SUPPLY CHAIN INTEGRATION PRACTICES AND ITS ROLE ON SUPPLY CHAIN PERFORMANCE: THE CASE OF UNIVERSAL FOOD COMPLEX PLC

BY

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DECLARATION

I, the undersigned, declare that this thesis entitled "SUPPLY CHAIN INTEGRATION PRACTICES AND ITS ROLE ON SUPPLY CHAIN PERFORMANCE: THE CASE OF UNIVERSAL FOOD COMPLEX" is my original work. I have carried out the study with the guidance and support of the research advisor, Shiferaw Mitiku (PhD). Any other research or academic sources used here in this study have not been submitted for the award of any degree or diploma program in this or any other institution. All sources of materials used have been acknowledged.

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CERTIFICATION

This is to certify that Meron Mesfin has carried out her research work on the topic entitled, SUPPLY CHAIN INTEGRATION PRACTICES AND ITS ROLE ON SUPPLY CHAIN PERFORMANCE: THE CASE OF UNIVERSAL FOOD COMPLEX the work is original in nature and is suitable for submission for the award of the degree of master Arts in Logistics & Supply Chain Management.

Advisor Name: Shiferaw Mitiku (PhD)

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Date _____

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The Researcher

Abstract

Supply chain integration practices are considered a powerful weapon to optimize performance of the organization. The objective of this study was to analyze the supply chain integration role on organizational performance the case of universal food complex. Analysis of the supply chain integration dimensions requires determination of major components: external integration, internal integration, supplier integration, customer integration, information integration and measurement integration identifying enablers and challenges of supply chain integration. The problems of integration, uncertainty, longer lead and cycle times, high inventory level, ineffectiveness and inefficiencies in today's supply chain were the critical factors that initiated this study for investigation. Both descriptive and an explanatory research design was employed with a sample of 70 employees through stratified sampling that was 91% of the response rate. A questionnaire was used as research tool for collecting data. Available data on these factors was gathered, processed, formatted and thoroughly checked for continuity and consistency. The supply chain integration and organizational performance of supply chain data were in filled using the Five Point Likert-Scale .The relationship between independent variables lack of information technology, lack of information sharing, lack of management commitment, lack of trust, government regulation, uncertainty, bullwhip effect, inter organizational factors, technology, information communication technology and top management support and dependent variables supply chain Performance are also cross-checked from Pearson correlation matrix. To predict supply chain performance from supply chain integration dimensions, the multiple linear regression model were adopted. The analysis indicates that independent variables, supply chain integration with respect to the six dimensions. The study recommends relationship management; information communication technology and performance evaluation should be used to improve the degree between supply chain integration dimensions and organizational performance to achieve optimal performance with all chain partners, the company should continuously improve its supply chain integration procedures.

Keywords: supply chain, integration, internal integration, external integration, responsiveness, reliability, ICT, technology, government regulation.

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Acronym and Abbreviation

CI	Customers Integration
DRMFSS	Disaster Risk Management and Food Security sector
EDP	Extended Delivery Point
EI	External Integration
ERBV	Extended Resource Based View
ERP	Enterprise Resource Planning
FAO	Food and Agriculture Organization
FDP	Final Delivery Point
IFAD	International Fund for Agricultural Development
II	Internal Integration
ICT	Information Communication Technology
IOS	Inter Organizational System
IT	Information Technology
JIT	Just In Time
KPI	Key Performance Indicators
ND	No Date
NGOs	Non-Governmental Organizations
P-P	P-P Plot
R2	R Squared
RBV	Resource Based View
RDT	Resource Dependence Theory
ROA	Return On Assets
ROI	Return On Investment
ROS	Return on Sales
SC	Supply Chain
SCI	Supply Chain Integration
SCM	Supply Chain Management
SCP	Supply Chain Performance
UFC	Universal Food Complex

CHAPTER ONE
INTRODUCTION

This chapter presents background of the study, problem statement, research objectives, scope of the study, and delimitation of the study, significance of the study and organization of the study.

1.1. Background of the Study

Today's business environment is characterized by faster technological development, shorter product life cycle and more intense global competition. This new competitive landscape force organizations to actively acquire new ways to achieve competitive advantage since a firm's competitive advantage is now more dependent on operating efficiency and productivity across functional areas of the organization (Pius, 2014). Global competitors working in the global market almost always tend to have world class performance. Having the right product available in the right place, at the right time, enable the company to compete in this volatile market place. However the resources competencies required are often difficult to mobilize and retain by single company. Therefore, it is crucial for companies to cooperative and leverage complementary core resource competencies through partnership-based coordination.

Through the installation of co-operative relationships, organizations are able to achieve distinct competitive advantages, as the adaptation and execution of such networks helps to reduce operating costs and maximize the effectiveness of the organization and eventually improve the performance of the firm (David, 2015).

One of the key issues in the SCI writing is whether the connection amongst SCI and performance is all inclusive or dependent upon situations or systems. The widespread point of view recommends that specific sorts of SCI are more powerful than others in enhancing performance (Huo, 2012). For instance, internal integration is more emphatically identified with execution than external integration (Flynn et al., 2010). In any case, the unexpected point of view recommends that the adequacy of different sorts of SCI is dictated by the level of contingent components (Wong, C. W. Y., Lai, K., & Cheng, T. C. E., 2016). For instance, Iyer, (2009) demonstrated that the impact of SCI on performance diminished as item turbulence and request flightiness mutually expanded. As of late, the SCI writing has progressively accentuated the

external condition or item qualities as contingent elements. Notwithstanding, discoveries on the integration–performance relationship have been conflicting (Huo, 2012; Zhao et al., 2013).

The rising level of competition brought shift to go beyond formulating strategies and leading to seek partnerships with other related companies which lead to competitive advantage in the market. In recent years, companies or industries have recognize making strategies along with integrating internal functions, suppliers and customers in a business relationship is the good model for achieving competitive advantage which establish a base for supply chain integration as a practice and builds links in the supply chain. Supply chain integration as a concept is anxious with the synergy that exists between the internal functions of a firm and its external activities across its supply chain which leads to organizational performance (Kumar and Lona, 2017).

To have the best practice of supply chain management performance and break world's market, supply chain integration is a major element that brings clear and transparent chain between all stakeholders. Supply chain integration is a system of information and communication between all parties that exchange information throughout a lifetime of the product (Mix move, 2021). Supply chain integration practice requires smooth coordination between all stakeholders to ensure everyone is effectively and efficiently working to achieve the common goal of the parties at a time (Creative Safety, 2018). This time, many research findings show that supply chain integration is essential to improve any companies/ industries performance and achieve supply chain management excellence that leads to enhance company's profit income and operational flexibility with cost minimization (Marzita and Ab. Ghan, 2015, Regasa Tesfaye, 2018).

For Ethiopian economy, agriculture is a first ranked economic sector which contributes 39% to country's GDP, brings 90% of foreign currency from export and employs 80% of the country's total population. Almost half of the total manufacturing production is in food production under agro processing industry. Wheat based food production such as Pasta, Wheat flour and Biscuits is one of the major agro processing potential in Ethiopia. Ethiopia is a third wheat producer in Africa. There are a lot of wheat flour and pasta production factories in Ethiopia and Ethiopian government aims to boost production, export and trade through one-billion-dollar investment in agro processing industrial parks to make Ethiopia a top manufacturing hub on the continent. One of the major challenges in the current agro processing sector is lack of infrastructures to support sufficient raw commodities flow to processors (ITA, 2021).

1.2 Statement of the Problems

The extensively practiced dimensions of SCI by the organization might be taken as an opportunity for the performance achievement that is equivalent to the designed strategy. Adversely, narrowly practiced SCI dimensions would lead to substantial adverse effects of slight performance outcome that happened as a result of inadequate responsiveness, flexibility, high uncertainty and inventory levels, and long cycle and lead times in the supply chain.

For seeking the efficient and effective cooperation between organizations of a supply chain, each chain member must seek not only to enhance its own individual competitiveness (quality, cost, delivery and lead time) but also the competitiveness and performance of all enterprises in its supply chain. This involves sharing of information, working together to lower costs, cut lead-time and building total quality into all the stages of the supply chain (Assefa, 2011).

For developing country like Ethiopia, Agriculture plays a critical role in the country's economy. In addition, Agro processing industry has big importance for low-income countries for structural change of economy. In Ethiopia, agro industry takes 50% of share from manufacturing industry which has a critical role for sustaining of Ethiopian economy (UNIDO 2018). Modernizing the agricultural sector and integrating small holder farmers with agro processer trigger the agro processing industry (Fasika and Thobe, 2014). In the other side this sector cannot control the stability of food related materials inflation rate. Beside the food price inflation, shortage of value added and processed food products on the market give another headache to people and government of Ethiopia. This may happen due to shortage of raw materials, broker's disruption to market and other related factors, but the major factor is poor supply chain management especially poor supply chain integration across all stakeholders (Solomon, 2019).

Universal food complex P.L.C in Ethiopia is one of food processing industry that produces pasta, macaroni, pastini and wheat flour. Mondial pasta and macaroni, Bravo pasta and macaroni and Universal flour are its products. Now a day the firm started export in addition to distributing its products in different regions of the country. (Regasa Tesfaye, 2018).

Based on a pilot interview made by the researcher for problem identification, Universal Food Complex have been complaining about problems associated with lack of integration both internal and external, lack of trust between each stakeholder, lack of raw materials and accessories, lack

of modern communication technology tool and disruption of the market by brokers. In Universal Food Complex, the supply chain integration practice is traditional like other Ethiopian food processing factories and related sectors which are not more than buy and sell (transactional relationship) Therefore, food supply chain needs effective management, integration, knowledge, and due attention throughout the supply chain. If properly implemented Supply chain integration can improve the company's responsiveness, flexibility and efficiency (Solomon, 2019).

Many of researches have been conducted on supply chain integration in different industry; most of them are conducted in high income countries which have different economic, political, technological and socio-cultural setup as compared to low-income countries like Ethiopia. Mubugua and Namada,(2019) supply chain integration and operational performances of Kenya's public health sector and Pius,(2014) studied the impact of supply chain integration on supply chain performance in the manufacturing firms Kenya identified supply chain concern on the processes management within and beyond organizational boundaries, a measure of its performance is necessary for its effective operation and controlling.

Yunus, (2013) did an empirical study on supply chain integration in Indonesia and his findings supported previous studies related to positive relationship between supply chain integration practice and firms operational performance. Rita, (2014) did a study on supply chain integration practice and organizational performance of multinational firms in Kenya and concluded performance of the multinational has improved because of integration

In Ethiopia also there are researches conducted on supply chain management and integration on food processing practice such as on diary process in and around Addis Ababa (Regasa ,2018) supply chain management assessment of Hillina Enrich food (Sisay, 2019) Garment sector (Salem ,2012), world food program Ethiopia office(Abdul ,hakim 2018).

Although literature has contributed a great deal of knowledge to better understand supply chain integration practice and sought to explicate performance benefits of integration concepts. In the above studies as well as other studies recommends there's need for more research to be investigated, compared and contrast findings on the relationship between various supply chain integration practice and organizational performance from a different country and different type of industry .Therefore this study sought to add onto the existing knowledge of supply chain

integration practice by narrowing the contextual scope to selected area of agro food processing which is UFC.

The UFC has to implement greater integration channels within the supply chain which increase the chain's responsiveness, reliability, quality, Innovation, delivery and flexibility to dynamic business world. These all-problems lead to another Sevier problem in company's operational performance and profitability. Therefore, this needs to be further investigated by this research on exploring the extent of supply chain integration practices, role of supply chain performance, identifying major challenges and enablers of supply chain integration in UFC and respectively to bridge those gaps in this company .

