency of Large Manufacturing Firms in Mogadishu, Somalia.

Table 4. 18 Model Summary of Supply Chain Efficiency

Model	R	R square	Adjusted R square	Std. Error of the Estimate
I	609[a]	.701	.718	.47457

a. Predictors:(Constant), Supplier Integration, internal Integration, Customer Integration

Source: Research data (2021)

R^2 is 0.72 transforming to 72 percent, as displayed in Table 4.18. This indicates that the regression model is relevant and that the adoption of SCI is responsible for 72% of the increases in SC Efficiency. Tabulated in 4.18 is the outcome of ANOVA.

Table 4. 19 ANOVA Analysis of Supply Chain Efficiency

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	4.343	2	1.680	11.438	.012[b]
	Residual	2.339	26	.234		
	Total	**6.681**	**28**			

a. Dependent Variable: Supply Chain Efficiency
b. Predictors:(Constant), Supplier Integration, internal Integration, Customer Integration

Source: Research Data (2021)

The F value of 12.180 was substantial as it's greater than F critical of 1.678 and is corroborated by the p value of (0.12) which did not exceed 0.05, indicating that the model was sufficient and significant. SCI has a statistically noteworthy association and effects SC Efficiency of Large Manufacturing Firms in Mogadishu, Somalia, as indicated by the P value of less than 5% (0.014< 0.05).

The second objective was to ascertain the correlation of SC integration and SC Efficiency of Manufacturing Firms in Mogadishu**.** The independent variable of the study was Supply Chain

Integration operationalized with Supplier Integration, Internal Integration and Customer Integration with the Dependent Variable being SC Efficiency operationalized with cost efficiency, time efficiency and resource utilization. It was established that cost efficiency, time efficiency and resource utilization are all influenced by SCI in the large manufacturing firms in Mogadishu

On individual effect of SCI metrics on SC efficiency, it was established that Supplier Integration ($t=0.680$, $P<0.05$) and Customer Integration ($t=2.312$, $P<0.05$) have an affirmative and significant correlation with Supply Chain Efficiency as indicated by the P = minimum of 5%. Internal integration on the other hand ($t=1.351$, $P<0.05$) does not influence Supply Chain Efficiency which is evident by its P value of greater than 5 % ($0.051>5\%$) This therefore means that Supplier Integration and Customer Integration influence Supply Chain Efficiency while Internal Integration does not Influence Supply Chain Efficiency of Large Manufacturing Firms in Mogadishu, Somalia

The general findings indicated that Supply Chain Integration has a statistically relevant correlation and influences Supply Chain Efficiency of Large Manufacturing organizations in Mogadishu, Somalia as indicated by the ANOVA Analysis of the p value (0.14) which was less than 0.05.

4.6 Discussion of the study findings

The outcome of the paper are presented with regards to the study objectives. It was noted that supplier integration, internal integration and customer integration were the main activities of SCI by the large manufacturing firms in Mogadishu and thus objective one of the research was accomplished. Objective two of the study aimed at determining the extent of adoption of SCI of large manufacturing firms in Mogadishu and supplier integration, internal integration and customer integration were adopted to a large extent and thus the second objective was accomplished. Objective three had to ascertain the correlation between SCI and SC efficiency of large manufacturing firms in Mogadishu and it was determined that SCI had an affirmative and substantial relationship with supply chain efficiency of the large manufacturing firms in Mogadishu and thus objective three was fulfilled.

Internal integration was adopted to a large extent as manifested by the mean of 3.91 and S.D of 1.11 by Large Manufacturing firms in Somalia. This indicates that Internal integration is vital to the firms and the findings is supported by that of Whang (2008) who established that when internally integrated, th**e** functions undertaken as a unit provide for efficiency and enhance

performance of an organization. Carter (2011) adds that there are elements that are essential in internal integration and they include information sharing, coordinating of functional teams and collaboration to ensure the services and products are provided at the correct time to sustain the expectations of the customers.