1.3 Research Objective

1.3.1 General objective

The general objective of this study is to assess the supply chain integration practice and its role on supply chain performance at universal food complex.

1.3.2. Specific objective

The specific objectives of this study are:

1. To assess the extent of supply chain integration in universal food complex.
2. To examine supply chain performance at Universal Food Complex.
3. To identify the major challenges the firm faces in successful implementation of supply chain integration practice.
4. To identify enablers of supply chain integration at Universal Food Complex.

1.4. Research Question

1. How the company's supply chain integration is being practiced?
2. What is supply chain performance of Universal Food Complex?
3. What are the major challenges the company faces in supply chain integration practice?
4. What are the enablers of supply chain integration at Universal Food Complex?

1.5. Scope of the Study

The scope of this study has been seen in two dimensions the subject and area of study. The subject scope of the study was limited to assess or examine the case company's supply chain integration practices, role of supply chain performance and identification of the major challenges and enablers in all integration level.

The area scope of this study was being limited to the case company only which was Universal Food Complex PLC. The study majorly focuses on agro industry (food processing) sector. According to International Trade Administration, 50% of Ethiopian manufacturing industry is in food and beverage sector. Currently, Ethiopian government also gives more emphasis on expansion of agro industry. In the food processing sector still the numbers of researches are very rare. Therefore, the area scope of this study was being limited to the case company only which was Universal Food Complex PLC in the food processing industry.

1.6. Limitation of the study

The study examines supply chain integration practice and its role on supply chain performance of universal food complex. The time and resource constraints have limited the researcher's investigation study subject along geographical scope as well as his dare to move beyond single organization.

1.7. Significance of the Study

It is believed that computing this study gives a huge benefit for the academic sector by providing empirical suggestions and important for different parties such as the case company, other firms which work in the same sector, academicians, and policy makers. Some of the major significances of the study are like it was help the case company through indicating the actual gaps and remedial measures; this study was provide baseline information to conduct more detailed research in the topic of supply chain integration practice; and it was give a clue for other firms who engage in food processing sector to compare their supply chain integration practice and to take positive lesson from the study.

1.8. Definition of Terms

Integration: is the process of combining or coordinating separate function processes or producers and enabling them to interact in seamless manner (Sunil,2004).

Supply chain: Are all inter-linked resources and activities needed to create and deliver products and services to customers (Sunil, 2004).

Supplier-are participants in supply chain that act as the link between producers, processors and markets. The distributors source either fresh produce or processed food from the processors and then distribute it through various channels to reach the final consumer (Smither, 2014).

Customers-The consumer is the final entity in the food supply chain. The economic sustainability of the chain depends upon the consumers buying the products and providing the necessary cash to travel upstream through the supply chain (Smither, 2014).

Information technology (IT)- As a supply chain spans many organizations in developing products to customers both up-stream, downstream and many functional areas within a company, the implementation of IT allows the companies to increase communication and coordination of various value adding activities with their partners and between functions within their own operation (Simchi, 2000).

1.9. Organizations of research report

The study was organized into five chapters. The first chapter includes background of the study, statement of the problem, basic research questions, objective of the study, significance of the study, and delimitation/scope of the study limitation of the study, definition of terms /operational terms and organization of the study. The second chapter is the literature review carried out under this research. It provides a detailed discussion of relevant theoretical arguments on SCI and organizational performance. Theoretical framework that covers researches question and empirical study with the conceptual framework on the literature review carried out. Accordingly, the gaps in the literature will be identified and presented. The third chapters contains the type and design of the research, the subjects/participants of the study, the sources of data, the data collection tools, the procedures of data collection, and the methods of data analysis and presentation was be described. The fourth chapter presents the result discussion and interpretation carried out under this research. This includes the data collected, managed and prepared for the initial analysis. This chapter provides a discussion on the reliability and validity of the data. The fifth and last chapter includes summary, conclusion and recommendations. This chapter underlines theoretical and managerial contribution of the research. It also presents a section on limitations and recommendations on the direction for future empirical studies.

CHAPTER TWO

REVIEW OF RELATED LITERATURE

2.0. Introduction

This chapter presents a review of literature on the concept of study. This chapter looks at supply chain integration and supply chain management. It also discusses the theoretical underpinning of the study as well and the framework of supply chain integration.

2.1. Theoretical Literature Review

2.1.1 Supply Chain Management

In different research, scholars tried to define supply chain management (SCM) in different philosophical perspectives. According to John, (2001) definition, supply chain management is a systematic integration of functions and strategies of business organizations for sustainable performance of the business by satisfying the ultimate customers. The context of management philosophies, Supply chain management is *"The management of Materials, Information and funds from the initial raw materials supplier to the ultimate consumer* (Deloitte, 1999)*"* It also described by (Christopher, 2011) as *"The management of upstream and downstream relationships with suppliers and customers in order to deliver superior customer value at low cost to the supply chain as a whole"* (Christopher, 2011). Stevenson ,(2009) also defined supply chain as value chain and in terms of coordination of business functions in an organization or throughout the supply chain for the purpose of demand management. The known authors Heizer and Render, (2011) define SCM as the integration of the activities that procure services and materials, transform them into intermediate goods and final products, and deliver them to customers. These activities encompass purchasing and outsourcing activities, plus many other functions that are important to the relationship with suppliers and distributors.

Before the term supply chain was started, the term used for management and movement of product and services was logistics. The occurrence of logistics was originally undertaken by the military in ancient times (Britannica, 1994). Therefore, SCM is driven from Logistics concept. The word supply chain management was coined in, 1982 by Keith Oliver, a management consultant at Booz Allen Hamilton (Cortada, 2001). Oliver used the word to develop a vision for tearing down functional silos that separated production, marketing, and distribution. As Cortada

stated the concept was enlarged upon efficiencies and mutual benefits associated with information sharing and decision coordinating to up and own a supply chain.

2.1.2 Supply Chain Integration

Supply Chain Integration (SCI) is the extent to which an organization strategically collaborates with its partners in managing intra and inter-organizational processes, to attain effective and efficient flows of products, services, information, money, and decisions to provide value to customers (Flynn, et al., 2010). On the overall context, SCI has been viewed as being both an effective and an efficient mechanism by which firms seek to secure competitive advantage by ensuring the operational costs are reduced and at the same time assuring high customer service (Mbugua Anne and Namada Juliana, 2019).

The scope of SCI has been defined regarding the integration of a focal firm's internal processes and external integration with its suppliers and customers (Doering et al., 2019).

Literature identifies internal integration, supplier integration, customer integration and information integration, external integration and measurement integration as key dimensions or practices in supply chain integration (Kumar et al., 2017).

2.1.3. Dimensions of supply chain integration Practice

2.1.3.1 External Integration

External integration practices encompass both the upstream and downstream process of the organization's supply chain partners with the desire of enhancing value to all the chain. This consists of both supplier and customer integration ((Mbugua and Namada, 2019).

Despite the advantages recognized by many authors as well as many tiers in to the integrative relationship enclose a positive result on performance of all concerned companion (i.e., increased quality, repair level and lower costs) in point of fact the two relationships are foremost prevailing

2.1.3.2 Internal integration

Internal integration is defined as strategically placed and coordinated internal process and activities for the purpose of achieving maximum performance of an organization. It advances the organizations activities through decreasing expenses and limiting departmental capacity which wouldn't maximize the overall aim within the organization (Kumar et al., 2017).

According to Basnet, c, (2013) Supply chain integration begins first with internal integration among the different functions and departments within an organization before external integration is pursued. Many studies on internal integration have focused on the relationship of internal integration on firms' performance, while others have inspected internal integration as a moderator of the relationship between external integration and performance.

2.1.3.3 Supplier integration

Supplier integration involves collaboration, coordination and information sharing activities between the firm and the suppliers with the aim of integrating the firm information into vendors' processes, constraints, capabilities and ultimately enabling more efficient planning, forecasting, product, process design, and transaction management (Mbugua and Namada, 2019)

According to Kumar et al., (2017), in order to raise customer service to serve better, customer-supplier integration process is invaluable focus of the firm on strengthening the relationships between customer and supplier for the reason of accomplishing supply chain surplus. When suppliers are participated concerning information of demand forecasts, production and inventory levels decision making of the organization, the organization and suppliers have a working partnership that maximize the benefits of both suppliers and the focal firm by reducing lead times, and in advancing innovations and quality.

2.1.3.4 Customer integration

Customer integration is collaborating with the firm's customers through the sharing of information to meet the customer's requirement and expectations (Zhao et al., 2011; Wong, et al., 2011). Customer integration contains strategic information sharing besides collaboration between the firm and customers with the primary aim of improving visibility through the provision of strategic insights into market expectations and opportunities (Namada and Mbugua, 2019).

In addition, a firm that is fully integrated with its customer's stands to benefit through quick problem resolutions, timely tasks coordination, cost reduction of inventories, resolving quality issues in good time and reduction in waste.

2.1.3.5 Information Integration

Information integration refers to the coordination of information transfer, collaborative communication and supporting technology with firms in the supply chain (Leuschner,Rogers and Charvet, 2013).

Information integration has been found to be essential for firms looking to integrate with their customers and suppliers. It needs the inputs and role playing of people, technology systems to originate, sort, process and disperse information to the denominated location at the right time for effectual decision-making. When information is shared through the supply chain, data can be collected in real time as closer communications are then generated with other members in the supply chain which was lead to improved customer service and demand forecasting. Integrating in the supply chain has been found to improve performance of the chain therefore it's important for partners in the supply chain. (Kumar et al., 2017)

2.1.3.6 Measurement integration

It is the performance assessment of supply chain as a whole that also holds each individual firm or business unit accountable for meeting its own goals (Abdulhakim Haji, 2018).

Integration in the supply chain has been found to raise performance of the chain therefore it is necessary for organizations to set out clear cut indicators on what they intend to measure.

2.1.4 Supply chain performance

Supply chain performance is defined as ability of the supply chain to deliver the right product to the right location at the right time at the lowest cost of logistics (Zhang and Okoroafo, 2015). This definition considers the time of delivery, cost, and value for the end consumer. The authors believe that this definition includes the most important aspects of the supply chain (D. Leończuk, 2016)

Supply chain performance in the manufacturing sector is measured broadly by the extent to which the organization fulfills the customers and consumer demands. Measuring organization performance can facilitate a greater understanding of the organization and improve its overall performance (Gunasekaran et al. 2004)

The Supply Chain Operations Reference (SCOR®) model provides a common framework for supply chain procedures and performance metrics along with benchmarks and best practices. The metrics in SCOR provide a solid foundation for measuring performance and determining

priorities (Sami Tewfik, 2014). The Supply Chain Operations Reference (SCOR) model was refined by the Supply-Chain Council to provide a process-based approach to SCM and assist firms in evaluating the effectiveness of their supply chains. The SCOR model is based on five different management processes: plan, source, make, deliver, and return. The supply chain operations reference (SCOR®) has five supply chain performance attributes broadly grouped under customer focused and internal focused (SCC, 2010). These are agility, cost, Reliability, Responsiveness, and asset management.

- **Reliability** is customer focused feature describing system's ability to deliver the right quantity and quality on the right time and supply chain operations reference (Sami Tewfik, 2014). Looks at whether supplies are fit for purpose, whether orders are accurate and whether the estimation of requirements is accurate (Haavisto & Kovacs, 2014).
- **Responsiveness** is customer focused feature describing the speed at which tasks are performed and mostly expressed by cycle-time metrics (Sami Tewfik, 2014) Supply chain responsiveness refers to how quickly a supply chain delivers products to the customer. It includes the time that passes from a customer's order being received to completed delivery (Intaher Marcus, 2014).
- **Agility** is customer focused attribute describing the capability to respond and change according to external influences. (Sami Tewfik, 2014) Flexibility in the supply chain is its agility in responding to random changes in the marketplace in order to acquire or maintain competitive advantage (Wisner, Tan and Leong, 2012,). Flexibility has become specifically valuable in new product development. Some companies compete by developing new products faster than their competitors. Supply chain response time and production flexibility are two showers for flexibility.
- **Cost** Supply chain include all costs associated with operating the supply chain, the cost of operating the process (labor, material and transportation costs) Supply chain costs is related with forecasting, administration, transportation, inventory, manufacturing, customer service and supplier relationship management (Burt, Petcavage and Pinkerton, 2010). Cost control and cost reduction capabilities must be intrinsic to structure, processes, culture and technology foundation for an organization to survive and thrive. (Intaher Marcus, 2014).

- **Asset Management** refers to the effectiveness of an organization in handling assets to support demand satisfaction (Taylor, 2004). This involves the management of all assets (Bolstorff & Rosenbaum, 2003). Three indicators that measure supply chain asset management efficiency are cash-to-cash cycle times, inventory days of supply and asset turns. Top organizations have a cash-to-cash cycle time of approximately 30 days.

2.1.5. Theoretical Framework of the study

The most theories in which supply chain management literatures explored are Transactional cost analysis, resource-based view, and network perspective and principal-agent theory. These theories describe supply chain management in different views which no one of them can be considered as right and the other is wrong (Holldorsson et al., 2007). They suggest transactional cost analysis (TCA) and Principal Agent Theory (PAT) to well describe how to structure of the supply chain when it is perceived as a collaboration of institutions within the supply chain while adopting Resource Based View (RBV) and network Theory (NT) was help us to insight what is needed to manage a particular structure of the supply chain. Applying Resource based view and network theories in the supply chain concept used to identify the resources required to stay competitive and to show the dynamics of inter organizational relationship.

2.1.5.1 Transactional cost analysis

TCA is a principal theoretical framework used to explain and predict global sourcing of products (Murray and Kotabe, 1999). TCA is more concerned with cost minimization. TCA is also referred to as Transaction Cost Economics (TCE) and Transaction Cost Theory (TCT) or Transaction cost (TC) in other studies (Anand Pore, 2018).

TCA generally favors low control entry modes, (Anderson and Gatignon, 1986) as one of the main underlying assumptions in TCA is markets are competitive (Hennart, 1989). In competitive markets there are many potential suppliers; hence more chances that firm was be able to buy a particular input at a competitive price, without worrying about supplier's opportunistic behavior. Only under conditions of market failure TCA recommends hierarchies (internalized transactions). Also, under conditions of market failure TCA does not suggest that equity modes of entry are always superior to markets. (Anand Pore, 2018).

2.1.5.2. Principal agency theory

The focus of agency theory centers on determining the most efficient contract governing the principal–agent relationship". The idea of the contract is used here as a metaphor to describe the agency relationship and designed based on the outcome (such as commissions) or behavior (such as salaries) of the agent (Sajad Fayezl and Maryam zomorrodi, 2016).

Two streams of agency theory (AT) can be found in the literature: principal–agent research and positivist agency theory (Eisenhardt, 1989). In agency relationships, the principal was typically sought to minimize agency costs, such as specifying, rewarding, monitoring and policing the agent's behavior, while the agent works towards maximizing rewards and reducing principal control. AT provides a useful framework to analyze relationships and behaviors in supply chains because these chains are replete with the principal–agent dyads. (Sajad Fayezl and Maryam zomorrodi, 2016).

2.1.5.3 Resource based view

Traditional RBV accept firms must possess or completely control the assets to make esteem. In the broadened asset-based view (ERBV), asset availability, the privilege to utilize assets or make the most of their related benefits, empowers firms to accomplish favorable circumstances. Broadens the RBV by clarifying how interconnected firms in dyadic cooperation/partnership consolidate outside assets and interior asset blessings to accomplish upper hand for the central firm. As per David ,(2015) the upper hand of a central firm partaking in an organization together/joint effort incorporates four components: (1) inside lease (2) appropriated social lease (3) inbound overflow lease, and (4) outbound overflow lease.

Inside lease can be removed from the central firm's own mutual and non-shared assets. Appropriated social lease can be separated just from the mutual assets of the two accomplices. Inbound overflow lease is the lease produced from the accomplice's shared and non-shared assets through information spillage, between firm learning, relative absorptive limit, and disguise of the accomplice's practices, though outbound overflow lease comes about because of the exchange of benefits from the central firm to the associates. The mix of inward lease, inbound overflow lease, and outbound overflow lease frames private benefits for the central firm. Its upper hand relies upon its private benefits and appropriated social lease (i.e., appropriated regular benefits). Conversely, synergistic favorable positions are joint upper hand and originate from a social

lease, a typical benefit that collects to community accomplices. This kind of lease can't be created separately by either collective accomplice.

2.1.5.4 Network theory

The network theory (NT) provides a broader view of the inter-organizational interactions in a network environment. It highlights the dynamics of network environments and recognizes the influence of partner–partner relationships on an organization's operations (Halldórsson et al., 2007). By emphasizing the notion of strong and weak ties, the NT states a network resource view benefits managers to develop a more realistic assessment of individual node resources and their implications for business. Resource accretion and coordination are considered key triggers for inter-organizational connectedness and are advocated to be grasped in today's turbulent business environment (Fawcett, Allred, Magnan and Ogden, 2009; Fayezi, Zutshi and O'Loughlin, 2010; Knoppen and Christiaanse, 2007).

By taking a network approach, organizations can design their supply chains so they can benefit from things such as the advantage of strong ties to build reliability, and weak ties to create flexibility to manage their responsiveness. A further implication of the network theory is its usefulness for supply chain innovation by demonstrating network-wide knowledge-sharing mechanisms and management (Sajad Fayezl and Maryam zomorrodi,2016).

2.2. Empirical literature review

2.2.1. Supply Chain Integration

Supply chain integration is defined as the degree to which all activities within an organization, and activities of its customers, suppliers, and other supply chain members, are integrated together (Narasimhan, et al., 1998). The theoretical foundation for supply chain integration can be drawn to the value chain model of Porter, and specifically, its notion of linkages. As per Baharanchi (2009), an integrated supply chain is linked organizationally and coordinated with information flow, from raw materials to the on-time delivery of finished products to customers. The whole supply chain is linked by information about anticipated and actual demand. As stated by Mangan et al (2008), "Supply chain integration is the alignment and interlinking of business processes, collaboration is the relationship between supply chains partners developed over a period of time". Supply chain integration comprises a set of firm's activities adapted to fostering its relationships with suppliers and customers; these are designed to harmonize supply chain

activities with suppliers on the upstream side and improve customer satisfaction on the downstream side through offering superior products (Petrovic-Lazarevic et al., 2007).

There are two interrelated forms of integration manufacturers regularly employ. The first integration involves integrating the forward physical flow of delivery between suppliers, manufacturers and customers. The second integration involves the backward integration of information technologies and the flow of data from customers to suppliers. Supply chain integration is one of the prominent research streams in operations and supply chain management literature and it manifesting terms of integration of internal operations within a firm as well as external integration with customers and suppliers (Ataseven and Nair, 2017). Supply chain integration must contain both information and material and cannot restrict itself to only one. Higher level of integration is characterized by increased logistics-related communication, greater coordination of the firm‘s logistics activities with those of its suppliers and customers and more blurred organizational distinctions between the logistics activities of the firm and those of its customers and suppliers (Stock et al., 2000). Collaboration, coordination and cooperation are often used more of less interchangeably for describing integrative efforts among partners to improve the overall efficiency of the supply chain (Singh and Power, 2009). such as collaborative planning, forecasting and replenishment (Danese, 2006).

Internal integration and external integration play different roles in the context of supply chain integration. While internal integration recognizes the departments and functions within a manufacturer should function as part of an integrated process. External integration recognizes the importance of establishing close, interactive relationships with customers and suppliers. Both perspectives are important in allowing supply chain members to act in a concerted way, to maximize the value of the supply chain (Ataseven and Nair, 2017).

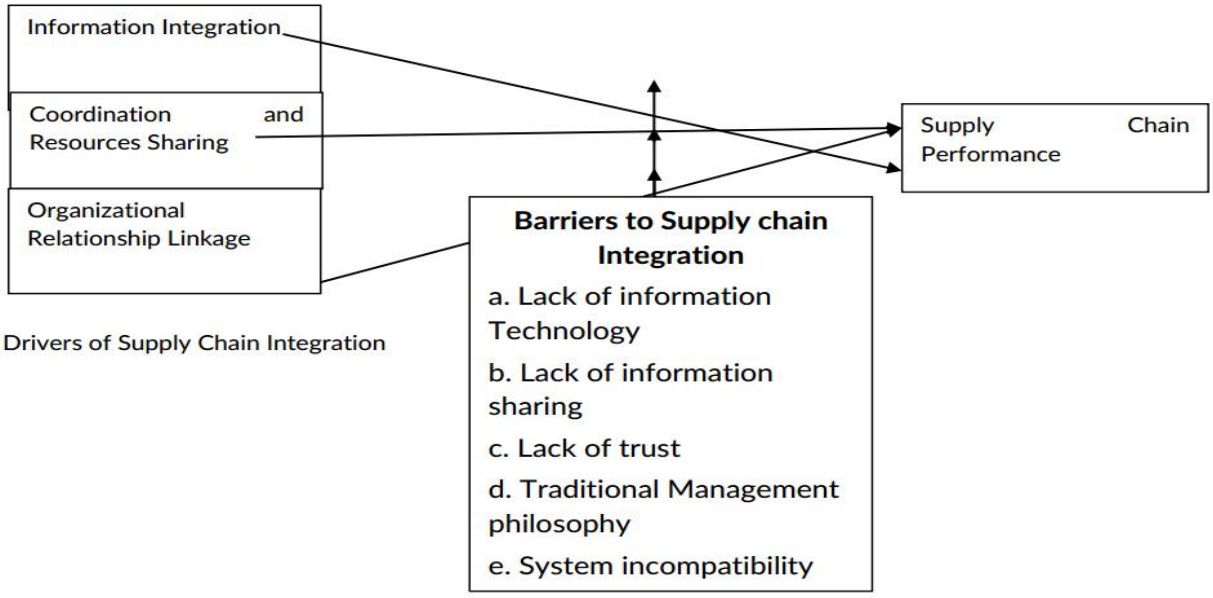

Figure 2.1. Theoretical model of supply chain integration
Source: Richey Jr, G. R., Chen, H., Upreti, R., Fawcett, S. E., and Adams, F. G (2009)

2.2.2 Supply chain integration practices

Most supply chain literature considers supply chain integration practices as the collaborative effort in linking functions and supply chain networks in terms of process, information and physical flow. (Frolich and Westbrook, 2001 and Mentzer et al., 2008) concluded the coordination and collaboration with suppliers and customers is the key element of supply chain integration practices. Thus, coordination, collaboration, interaction, information flow linkage and business process linkage become the key components of supply chain. Supply chain integration practices refer to the degree to which a manufacturer strategically collaborates with its supply chain partners and collaboratively manages intra and inter-organization processes (Rita Sheryl, 2014).

Swink et al, (2007) contended that the integration process includes activities that require share as well as enhance strategic knowledge and information with parties outside the immediate organization. Rosenzw.eig, Roth, and Dean Jr (2003), further define supply chain integration practices as the linkages among various supply chain elements. Supply chain integration practices includes the internal linkages among the departments, functions or business units within the firm that source, make and deliver products and the external linkages with entities

outside the enterprise, including the network of direct suppliers and their supplier and direct customers and their customers.