Supplier Integration with the mean of 3.75 and S.D of 1.86 was also adopted to a large extent. The findings thus conclude that Supplier integration is equally critical for the existence of manufacturing firms in Mogadishu, Somalia. The conclusions are concurrent with Monks (2014) who determined that supplier integration aids entities and its suppliers in working together to share operational, financial and technical information and giving an opportunity to the suppliers to be part of the decision making. Lysons and Farrington (2006) opine that the shared information results to an enhanced product, better factory utility, capability of suppliers and improves the structure of cost.

Also adopted to a large extent (M=3.58. S.D=1.57) is Customer Integration indicating that it is crucial for the manufacturing firms in Mogadishu who wants to achieve Supply Chain Efficiency. The outcome are in unison with that of Halley and Beaulieu 2009) who notes that satisfaction of customers can be achieved by producer's utilizing the information obtained from customers based on what they need. According to Baulcomb (2013), customer integration can be attained by ensuring that customer's views are considered during the production of products. Bargchi and Larsen (2002) adds that Integration of the customers results to enhanced customer demand response, cycle time reduction, visibility of transactions, cost reduction and enhanced satisfaction levels of services offered. Vickery et al. (2003) conclude that clients Integration increases their value by responding to their needs by systematically and frequently measuring if they're satisfied and tracking their commitment levels to meeting the needs of customers.

From the above findings, it is clear that objective two (To establish the level that Supply Chain Integration has been adopted by manufacturing firms in Mogadishu) has been achieved. This objective is supported by Knowledge Based Theory. The theory is relevant to this study since suppliers and retailers bear knowledge in a variety of domains which creates a unique set of information that is strategic which may be used to enhance the business operations after integration of the supply chains. Suppliers and companies enjoy better relationships along with their customers due to integration as it enhances development of innovative goods and services and their

acceptance by the users. All supply chain members have different knowledge based on their areas of expertise and once all of them are integrated, the firm can seamlessly achieve Supply Chain Efficiency.

Objective three which had to establish the association amongst SCI and SC efficiency was achieved as it was noted that supply chain integration has an affirmative and noteworthy relationship with supply chain efficiency. It was noted that supplier, customer and internal integration influenced cost efficiency, time efficiency and resource utilization. It was however noted that only supplier integration and customer integration influenced the general SC efficiency while internal integration did not influence SC efficiency of the large manufacturing firms in Mogadishu.

The findings are in alignment with that of Stephens (2001) who ascertained that the key aim of SCI is to ascertain that a supply chain utilizes its resources, is responsiveness and is sufficient. Ellram and Cooper (2013) points out that an efficiently managed and integrated supply chain leads to reduced cost of operation and enhances operational efficiency. Vaidya and Hudnurkar (2012) concluded that supply chain collaboration across the supply chain plays a significant role for achieving supply chain efficiency by an entity. According to Baulcomb (2013), customer, internal and supplier integration results to enhanced customer demand response, cycle time reduction, visibility of transactions, cost reduction and enhanced satisfaction levels of services offered. Every member in the supply chain operationalize in their individual strategy to realize efficiency but they have to work hand in hand so as to ensure that all members along the chain achieve that efficiency (Lysons & Farrington, 2006).

CHAPTER FIVE: SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

The chapter included an overview of major results, as well as conclusions formed from the outcome and recommendations drawn in response to them. The suggestions and conclusions reached are aimed at answering the study question or accomplishing the study objectives.

5.2 Summary of Findings

This segment summarizes the study's outcome in accordance with objectives.