Supply chain integration practices entails a set of three or more entities that are directly involved in the value adding processes required to achieve efficient and effective upstream and downstream flows of products, services, finances, decisions, and / or from source to a customer (Mentzer et al., Zhao et al., 2008). This indicates that the performance of each supply chain practice should be evaluated depending on how the practice has a significant effect on the efficient integration of whole supply chain processes, and thus, the successful achievement of supply chain integration can be possible by the systematic utilization of numerous supply chain practices.

Bowersox ,(1989) asserts that the process of supply chain integration should progress from the integration of internal logistics processes to external integration with customers and suppliers. This internal integration can be achieved by the automation and standardization of each internal logistics function, the introduction of new technology, and continuous performance control under formalized and centralized organizational structure. External integration can be accomplished by information sharing and strategic linkage with suppliers and customers, and the standardization of logistics process between firms (Bowersox, 1989).

Supply chain integration practices have been broken into internal integration practices and external integration practices (Zailani and Rajagopal, 2005). In recent literature, internal integration practices combine different internal perspectives and refer to the degree to which companies aim for cross functional linkage, develop structures for interaction, and execute cross functional operations in their everyday business (Schoenherr and Swink, 2012). An organization is considered to have a high level of integration when the information systems used different functions are linked together with all functions able to access precise and real time information from other functions and there are also effective means of communication across functions.

External integration practices are dyadic and one-dimensional in that encompasses either supplier integration or customer integration (Flynn et al., 2010). The practices recognize the importance of establishing close, interactive relationships with customers and suppliers. Integration with suppliers represents a change from adversarial to a cooperative attitude,

commencing with product development, the supply of high-quality products, the processing and incorporation of adjustments in specifications, technology exchange and design support. To achieve customer integration, there should be seamless links between the organization and its customers, both parties should be able to access accurate and real time information. There should be seamless links between them in terms of business processes as well as strong supplier-customer relationships (Frohlich and Westbrook, 2001).

Several theories have been put forward in an attempt to offer proactive and helpful wisdom to the field of supply chain integration. For instance, the systems theory emphasizes the interconnected nature of organizational activities (Ashmos and Huber, 1987). The theory helps to understand to what extent and how the supply chain level of analysis help explains organizational behavior and outcomes beyond the explanations offered by other levels of analysis, such as firm, the industry and the nation

2.2.3. Supply Chain Integration on supply chain performance

The rising level of competition that exists among firms globally has brought a shift to do more than just strategy formulation and execution but to go beyond that and seek partnerships with other firms which was drive to competitive advantage in the marketplace. Over the years, manufacturing firms have concentrated on developing strategies that was bring about the much-desired level of change and operational performance in the organization. However, firms have conceived creating strategies along with integrating internal functions, suppliers and customers in a business relationship is the proper model for achieving competitive advantage (Abdulhakim Haji, 2018).

Stalk ,(2002) define companies as systems and says that competitive advantage can be attained by breaking the debilitating loop strangling traditional manufacturing planning. This means that traditional manufacturing needs long lead-times to deal with conflicts between various jobs or activities that require the same resources. The lead-times require sales forecasts to guide planning. Rather than relying on tools such as acceptance sampling to establish the quality of incoming materials and component parts, manufacturers purchase from a more limited number of qualified or certified suppliers to ensure effective supply chain performance (Pius Alphonce, 2014).

(Leuschner, Rogers and Charvet 2013) articulated there is positive relationship between SCI and firm performance, and it encompasses information integration, operational integration and Relational integration. (Raja Irfan and Muhammad Irfan,2014). Supply chain integration is the secret of success in today world of strong competition.

Raja Irfan and Muhammad Irfan, (2014) in study on Quality management as a part of supply chain recommend that Supplier Quality and customer focus are the two main areas of Quality management practices within the domain of SC. Results shows that stronger quality management practices internally and externally within supply chain results in increased financial, market, quality and inventory management performance of the firm.

Yang, (2014) developed a theoretical frame work to investigate the antecedents of supply chain agility on manufacturer's performance. Technical factors (IT competencies) and coordination resource sharing (work collaboration, trust etc.) are antecedents of SC agility which lead to cost efficiency that intercedes the relationship with increased performance.

Time based management and the relation between speed of operations and efficiency has been one of the key issues in supply chain. Suppliers should be selected for their speed and flexibility, not for their low cost (Fisher, 2007). The first step in designing a responsive supply chain performance is to undertake that uncertainty is inherent in innovative products. Uncertainty can be averted by cutting lead-times and increasing the supply chain's flexibility so that it can produce to order or at least assemble the product at a time closer to when demand materializes and can be precisely forecast. Supply chain flexibility can be greatly increased by aligning functional processes of as many business partners as possible.

Holmstrom, (2009) has studied the efficiency potential of speed in operations. His central results are empirical indications of a strong positive correlation between speed and efficiency in manufacturing and that a focus on speed of operations helps expose and remove self-induced sources of uncertainty.

Flynn, Huo and zhao, (2010) in study on impact of SCI on performance in Chinese manufacturing sector explored the benefits extracted from internal and external integration in terms of, improved lead time, efficient flow of material, accurate demand forecasting, reduced inventory cost, and goods among supply chain partners. (Frohlich and Westbrook, 2005).

Internal integration and external integration with suppliers and customers should be precondition to pursue sustainable performance growth. It is important to attain a high level of customer service, a high level of efficiency and the ability to respond effectively to a changing environment. Performance measurement selection is important step in the design and evaluation of any supply chain integration

A considerable positive linkage between SCI and firm performance is found by several empirical studies whereas some also reveal substantial adverse effects, and the magnitude of the linkage varies considerably. To well comprehend this relationship, performance effects collected, shortened, and assessed across three types. Financial firm performance is measured using either revenue minus cost-based measures, such as profitability and return on assets, or purely revenue-based measures, like sales and market share. Customer-oriented performance includes of measures related to an improvement in customer satisfaction and customer loyalty, or closely related constructs. Operational performance includes improvements in key competitive capabilities including cost, quality, delivery, flexibility, and innovation. Analyses were conducted both on total firm performance and each separate dimension. Several studies found a significant relationship between SCI and supply chain performance. Thus, SCI is positively correlated with different measures of firm performance. (Leuschner, Rogers and Charvet, 2013)

The higher the level of integration with suppliers and customers in the supply chain the easier the practice of organization coordination. (Pius Alphonce, 2014). Illustrates the companies with the greatest arcs of supplier and customer integration have the largest rates of performance improvement.

2.2.4 Effect of Supply Chain Integration on supply chain Performance

Efficient supply chain integration enables upstream and downstream supply chain firms to compete better. A customer focused supply chain strategy requires a total systems view of the linkages in the chain that work together efficiently to create customer satisfaction at the end point of delivery to the consumer. Consequently, costs must be lowered throughout the chain by driving out unnecessary costs, processes, shorten the delivery lead times and focusing on value adding supply chain processes (Mentzer and Gundlach, 2009). As per the aforementioned literatures, one can understand that supply chain integration, system thinking, and performance have a significant impact on the performance and competitiveness of companies.

2.2.5. Enablers of Supply chain integration

Supply chain integration literature identifies three main enablers of supply chain integration environmental factors (e.g., technology, uncertainties of environment and demand); inter organizational factors (e.g., power, Trust, and commitment); and firm-level factors (e.g. Information technology and strategy) (Cao et al.,2015).

However, researchers have found different results on related to this enabler of supply chain integrations. Wang et al., (2016), indicate inter-organizational relationships include communication, personal affection, credibility, and integration has a positive impact on enhancing commitment, trust and power between organizations. Also, Abdullah & Musa, (2014) found information sharing and the level of information integrations between firm organizations have enhanced the performance and competitiveness of the supply chain firm. This enhancement leads to provides trust within the supply chain firms. Organizational variables, such as trust, commitment, reciprocity, and power positively influence information sharing, collaboration, and supply chain performance.

In inclusion to this, the level and application of technological improvement and digitalize systems have positive impact on supply chain integrations. The firm performance shows in terms of quality, finance, flexibility of the supply chain systems (Dametew et al., 2020). Technological innovation has a great impact on the performance of manufacturing industry in terms of productivity, information sharing, knowledge, resource utilization, and technology transfer and achieve sustainable competitive environments. While financial performance is enhanced by implementation and adoption of e-business technology through reduction of supply chain cost including supplier catalogues, electronic data interchange (EDI), online purchase order systems, and electronic linkage with suppliers lead to measurable improved performance (Dametew et al, 2020).

Furthermore, technology, information, and measurement systems considered as enablers and barriers to successful supply chain integrations (Fawcett et al., 2008). They have an impact on culture, trust, aversion to change, and willingness of people or supply chain firms. Also, Information and communication technology (ICT) is an important enabler of supply chain integration. This is because of their ability to facilitate, coordinate, and integrate the flow of

information across the supply chain. ICT is an enabler for helping supply chain members to establish partnerships for better performance (Jharkharia & Shankar, 2005). To mention some of the potential ICT applications in developed country firms are Internet and Enterprise Systems such as Enterprise Resource Planning (ERP), Electronic Data Interchange (EDI), and Radio Frequency Identification (RFID).

Supply chain firms have to invest in higher level for the improvement and building of people, so as to improve and enhance the entire supply chain system. Additionally, interpersonal relationships (IPRs) include (personal affection, communication, and credibility), have a positive impact on supply chain integrations (Wang et al., 2016). Accordingly, perceived exchange rewards and costs in supply chain interactions for involved firms are influenced by attitudes and behaviors of IPR individuals. On the other hand, IPRs involved in supply chain interactions are unlikely to influence.

In order to enhance the aspects of supply chain integration, establishing inter organizational teams, designing performance measures, and creating effective communication and information exchange. The establishment of effective alliances and collaboration along cross-company members aids in order to develop strong commitment and alliance that cannot be broken easily and immersed by traditional organization structures. Establishing strong commitment in strengthening relationships across company members provides an organization to become a forerunner in its business activity

Ellinger et al. (2006) identified inclusive communication, strong working relationships, joint accountability, and senior management involvement facilitated internal integration between logistics and marketing functions. Barratt, (2004) identified various enablers to external collaborative efforts including interdependency, common goals, objectives, communication, and information sharing.

The proper implementation and applications of these enablers enhance efficiency, effectiveness, performance, and competitiveness of supply chain subsystems in different way. On the other hand, the poor, weak, improper implementation, null usage of this enabler and geographic scattering was cause weak-linkage problems of trust in firm organizations (Lorentz et al, .2012)

Inter-organizational relationships (Trust, power, and commitment), Technology, Top management support, and Information communication technology are the main enablers of supply chain integration and determined by many literatures

2.2.6. Barriers of Supply Chain Integration

Supply chain management executives face unique problems, with respect to integrating supply chain specific strategies with the general corporate business strategy; thus, seamless coordination is rarely achieved in practice (Hussain and Nassar 2010; Otchere et al,2013).

Most SCI related problems emerge, either from uncertainties or an inability to co-ordinate several activities and partners. At the same time, customers have become more discerning and demanding better quality products, higher levels of service and reduced prices (Sweeney, 2011). The more the supply chain expands the less consistent and intimate the created system become lack of integration occurs. This results internal links and relationships becoming less stable; the cooperation between the entities might be then hindered.

The implementation of supply chain is not as simple as we think. It was face different challenges internally as well as externally, with respect to process of supply chain specific strategies with the overall corporate business strategy (Award & Nassar, 2010). In recent years, along with the change in business realities related to globalization and modernization, the supply chain has got the first priority on top management of the business entities, and they pay attention to cut costs and to bring their competitive advantage to satisfy their customers (Daniel Tekasse, 2013)

Many researchers have mentioned a different kind of classification of supply chain integration challenges based on their own criteria. Ellinger et al. (2006) looked over five barriers to SCI these are; insufficient knowledge of the other function, poor working relationship, lack of communication, conflicting goals, and lack of direction by the senior management. Moberg et al., (2003), also stated lack of trust, internal politics, poor understanding, misaligned goals and objectives, short-term orientation to goals, and other supply chain complex affairs.

As per Abdullah & Musa, (2014) stated barrier of supply chain integrations as lack of resource sharing, lack of organizational compatibility, lack of information sharing, lack of responsibility sharing, and lack of planning of supply chain activities are considered as barriers in supply chain integration.

Awad and Nassar, (2010) classify the challenges of SC integration as technical perspective, managerial perspective and relationships perspective, classification details his main emphasis was on the knowledge sharing challenges between supply chain members, but on the other hand he discards other challenges such as; technical challenges, inter-organizational challenges, and SLEPT factors. Samuel and Kashif ,(2013) Observed from literature on barriers of supply chain as lack of information Technology, lack of information sharing, lack of trust demand distortion, bullwhip, system incompatibility, lack of knowledge, cost of integration

Many studies have been made on barriers of supply chain and most of them were divided as internal and external barriers (Walker and Jones 2012, Samuel and Kashif, 2013, Sajjad et al., 2019 and Narimissa et al., 2020)

- Some of the major internal barriers are lack of information sharing, Lack of information technology and lack of management commitment
- External barriers as Lack of trust, government regulation, uncertainty, and bullwhip effect

2.3 Conceptual Framework

Supply chain integration requires technological combination primarily with main supplier and customer which has positive impact on overall monitoring and collaboration among the business entities within the supply chain. Supply chain can also encourage business firms for information sharing, collaboration, and cooperation among them which enhance ultimate customer satisfaction. After going through tremendous literatures, the researcher organizes the conceptual framework in supply chain integration practice, supply chain performance, challenges and enablers as essential parts. The supply chain integration practices namely, supplier, customer, internal, external, measurement and information integration

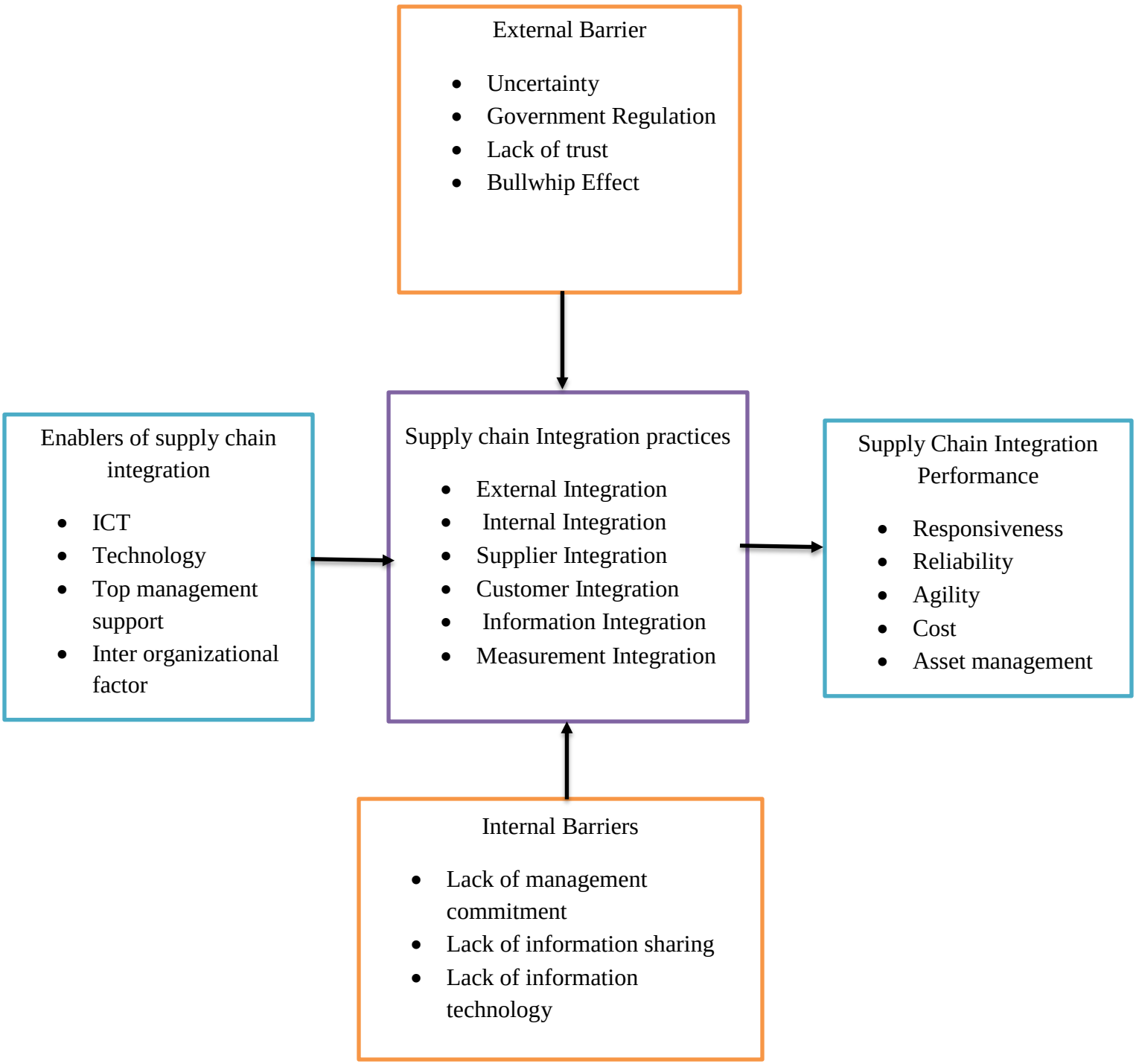

Figure 2.2. Conceptual framework of supply chain integration practice

CHAPTER THREE

RESEARCH METHODOLOGY

Introduction

In this chapter the methodology employed for the study is discussed. The chapter elaborates specifically the research design, population and sample of the study, data collection methods and analysis including the data presentation method.

3.1 Description of the study area

Universal Food Complex PLC in Ethiopia is a leading food industry that produces Pasta, Macaroni, Pastini and Wheat Flour. It has an effective impression with its trademarks Mondial Pasta and Macaroni, Bravo Pasta and Macaroni and Universal flour. The company is qualified with latest Italian made food processing technology and Buhler Flour Mill technology. It's located in Addis Ababa, Akaki Kaliti area and has currently employed a total of about 200 well experienced and educated personnel. The company has production capacity of 125 ton/day for Wheat Flour, 36 ton/day for Spaghetti and 28.8 ton/day for Macaroni. For the hygiene, the company is attentively following up the international food processing procedure and quality standards. Currently the company distributes its products through whole sellers, supermarkets and in all regional states in the country. In addition, the company started exporting its products to neighboring countries.

3.2 Research Design

The research design for this study was both descriptive and explanatory research design is employed as the research uses primary and secondary source of data. A Descriptive research is used to identify characteristics, frequencies, trends, and categories and an explanatory research is used to explain the data found from secondary resources like different records of the organization. Research design is the proposal and structure of investigation intended to find answers to the research questions, which includes procedures and methods employed to collect, discuss and analyze the data, presenting the findings in an acceptable arrangement

The findings are described and discussed using descriptive statistics, such as mean, standard deviation and percentage distribution. Explanatory research design is employed to address

research objectives and surveyed the source and result association between variables of supply chain integration practice and role of supply chain performance at UFC.

3.3 Research Approach

In order to answer the research questions developed in chapter one mixed research approach was used to conduct this study, which means quantitative and qualitative research approaches were applied, since the source of data used both primary and secondary. The study applied mixed approach and took UFC as a case company. The research examined supply chain integration practice and its role on supply chain performance at UFC so as to present the result for the analysis.

3.4 population of the study

According to the Company's Profile data, the total numbers of employees working in the company are 200. Therefore, the study considered these employees, especially those who work in a position of supply chain management department (logistics, procurement, warehouse, operational and transportation department) as a target population of the study.

3.5 sample and sampling technique

A sample is a smaller group obtained from the accessible population to represent the whole population while sampling is the process of selecting the individuals for the study from the population (Mugenda, 2003). For this research stratified sampling technique was used to collect comprehensive and reliable data. The study used Yamane (1967:886) simplified formula to calculate the sample respondent from total population Based on this method, in case of Universal Food Complex employee number (200), the respondent of the study was 85 and it is more enough to have reliable information for the study. In addition, interview was being held with management bodies.

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

Where:

$$n = \frac{85}{1+85*(0.05)^2}$$

n=70

3.6 Data Sources and Collection Procedures

For this research both primary and secondary data were gathered. Primary data collected from selected respondents through semi structured questionnaires and personal interview The interview was with heads of supply chain, procurement and logistics (transportation) departments of UFC and questionnaires for supply chain, procurement and logistics personnel of the company to understand the current status of the company towards supply chain integration practice using a five-scale rating (1-5 large extent to small extent).

Secondary data was gathered from survey, companies published and unpublished documents (reports), different books, articles, magazines, journals, broachers, and that show the firm's profile.

3.7 Method of Data Analysis and Presentation

Data analysis means studying the tabulated raw data to determine inherent facts or meanings. It involves breaking down existing complex factors into simpler parts and putting the parts together in new arrangements for the purpose of interpretation (Singh K, 2006). There are two types of data analysis techniques namely: qualitative and quantitative whereby the choice of these methods greatly depends on the type of information the researcher has on hand. If most of information collected contains numerical, the analysis calls for quantitative tools and descriptive statistics can be used to characterize the data. On the extreme, if most of the data collected are in words which mean data gathered using individual interviews, open –ended questions and focus group discussion, it is logical enough to apply qualitative data analysis tool (Nunnery et al., 1994).

Therefore, both quantitative and qualitative data analysis techniques were be used through implementing descriptive statistics (frequencies, percentages, charts, mean and standard deviations) and thematic analysis (to explain further and get in-depth insight about the data) that was analyze both numerical and in word data respectively. To compute numerical data, SPSS version 26 was be used.

To determine the effects of the eleven independent supply chain integration variables on the effectiveness of the supply chain performance, a multiple linear regression model was used. A regression analysis was established to determine the association. An overall mean for each

supply chain integration variable was calculated, and it was compared to the organization's performance mean. This relationship served as the basis for the model, which was created using multiple linear regression analysis assumptions. These assumptions included the linear relationship between Y and each of the Xi variables, the absence of multi-collinearity (the independent variables are not related to one another), and homoscedasticity and normality of the distribution.

3.8 Validity and Reliability Test

Validity shows the degree to which instruments measure what they are supposed to measure (Kothari, 2004). The researcher had continuous discussion with respected research advisor and was adopt data instruments from well acknowledged international institutions publications and other published resources to keep the validity of the data collection instruments.

According to Toke et al., (2012), the goal of reliability analysis is to find the extent to which a measurement procedure produced the same result if the process is repeated under the same conditions. And the consistency, stability and accuracy of the study were being tasted using Cronbach's Alpha Coefficient.

3.9 Ethical Consideration

The researcher had all ethical clearance and legal ground through having permission and support later from Addis Ababa University, and Universal Food Complex plc. The participant was free from any enforcement to participate or not. The respondents were assured that the information provided by them is confidential and used exclusively for academic purpose. The study was not affecting both the study subject and researcher negatively. The researcher was considered and implements all safety rules while observing the case company during data collection period.