On objective one of the study, the findings indicate that large manufacturing firms in Mogadishu, Somalia have embraced supplier integration, customer integration and internal integration as SCI activities. Objective two concludes that the large manufacturing firms in Mogadishu has adopted Supplier Integration, Internal Integration and Customer Integration to a large extent. Supplier Integration was adopted to a large extent achieved through cultivation of good relationship with suppliers, maintaining a data base of all key suppliers mutually sharing of rewards and risks with suppliers, carrying out trainings and seminars to educate suppliers as well as involving the suppliers in the developing and designing stages of the innovative products. Also to a Large Extent, internal integration was adopted through conducting interdepartmental meetings in intervals internally, adoption of Cross functional management, constant coordination between different departments, Equal sharing of relevant information and use of ICT to achieve Data integration among internal functions. On Customer Integration, it was noted that Manufacturing firms have a data base of all customers with all the relevant information as well as having a dedicated team of customer service. They also ensured that the Clients were satisfied through innovative designing and processing of the entity's products as well as having a reward system for their clients so as to enhance their loyalty and build their trust.

The third objective was to ascertain the correlation of SCI and SC Efficiency of Manufacturing Firms in Mogadishu. This objective was achieved as it was established that; Supplier Integration and Customer Integration influence SC Efficiency while Internal Integration does not Influence Supply Chain Efficiency of Large Manufacturing Firms in Mogadishu, Somalia. The general

results affirmed that Supply Chain Integration has an affirmative substantial relationship and influences Supply Chain Efficiency of Large Manufacturing Firms in Mogadishu, Somalia. It is thus summarized that there is an affirmative and substantial correlation between SC Integration and SC Efficiency of Large Manufacturing Firms in Mogadishu

5.3 Conclusion

The aim of the research was to determine the correlation between SCI and Supply Chain Efficiency of Large Manufacturing Firms in Mogadishu, Somalia. Based on the analysis, a significant correlation was found to exist between SCI and SC Efficiency. SCI impacted Cost efficiency, time efficiency and resource utilization of Large Manufacturers in Mogadishu.

It is concluded that Supplier, customer and internal integration have all been adopted to a large extent by the Large Manufacturers Mogadishu. The study thus summarizes that it is relevant for a firm to work hand in hand with its vendors and clients through integration to enhance its SC Efficiency.

5.4 Recommendations form the study

As per the outcome from the research, the paper recommends that business entities should implement SCI to be able to bring together all the SC players to a single platform whereby vendors, clients and the focal entity can carry out their activities in an efficient and effective way. This will aid firms in achieving the aim of Supply Chain Efficiency as established by the study. This recommendation is drawn from the fact that Supply Chain Integration has been established to positively influence Supply Chain Efficiency of Large Manufacturing Firms in Mogadishu, Somalia.

Since SCI positively influences SC efficiency, the researcher recommends that supplier, internal and customer integration be wholly adopted by the large manufacturing firms in Mogadishu. This is because some of the practices have been found to have been moderately implemented and thus hinders the full realization and maximization of achieving supply chain efficiency by the large manufacturing firms in Mogadishu, Somalia.

It’s also endorsed that all manufacturing companies, not just the large ones, should adopt Supply Chain Integration as a method to compete and stay in business as well as achieving Supply Chain Efficiency.

5.5 Limitation of the Study

Because the research primarily looked at large manufacturing enterprises in Mogadishu, Somalia, the findings cannot be applied to all manufacturing enterprises in the country and thus limiting the study contextually. Due to unavailability of respondents and others were unable to give the information due to privacy concerns, the response rate was not entirely achieved. This, however, had no bearing on the study's quality, as the response level attained was adequate for generalizability.

The research was conceptually limited to solely supply chain integration and efficiency, making it impossible to determine the drivers and hurdles to Supply Chain Integration adoption. It was impossible to ascertain whether the intended respondents were the actual ones who completed the research instrument or if the surveys were completed by different staff. Apart from supply chain integration, other elements that improve supply chain efficiency could not be identified.