CHAPTER FOUR

RESULTS, ANALYSIS AND INTERPERETATION

4.1. Response Rate

The returned surveys total 64 out of the original 70 questionnaires sent. 91 percent of the surveys were returned, which is an adequate and sufficient response rate for analysis.

4.2. Demographic profile of the respondent

Regarding to the gender distribution of the study, 61% of respondents were men, took part in the survey. Women made up the remaining 39% of respondents.

Table 4.1: Demographic characteristics of employees at UFC (n=64)

Variable		Valid Percent	Cumulative Percent
Gender	Male	60.9	60.9
	Female	39.1	100.0
	Total	100.0	
		Valid Percent	Cumulative Percent
Age	20-30 Years	40.6	40.6
	31-40 years	39.1	79.7
	41-51 Years	10.9	90.6
	above 51 Years	9.4	100.0
	Total	100.0	
		Valid Percent	Cumulative Percent
Education Level	Diploma	10.9	10.9
	First Degree	60.9	71.9
	Second Degree and Above	28.1	100.0
	Total	100.0	
		Valid Percent	Cumulative Percent
Work Experience	1-5 Years	32.8	32.8
	6-10 Years	39.1	71.9
	above 10 Years	28.1	100.0
	Total	100.0	

Source: *Survey Data, 2022*

Regarding table 4.1 to the age of respondents, Employees are young in age the result show that 40.6 % employees are of age 20-30, also 39.1% employees are of age 31-40, and 10.4% employees are age of 41-51, and the rest 9.4 % employees are above 51.Regarding the education status 10.9% of the respondents are diploma holder ,60.9% of respondents are first degree holders and 28.1% second degree and above holders .When we look at the work experience with

in the company ,32.8% of respondents served the company 1-5 years ,39.1% served 6-10 years and 28.1 served above 10 years.

As per the standard questionnaire, the survey was undertaken for four components of Supply chain integration which are: supply chain integration practice, supply chain performance, internal and external barriers of supply chain integration and enablers of supply chain integration.

4.3. Extent of Supply Chain Integration practice at UFC

The first objective of this study is to examine the extent of supply chain integration in the organization The participants were asked to respond on the extent of supply chain integration in their organization, and rated their responses on a five-point Likert- type scale where:

5-to a very large extent, 4-to a large extent, 3-to a moderate extent, 2-to a small extent, and 1-to not occur. The findings were presented in the subsequent sub themes. In the process of examining, standard deviation was used. Small standard deviations (relative to the value of the mean itself) indicate that data are close to the mean whereas a large standard deviation (relative to the mean) indicates that the data points are distant. The mean is a poor fit of the data. Standard deviation is a measure of how well the mean represents the data *(Field, 2009).*

The respondents were required to indicate on a Likert scale of 1-5 where: 1= Strongly Disagree, 2= Disagree, 3= Neutral, 4= Agree and 5= Strongly Agree.

4.4 Supply chain integration practice

Table 4.2 supply chain integration practice

Supply chain integration practice	Mean
Supplier integration	**2.54**
Internal integration	2.87
Customer integration	3.78
External integration	2.5
Information Integration	3.4
Measurement Integration	3.85
Overall Grand Mean of Supply chain integration practice	**3.15**

According to the survey result table 4.2 shows extent of supply chain integration practice of UFC. This accounts on the overall grand mean value of 3.15 this indicates that UFC moderately practice supply chain integration in its supply chain operation.

That falls between 2.5 to 3.85 supplier integration (2.5) and external integration (2.54) being the lowest customer, measurement, and information integration with the highest (3.78 ,3.85 & 3.4) whereas internal integration (2.87) with a moderate practice.

Hence, the finding implies there is high integration of supply chain within the four independent variables. **Customer integration (3.78)** practicing assisted in improving the quality of goods, works and services offered to the customer on high extent. **Measurement integration (3.85)** being the highest on degree to which clients experiencing timely and targeted access to the services they need when they need them. **Information integration (3.4)** practice high extent when sharing information with implementing partners in terms of forecasting demand planning.

Internal integration (2.87) practice high extent on organization supply chain jointly undertaking activities among others functions of the organization in terms of developing periodical forecasting and demand management.

The finding result in supplier and external integration are low in practice within the organization majorly on **supplier integration** which indicates there is low strategically partnership with suppliers and low integration between supplier and manufacturers coordinately making decisions related to management of inventory .

On **external integration** there is low integration of objectives, planning and resource with external organizations and low integration regarding distribution also delivery being made at the right time and place due to external information sharing, and coordination. Specifically, some activities are practiced highly and some to low extent.

4.5 Supply chain Performance of UFC

Table 4.3 supply chain performance

Supply chain Performance	Mean
Responsiveness	**3.50**
Reliability	3.62
Agility	3.66
Cost	3.69
Asset management	4.18
Overall Grand Mean of Supply chain performance	**3.78**

The Table 4.3 illustrates the mean of supply chain performance which are responsiveness (3.51) reliability (3.62), agility (3.66) cost (3.69) and asset management (4.18) that falls in modern and high practice.

Responsiveness (3.51) with the lowest compared to other performance having short raw material sourcing cycle time and Asset management with the highest occurred in the result of the analysis. The finding implies there is high and moderate supply chain performance within the dependent variable. **Asset management** specially has the highest when setting quality parameters and collection plan per warehouse and selecting strategic locations of warehouse for building and renting in the company. **Cost** on the other hand using automated system to decrease order related costs associated with issuing purchase order and the company using cheapest transportation means without compromising the quality of the products.

Compared to above SCP **responsiveness** has the lowest mean on having short raw material sourcing cycle time and responding customer requests within an appropriate time frame digitally. On **reliability** also there is low delivering consistent service to suppliers. The variable on **agility** shows there is low capability of the organization to react internally and externally towards market change.

4.6. Enablers of supply chain integration

Table 4.4 enablers of supply chain integration

Enablers of supply chain integration	Mean
Inter organizational factor	**4.25**
Technology	**4.23**
ICT	**4.24**
Top management support	**4.24**
Overall Grand Mean of enablers of SCI	**4.24**

According to the result table 4.4 presents the respondents view on identifying the enablers of supply chain integration within the organization. The data analyzed shows with the mean of inter organizational factor (4.25), Technology (4.23), ICT (4.24) and Top management support (4.24). This shows many of the respondents agreed on the variables that are enablers to supply chain integration

The finding indicates the respondents highly agreed on the variables that are illustrated on the above table, the variables mean are above four which indicates SCI is highly enabled by the stated variable. On **inter organizational factors** top management support and staffs involving in decision making enable SCI.

ICT enables when using wide IT strategy and creating awareness about the use of IT in the supply chain. **Top management support** has positive integration when providing financial support and supporting the organization climate for adopting new technologies

Technology inter innovation process and State of art technologies, materials and process enables SCI

4.7 Internal and external barriers to supply chain integration

Table 4.5 Internal and external barriers to supply chain integration

Internal Barriers of supply chain integration	Mean
Lack of information technology	4.16
Lack of information sharing	4.1
Lack of management commitment	4.23
Overall Grand Mean of internal barriers of SCI	4.16
External Barriers of supply chain integration	**Mean**
Luck of trust	4.34
Government regulation	4.45
Uncertainty	4.2
Bullwhip effect	4.24
Overall Grand Mean of external barriers of SCI	4.3

Table 4.5 presents the respondent's views on identifying what are the internal and external barriers to supply chain integration within the organization. the Data analyzed showed the respondents highly agreed with the mean of lack of information technology (4.16), lack of information sharing (4.1), lack of management commitment (4.23), lack of trust (4.34), government regulation (4.45), uncertainty (4.2), bullwhip (4.24).So, this result shows these variables highly affect the supply chain integration with government regulation (4.45) being the highest to lack of information sharing (4.1) to being the lowest compared to others.

The result shows **government regulation** highly affects SCI with low level of readiness among government institution and changing rules and regulation. **Lack of trust** restricts SCI practice of the company and integration between the company and suppliers. **bullwhip effect** response time for receiving an order being long and inefficient planning and forecasting tool weakens SCI. **lack of management commitment** management support in the organization decrease SCI. **uncertainty** supplier inability to carry out as promised and irregular order from inconsistent customer affects SCI **lack of information technology** lack of digitalized supply chain infrastructure weakens SCI and lack of education and knowledge, about IT management affects

SCI **lack of information sharing** poor internal communication and limited communication planning weakens the food supply chain in the organization

Table 4.6.: summery of challenges of supply chain integration practice

Independent variables	N	Mean	Std. Deviation
Lack of information technology	64	4.1615	.55394
lack of information sharing	64	4.0990	.46644
Lack of management commitment	64	4.2865	.40223
Lack of trust	64	4.3333	.41574
Government regulation	64	4.4427	.40740
Uncertainty	64	4.1979	.43933
Bullwhip effect	64	4.2344	.49220
Inter organizational factors	64	4.2437	.35540
Technology	64	4.2292	.45956
Information communication technology	64	4.2396	.43428
Top management support	64	4.2448	.45325

Source: *Survey Data, 2022*

As illustrated on table 4.6 the survey result, the mean of all the independent variables (lack of information technology, lack of information sharing, lack of management commitment, lack of trust, government regulation, uncertainty, bullwhip effect, inter organizational factors, technology, information communication technology and top management support) are fall in the high extent from 4.0990 to 4.4427 for lack of information sharing and government regulation respectively. The standard deviations of these variables have also low variance from 0.35540 to 0.55394; inter organizational factors with the lowest deviation, 0.35540 whereas lack of information technology is the highest deviation occurred in this result of analysis. Hence, this finding implies that there are high integrations of supply chain in the organization with all eleven independent variables.

In general, the findings of this survey's evaluation of the organization's level of supply chain integration and those of Uwamahoro, 2018, which discovered that all the independent variables had high mean values, are congruent. This showed us that there is an indirect relationship between mean values and significance levels since independent variables with high means yield insignificant levels.

4.8. Correlation Analysis

Through correlation analysis, the strength and direction of the linear relationship between two variables are both described. The correlation is used to show that a test scale is valid by showing that it has a significant relationship with another recognized scale for a related construct, to show reliability and consistency of measurement on two occasions, to show internal consistency of scale items, and to support theories that predict the relationships between variable. For interval data, Pearson's Product-Moment Correlation is the most well-known and often used correlation (Beech, 2006).

Interpretation	Correlation	Directions	Form	Degree
Small	0.10 – 0.29	+ve	Linear	
Medium	0.30 – 0.49	vs	vs	Strength
Large	0.50 – 1.00	–ve	Non-linear	

Source: Beech, 2006

The findings of the correlation matrix analysis between each indicator of supply chain integration (i.e., lack of information technology, lack of information sharing, lack of management commitment, lack of trust, government regulation, uncertainty, bullwhip effect, inter organizational factors, technology, information communication technology and top management support) and supply chain performance are shown in the table 4.7 and 4.8 below.