5.6 Suggestions for Further Research

Future research should establish if there are any more types of integration besides supplier, internal, and customer integration. Other researchers can borrow the constructs to see if the findings of this study can be replicated in other areas, such as public institutions or the service industry. Future research could look into the bearing of SCI on competitiveness, financial performance, SC responsiveness, and even operational performance. Another area for future research could be the drives and obstacles that come with implementing Supply Chain Integration. Other Academicians can also shift attention on the determinants of SCI.

REFERENCES

Abdallah, A. N. (2015). Effect of supplier relationship management on humanitarian supply chain performance at the world food programme in Somalia (Doctoral dissertation, Doctoral dissertation, University of Nairobi).

Arzu Akyuz, G., & Erman Erkan, T. (2010). Supply chain performance measurement: a literature review. International journal of production research, 48(17), 5137-5155.

Baulcomb, J. (2013). Management of change through force field analysis.Journal of Nursing Management, 11(4), 275-280

Beamon, B. M. (1999). Measuring supply chain Performance, International Journal of Operations& Production Management, 19(3), 275-292

Bhagwat, R., & Sharma, M. K. (2007). Performance measurement of supply chain management: A balanced scorecard approach. Computers & Industrial Engineering, 53(1), 43-62.

Blackman, I. D., Holland, C. P., & Westcott, T. (2013). Motorola's global financial supply chain strategy. Supply Chain Management: An International Journal, 18 (2) 132–147.

Bolstorff, P., & Rosenbaum, R. G. (2007). Supply chain excellence: a handbook for dramatic improvement using the SCOR model. AMACOM/American Management Association.

Borade, A. B., & Bansod, S. V. (2010). Study of vendor-managed inventory practices in Indian industries. Journal of Manufacturing Technology Management, 21 (8), 1013–1038.

Burgess, K., Singh, P. J., & Koroglu, R. (2006). Supply chain management: a structured literature review and implications for future research. International Journal of Operations & Production Management, 26(7), 703-729.

Chen, H., Daugherty, P., & Landry, T. D. (2009). Supply Chain Process Integration: A theoretical Framework '. Journal of Business Logistics. 30 (2): 27-46.

Croom, S., Romano, P., & Giannakis, M. (2000). Supply chain management: an analytical framework for critical literature review. European journal of purchasing & supply management, 6(1), 67-83.

Flynn, B. B., Huo, B., & Zhao, X. (2010). The impact of supply chain integration on performance: a contingency and configuration approach. Journal of operations management, 28(1),58-71.

Frohlich, M. T., &Westbrook, R. (2001). Arcs of integration: an international study of supply chain strategies, Journal of Operations Management, 19, 185-200.

Halley and Beaulieu P. (2009). Mastery of operational competencies in the context of supply chain management. Emerald Journal, (14)1, 49-63

Handfield, R. B., and Nichols, E. L. (1999) Introduction to Supply Chain Management, New Jersey: Prentice-Hall, Inc.

Hofmann, E., & Kotzab, H. (2010). A Supply Chain-Oriented Approach of Working Capital Management. Journal of Business Logistics, 31 (2) 305–330.

Kothari, C. R. (2004). Research methodology: Methods and techniques. (2nd ed.) New Delhi: New Age International.

Kouvelis, P., Chambers, C., & Wang, H. (2006). Supply chain management research and production and operations management: Review, trends, and opportunities. Production and Operations Management, 15(3), 449-469

Lambert, D. M. Cooper, M. C., and Pagh, J. D. (1998). Supply chain management: implementation issues and research opportunities, International Journal of Logistics Management, 9 (2), 1-19.

Liu, H., Wei, S., Ke, W., Wei, K. K., & Hua, Z. (2016). The configuration between supply chain integration and information technology competency: A resource orchestration perspective. Journal of Operations Management, 44, 13-29.

Luo, J., & Zhang, Q. (2012). Trade credit: A new mechanism to coordinate supply chain. Operations Research Letters, 40 (5), 378–384.

Lysons, K., & Farrington, B. (2006). Purchasing and supply chain management. Pearson Education.