4.8.1 Correlation analysis of Challenges of Supply chain integration and supply chain performance

Table 4.7: Correlation Matrix for challenges of SCI

Pearson Correlations		supply chai performance	Lack of information technology	lack of information sharing	lack of management commitment	lack of trust	government regulation	uncertainty	bullwhip effect
supply chai performance	Pearson Correlation	1							
	Sig. (2-tailed)								
Lack of information technology	Pearson Correlation	.266*	1						
	Sig. (2-tailed)	.033							

lack of information sharing	Pearson Correlation	.045	.176	1					
	Sig. (2-tailed)	.722	.164						
lack of management commitment	Pearson Correlation	.008	.003	-.172	1				
	Sig. (2-tailed)	.952	.982	.173					
lack of trust	Pearson Correlation	-.066	.153	.118	.285*	1			
	Sig. (2-tailed)	.602	.227	.352	.023				
government regulation	Pearson Correlation	.017	.124	-.039	.269*	.135	1		
	Sig. (2-tailed)	.892	.330	.758	.032	.286			
Un certainty	Pearson Correlation	-.083	.185	.023	.133	.203	.094	1	
	Sig. (2-tailed)	.516	.142	.854	.294	.108	.460		
bullwhip effect	Pearson Correlation	.006	-.057	.182	.154	.060	-.033	.125	1
	Sig. (2-tailed)	.960	.655	.151	.223	.636	.795	.326	
	N	64	64	64	64	64	64	64	64

Source: *Survey Data, 2022*

As table 4.7 depicted, there was a strong positive correlation between supply chain performance with that of lack of information sharing, lack of management commitment, lack of trust, government regulation, bullwhip, uncertainty, with r values of 0.722, 0.952, 0.602, 0.892, and 0.960 respectively. On the other hand, lack of information technology has moderate correlation with supply chain performance with r values of 0.33. The rest independent variables have weak correlation with that supply chain performance.

4.8.2 Correlation analysis of enablers of Supply chain integration and supply chain performance

Table 4.8 Correlation Matrix for enablers of supply chain integration

Correlations		supply chai performance	Inter organizational factors	Technology	information communication technology	top management support
supply chai performance	Pearson Correlation	1				
	Sig. (2-tailed)					
inter organizational factors	Pearson Correlation	0.002	1			
	Sig. (2-tailed)	0.988				
Technology	Pearson Correlation	-0.122	0.21	1		
	Sig. (2-tailed)	0.338	0.096			
information communication	8 Pearson Correlation	0.191	.363**	.251*	1	

technology	Sig. (2-tailed)	0.13	0.003	0.046		
top management support	Pearson Correlation	0.087	0.195	.294*	.450**	1
	Sig. (2-tailed)	0.497	0.122	0.018	0	
**. Correlation is significant at the 0.01 level (2-tailed).						
*. Correlation is significant at the 0.05 level (2-tailed).						

As table 4.8 duplicated there is strong positive correlation between supply chain performance within inter organizational factor, ICT, technology, and top management support. With r values of 0.988, 0.338, 0.13 and 0.497, on the other hand compared from all information communication technology with high interpretation.

4.8.3 Regression Analysis

4.8.3.1. Multiple Linear Regression Assumptions

A. Linearity Assumption

According to the linearity assumption, the residuals ought to have a linear connection with the projected dependent variable scores. There is a linear relationship between the independent and dependent variables. By simply drawing scatterplots of the correlation between each explanatory variable and the result variable, it is possible to assess this set of assumptions to a degree that is generally sufficient. The linearity of each scatterplot's relationship between the variables must be carefully examined (perhaps adding a regression line to help you with this). As an alternative, you may simply compare the scatterplot of the actual outcome variable to the expected outcome. The term residual is used to further distinguish between outliers and influential cases (J, 2010).

The line is substantially less affected by the simple outlier, despite its very high residual (distance to the regression line). The influential case outlier dramatically alters the regression line, but because the residual is small—indeed, smaller than the bulk of the other, more typical points—it might be more challenging to spot. Additionally, you can use impact statistics, such as the Cook's distance statistic, to assess the scatterplot and identify areas that might unintentionally influence the model (Wang, Rosner and Goodman, 2016).

If it is looked at the scatterplots below, the plot of the below graph indicates that the residuals are normally distributed. Non-normal if points substantially deviate from the diagonal line.

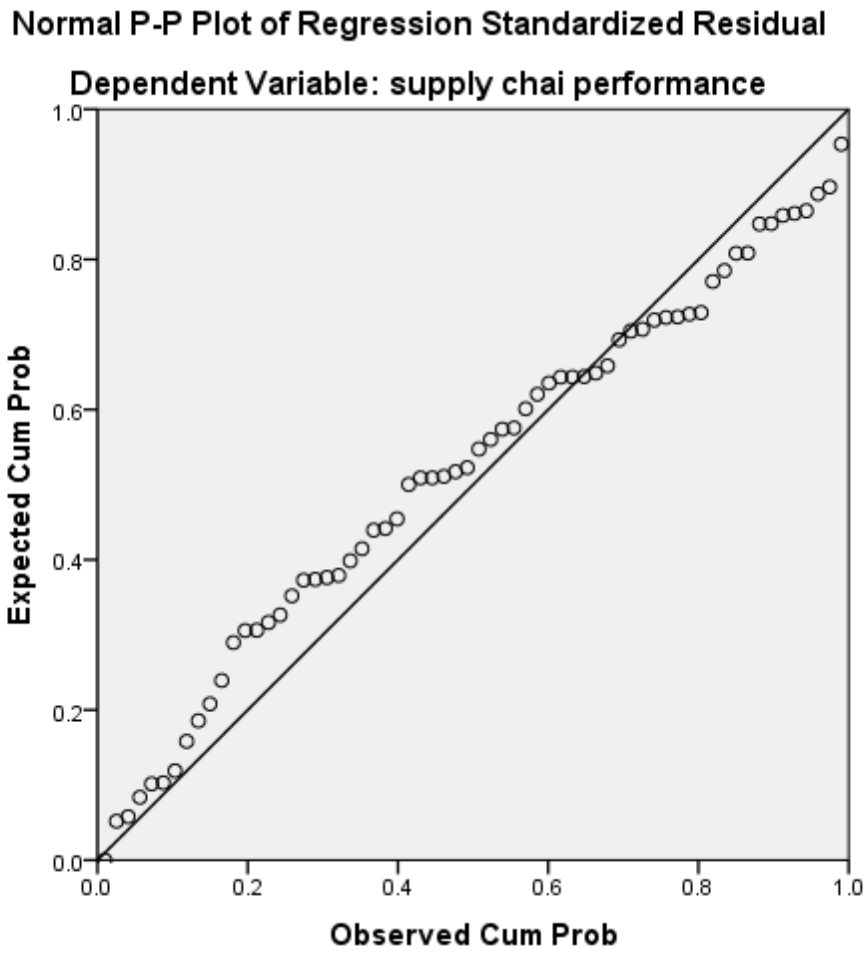

Figure 4.1 Linear Multiple Regression Assumption
Source: *Survey Data, 2022*

B. Multicollinearity

Independent variables shouldn't be related, according to the multicollinearity assumption. If they are closely related, multicollinearity exists. High predictor-predictor correlation (r >.85) results in an unstable regression model. (J, 2010). Tolerance and VIF (variance inflation factor) are helpful indicators to determine whether a specific explanatory variable has a significant link with the other explanatory variables (a problem of multicollinearity exists in the model). For instance, VIF (variance inflation factor) > 10 and tolerance smaller than.1 (10 percent) both imply multicollinearity. Therefore, VIF must be between 1 and 10, as VIF 1 or > 10 denotes the presence of multicollinearity (Ge, 2013). The tolerance and variance inflation factor (VIF) are

both larger than 10% and lower than 10%, respectively, according to the table 4.5 coefficient correlations below.

Table 4.9 Multicollinearity Correlation Matrix

Model		Collinearity Statistics	
		Tolerance	VIF
1	(Constant)		
	Lack of information technology	.783	1.276
	lack of information sharing	.733	1.364
	lack of management commitment	.743	1.347
	lack of trust	.806	1.241
	government regulation	.872	1.147
	Uncertainty	.823	1.214
	bullwhip effect	.878	1.138
a. Dependent Variable: supply chai performance			

Source: *Survey Data, 2022*

Table 4.10 Multicollinearity Correlation Matrix

Model		Collinearity Statistics	
		Tolerance	VIF
1	(Constant)		
	Inter organizational factors	.853	1.172
	Technology	.882	1.134
	information communication technology	.713	1.403
	top management support	.763	1.311

Therefore, table 4.9 and 4.10 indicates there is no multicollinearity between the variables listed in the above.

C. Normally distributed residuals

A histogram of the residuals (errors) in a model can be used to check that the residuals are normally distributed about the predicted dependent variables scores. However, it is often good to tell if the distribution is normal from just a histogram, and additionally, a P-P plot should be used as shown below figure. As it could have been seen from the below figure, the expected and observed cumulative probabilities are matched perfectly. This suggests that the residuals are seamlessly normally distributed. So in this survey result, the assumption of normality is not violated.

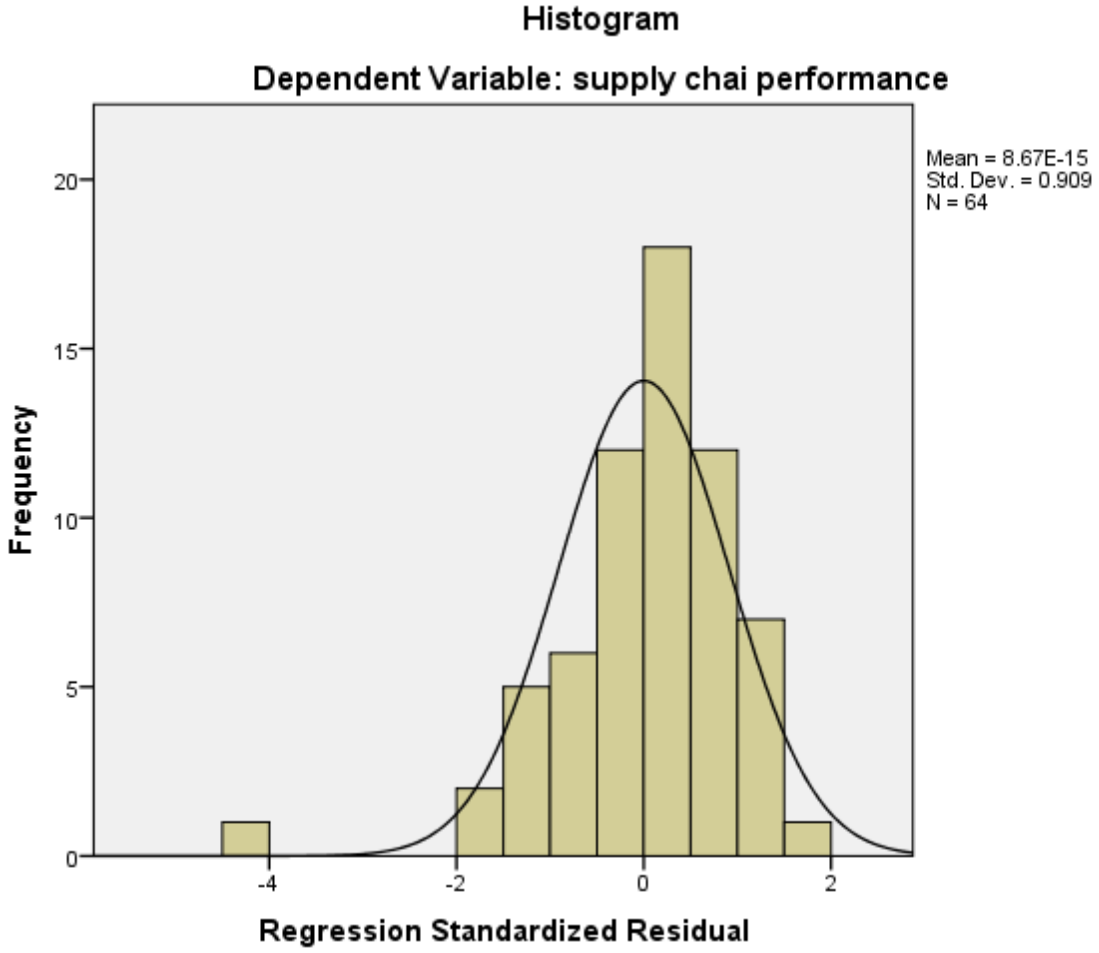

Figure 4.2 Normality Distribution Histogram
Source: *Survey Data, 2022*

4.5.1. Model Summary

a. Predictors: (Constant), top management support, bullwhip effect, government regulation, lack of trust, lack of information sharing, uncertainty, technology, inter organizational factors, lack of information technology, lack of management commitment, information communication technology.

b. Dependent Variable: supply chain performance

Source: *Survey Data, 2022*

R is the square root of R-Squared and is the correlation between the observed and predicted values of dependent variable.