Martinelli, E. and Tunisini, A. (2019), "Customer integration into supply chains: literature review and research propositions", Journal of Business & Industrial Marketing, 34(1), 24-38.

Mason, J. (2017). Qualitative researching. Sage.

McCormack, K., Bronzo Ladeira, M., & Paulo Valadares de Oliveira, M. (2008). Supply chain maturity and performance in Brazil. Supply Chain Management: An International Journal, 13(4), 272-282.

Millet, P. A., Schmitt, P., & Botta-Genoulaz, V. (2009). The SCOR model for the alignment of business processes and information systems. Enterprise Information Systems, 3(4), 393-407.

Monks, J. (2014). The Theory and problems of Operations Management. 2nd ed. Tata: McGraw Publishing Company Limited.

Mwau (2012). Supply Chain Management Practices and Performance at Kenya Medical Supplies Agency. International Journal, 39.

Ngechu. M. (2004), Understanding the research process and methods.

Sarkis, J., Zhu, Q., & Lai, K. H. (2011). An organizational theoretic review of green supply chain management literature. International journal of production economics, 130(1), 1-15

Shepherd, C., & Günter, H. (2010). Measuring supply chain performance: current research and future directions. In Behavioral Operations in Planning and Scheduling (pp. 105-121). Springer, Berlin, Heidelberg.

Stephens, S. (2001). Supply chain council & supply chain operations reference (scor) model overview. Supply Chain Council, Inc., Pittsburgh, USA [http://www. Supply chain. org/].

Vencataya, L., Seebaluck, A. K., & Doorga, D. (2016). Assessing the impact of supply chain management on competitive advantage and operational performance: a case of four star hotels of Mauritius. International Review of Management and Marketing, 6(4S), 61-69.

Vickery, S. K., Jayaram, J., Droge, C., & Calantone, R. (2003). The effects of an integrative supply chain strategy on customer service and financial performance: an analysis of direct versus indirect relationships. Journal of Operations Management, 21 (5), 523-539.

Whang, S. (2008). Information sharing in a supply chain. International Journal of Technology Management, 20(3/4), 373-87.

Zhu, Q., Krikke, H. and Caniëls, M. (2018). Supply chain integration: value creation through managing inter-organizational learning. International Journal of Operations & Production Management, 38 (1), 211-229

APPENDIX I: INTRODUCTORY LETTER

UNIVERSITY OF NAIROBI
COLLEGE OF HUMANITIES AND SOCIAL SCIENCES
SCHOOL OF BUSINESS
MSC.SUPPLY CHAIN MANAGEMENT PROGRAMME

Telephone: 4184160/1-5 Ext. 231
Email: dean-business@uonbi.ac.ke

P.O. Box 30197
Nairobi, Kenya

21 May 2021

TO WHOM IT MAY CONCERN

INTRODUCTORY LETTER FOR RESEARCH
HAILE HASSAN - REGISTRATION NO.D67/6723/2017

The above named is a registered Master of Science in Supply Chain Management student at the University of Nairobi, School of Business. He is conducting research on ***"Supply Chain Integration and Efficiency of Large Manufacturing Firms in Mogadishu, Somalia"***.

The purpose of this letter is to kindly request you to assist and facilitate the student with necessary data which forms an integral part of the project. The information and data required is needed for academic purposes only and will be treated in **Strict-Confidence**.

Your co-operation will be highly appreciated.

Prof. Mary Kinoti
Associate Dean, Graduate Business Studies
School of Business

MK/jkm

APPENDIX II: QUESTIONNAIRE

This survey was created with the sole objective of gathering information on supply chain integration and supply chain efficiency among manufacturing enterprises in Mogadishu, Somalia. Please complete this questionnaire as honestly as probable.

SECTION A: Biographic information

1. Kindly name your Manufacturing firm (not must).

……

……

2. Please state position at the manufacturing firm.

a) Supply chain manager ( )

b) Operations manager ( )

c) Procurement officer ( )

3. What period have you served in the manufacturing firm?

a) 1 – 2 years ( )

b) 3 – 5 years ( )

c) 5 -10 years ( )

c) Above 10 years ( )

4. For how long has this Manufacturing firm existed in Somalia?

a) 0 - 5 years ( )

b) 5 – 10 years ( )

c) Above 10 years ( )

5. When did you first integrate your supply chain?

5 years ago ( ) 10 years ago ( ) 15 years ago ( )

6. The following are some on the Supply Chain Integration activities that firms have engaged in. Kindly indicate the ones which your manufacturing firm has integrated.

Supplier Integration ( )

Internal Integration ( )

Customer Integration ( )

SECTION B: THE EXTENT OF SUPPLY CHAIN INTEGRATION

Kindly mark against the subsequent indicators the extent to which your entity has incorporated supply chain integration. 1=Very Low Extent, 2= Low Extent, 3= Medium Extent, 4=Large Extent, 5=Very Large Extent

SUPPLIER INTEGRATION	**1**	**2**	**3**	**4**	**5**
My entity cultivates proper working relationship with our vendors					
Our vendors are involved in the design as well as the development stages of innovative products					
We mutually share rewards and risks with suppliers					
We carry out trainings and seminars to educate our suppliers					
We maintain a data base of all our key suppliers					
INTERNAL INTEGRATION	**1**	**2**	**3**	**4**	**5**
Cross functional management is embraced in our organization					
Periodic interdepartmental meetings are always conducted internally					
Different departments constantly Co-ordinates to be successful					
All the relevant information is equally shared among all the departments					
Internally integrating data through information technology systems					
CUSTOMER INTEGRATION	**1**	**2**	**3**	**4**	**5**
We have a data base of all our customers with all the relevant information					
The organization acquires client's feedback to better its services					
We have a dedicated team of customer service					
Processing and designing of products are done to obtain satisfied clients					
We have reward systems for our customers to enhance loyalty					

SECTION C: THE IMPACT OF SUPPLY CHAIN INTEGRATION ON EFFICIENCY

The subsequent indicators illustrate the influence of supply chain integration on the supply chain Efficiency. Kindly rate your agreement level. The rating is on a Likert scale of 1 to 5 (1= strongly disagree, 2 =Disagreeing, 3 =Neutral, 4 =agreeing, and 5= strongly agree).

COST EFFICIENCY	1	2	3	4	5
TIME EFFICIENCY					
RESOURCE UTILIZATION					

THANK YOU

APPNEDEX III: LIST OF MANUFACTURING COMPANIES IN MOGADISHU

1	Anfac Water Com	21	XalwoBoqolsoon
2	Daldhis Aluminum Factory	22	WarshadaIsbuunyadaCanshuur
3	Ijabo Water	23	XalwoXaajiCiise
4	Malab Dairy Products	24	WarshadabiyahaSahha
5	Jema Factory Mineral Water	25	Wadani Foods
6	Somali Plastic Factory	26	Jema Mineral Water factory
7	Somali Water Development	27	Shirkadaqalabkadhismaha City
8	Som Tank	28	Dimond Furniture
9	Som Plastic Manufacture	29	Somali furniture Factory
10	WarshadabiyaFurat	30	Somali fruit
11	WarshadaIsbuunyadaShaakir	31	AAranAgri trade
12	Afi Pure Mineral Water	32	Ilkoagri Trade Co.
13	Udug Detergents Factory	33	XalwoBaariyow
14	Man International Company		
15	WarshhadaIbuunyadaMubaarak		
16	Bakery /FoornoUbax		
17	WarshadbiyahaDalsan		
18	Coco-Cola Company		
19	Kabaqori Furniture		
20	Al-buruuj Construction Company		

Source: Ministry of Commerce and Industry (2019)