According to the analysis's findings, there is a correlation .The conclusion that follows from this finding is that there is a significant association between observed supply chain performances and anticipated organizational performance.

The supply chain performance varies with variation in top management support, bullwhip effect, government regulation, lack of trust, lack of information sharing, uncertainty, technology, and inter organizational f. R2, also known as the coefficient of determination, is the proportion of the variance in the dependent variable (supply chain performance) explained by variations in the independent variables. It also shows the level of variance explained by the model.

The results demonstrate that the independent variables (top management commitment, bullwhip effect, government regulation, lack of trust, lack of information sharing, uncertainty, technology, inter organizational factors, lack of information technology, lack of management commitment, and information communication technology) studied in this study .

Table 4.11 ANOVA of internal and external barriers to supply chain integration

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	1.387	11	.126	1.170	.330[b]
	Residual	5.603	52	.108		
	Total	6.990	63			

a. Dependent Variable: supply chai performance

b. Predictors: (Constant), bullwhip effect, government regulation, lack of trust, lack of information sharing, uncertainty, technology, lack of information technology, lack of management commitment.

Table 4.12 ANOVA of enablers of SCI

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	.498	4	.124	1.131	.351[b]
	Residual	6.492	59	.110		
	Total	6.990	63			

a. Dependent Variable: supply chai performance
b. Predictors: (Constant), top management support, inter organizational factors, technology, information communication technology

Source: *Survey Data, 2022*

The bullwhip effect, government regulations, a lack of trust, a lack of information sharing, uncertainty, technology, inter organizational issues, a lack of information technology, and a lack of managerial commitment may all be statistically predicted by the model. The significant value of the model is p.0005, which is less than the significance level of 0.05 at a confidence level of 95%, according to the results of table 4.17 above. The F critical value was 1.17 at a significance level of 5%. Given that the calculated value of F is greater than the F critical value (value = 1.17), the model is noteworthy as a whole.

Table 4.13 Regression Coefficient for internal and external barrier to SCI

Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std. Error	Beta		
1	(Constant)	3.587	.914		3.926	.000
	Lack of information technology	.217	.084	.360	2.568	.013
	lack of information sharing	.030	.104	.042	.288	.774
	lack of management	.086	.119	.104	.723	.473

	commitment					
	lack of trust	-.147	.111	-.183	-1.322	.192
	government regulation	.003	.109	.003	.026	.979
	Uncertainty	-.071	.104	-.094	-.688	.495
	bullwhip effect	.032	.090	.047	.352	.726
a. Dependent Variable: supply chai performance						

Source: *Survey Data, 2022*

The regression coefficient is the independent variable associated with it is contributing significance to the variance accounted for in the dependent variable. From the findings in the above table 4.14, the regression equation is:

Y = 3.587+0.217x1+€

Where:

Y is Supply chain performance.

X1 – Lack of information technology

€ – Error Term or Unexplained variables not explained by the model

Table 4.14 Regression Coefficient for enablers of SCI

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	3.574	.632		5.657	.000
	Inter organizational factors	-.051	.127	-.054	-.401	.690
	Technology	-.132	.097	-.183	-1.367	.177
	information communication technology	.182	.114	.237	1.593	.116
	top management support	.032	.106	.044	.308	.759

a. Dependent Variable: supply chai performance

The regression coefficient is the independent variable associated with it is contributing significance to the variance accounted for in the dependent variable. From the findings in the above table 4.15, the regression equation is:

Y = 3.574+0.182x1 +€

Where:

Y is Supply chain performance.

X1-Information communication technology

€ – Error Term or Unexplained variables not explained by the model

These results back with other work that contends that supply chain management integration affects an organization's success. When the findings of this study are compared to those of earlier research on supply chain integration, the conclusions regarding supplier integration, customer integration, and internal integration that there is significant impact in improving a firm's performance are consistent with those of Uwamahoro, 2018, Devaraj, S., L. Krajewski, and J.C. Wei (2007), and Chirchir and Richu, 2013, respectively.

The outcomes of the measurement integration have an impact on how well the organization performs and are in line with those of the Klemencic study from 2006. Information integration is essential for an organization's effectiveness, according to Wong, Lai, and Cheng's 2016 study. According to Barroso, Gouveia, and José, (2016) the main result of external integration with intra-organizational dynamics were identical to the findings of the earlier study.

CHAPTER FIVE

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.1. Summary of findings

Based on the report provided under chapter four, the summaries of findings are given to the readers know and reach about the key results of this study. For this study, data were collected from permanent employees of universal food complex based on the questionnaires distributed to 70 respondents. Out of the 70 respondents, 64 had returned the questionnaires. Consequently, descriptive statistics were used to analyze the data collected from the respondents. Frequencies, percentages, mean and cumulative scores were used to analyze the data and explanatory research is used to explain the data found from secondary resources like different records of the organization.

From the findings of the study's objectives, the results found were summarized by the researcher in the following paragraphs. The analysis made on the extent of dimensions of supply chain integration practices were revealed that the result of measurement integration, customer integration ,information integration, internal integration ,supplier integration and external integration ranked from one to six. The result of the analysis implies form the highest to lowest extent of supply chain integration practices by the organization since overall grand mean of 3.15 the dimensions results as medium.

The other objective of the study is to identify external and internal barriers of supply chain integration by the respondents which are lack of information technology, lack of information sharing, lack of management commitment, and lack of trust, government regulation, uncertainty and bullwhip. They highly agreed these variables are considered as barriers of supply chain integration with overall grand mean of 4.3 and supply chain performance can be enhanced if necessary they are given necessary attention.

Another objective is to identify enablers of supply chain integration that would enhance the performance which are inter organizational factor, Technology, Top management support and ICT. The respondents highly agreed they are enablers or enhancers of supply chain integration.

The finding of the correlation matrix of the independent variables which is internal and external barriers of supply chain integration and dependent variables shows lack of information technology has moderate correlation with supply chain performance. The rest independent variables have weak correlation with that supply chain performance. On the other hand independent variable which is information communication technology has moderate correlation with supply chain performance. There is linear relationship between independent and dependent variables which the graph indicates the residuals are normally distributed. The expected and observed cumulative probabilities are matched perfectly .this suggests the residuals are seamlessly normally distributed .so, in this survey result assumption of normality is not violated.

5.2. Conclusions

There is medium extent of practices of supply chain integration by the organization since the dimensions have been fall in the great rate as per the survey scale instrument.

supply chain integration practice are highly influenced by lack of information technology ,lack of information sharing ,lack of management commitment, lack of trust ,government regulation, uncertainty and bullwhip effect identified by respondents.

supply chain integration practice are enhanced by inter organizational factor ,technology ,ICT and top management support and supply chain integration played important role in enhancing performance of supply chain .

A multiple regression was run after checking for the assumptions of linearity, multicollenearity and normally distributed residuals. The result indicated that enablers and barriers have noticeable impact and statistically significant which is an indication that positive reinforcement is required to effectively apply the practice of SCI. In order to corroborate this finding a correlation test were undertaken.

Finally, on the basis of the existing condition of the company putting the challenges and enablers to SCI into consideration, a model adopted from various companies and countries experience is developed to facilitate the implementation of SCP in UFC. These models explicitly indicate give a full picture of what the overall company‘s supply chain should look like. Overall, this paper has tried to address the major objectives and has shown the SCIP on role of supply chain performance possible way outs for the implementation of supply chain integration in the agro processing industry.

5.3. Recommendations

The recommendations stated below are projected as a way forward from the study's findings, grounded in the study's summary of key findings and conclusion.

- All the dimensions of supply chain integration should be created as well as practiced by the organization to attain superior performance for the organization to perform at its best, all aspects of supply chain integration should be developed and implemented.
- In order to achieve optimal performance with all chain partners, the company should continuously improve its supply chain integration procedures by enhancing supply chain wide IT strategy, awareness about use of IT in supply chain and long term relationships based on trust and commitment to networks between supply chain members.
- For achieving optimal performance with all chain partners, the company should continuously try to lower the internal barriers as well as external barriers specially inadequate technology and inadequate logistics support infrastructure and inter channel requirement between companies.
- Relationship management and performance evaluation should be used to improve the degree of variance between supply chain integration dimensions and organizational performance.
- To reduce the negative consequences of improper supply chain integration, additional supply chain integration characteristics that were not examined in this study but may have contributed to organizational performance should be taken into account.

5.4 SUGGESTIONS FOR FURTHER RESEARCH

The study suggests similar study be conducted on publicly traded companies and small, locally owned businesses to see whether they have adopted supply chain integration strategies and how such practices have affected supply chain performance. Although this study significantly contributes to the literature on supply chain integration practices, it calls for additional research on factors that affect supply chain integration practices, such as organizational culture, environmental factors, and other social and economic factors, as these have a significant impact on supply chain integration practices and an organization's operations.

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Appendix

ADDIS ABABA UNIVERSITY

SCHOOL OF COMMERCE

DEPARTMENT OF LOGISTICS & SUPPLY CHAIN MANAGEMENT

Dear respondent

This questionnaire is designed to undertake research on the title of **"Supply chain integration practices and its role on supply chain performance: The case of Universal food complex"** as a partial fulfillment requirement for M.A degree in Logistics & Supply Chain Management. This information is intended for academic purposes only and was be treated with confidentiality. Please complete all sections of this document. All questions are interrelated and are equally important for the study.

Finally, I was like to thank you for your concern and patience while responding to the questionnaire.

General Instruction:

- Please do not write your name or address on the questionnaire.
- please put a tick (√) mark in the appropriate box of your answer
- Contact address: if you have any question, please contact me through the following addresses

Meron Mesfin

Telephone: 09 33 22 13 89

Email: meronm207@gmail.com

Part One: Respondent's personal information

1. Sex: □ □Male □ Female

2. Age**:** □Below 20 years □20-25 years □26-30 years □ 31-35 years

□36- 40years □41- 45 years □ 46 –50 □above 50

3. Year of work experience in the organization:

□1-5 years □ 6-10 years □Above 10 years

4. Educational Qualification:

□Grade 10 completed □ certificate □ College diploma □first Degree □

□Second Degree and above

5. Your current position_____

Part Two: Extent of Supply Chain Integration Practice

Please indicate with tick (□) the extent to which the following statements concerning the level of SC Integration within your organization occur 1. ***Does not occur, 2. small extent, 3. medium extent, 4. large extent, 5. very large extent after*** reading the variable on the left hand.

No	Supply chain integration Variables	Rating				
1.supplier Integration		1.	2	3	4	5
1.	With an integrated supplier's supply chain, logistics service is improved					
2.	The level of strategic partnership with suppliers					
3.	Orders are easily processed as a result of supplier integration					
2.Internal Integration						
4.	In my organization every supply chain functions jointly undertakes activities among others functions of the organization in terms of developing short-, medium- and long-term plans					
5	In my organization every supply chain joint undertakes activities among others functions of the organization in terms of developing periodical forecasting and demand management process					
6.	There are internal integration of functions and activities					
3. Customer Integration						
7.	Customer integration has enabled to deliver services easily and quickly					
8.	There is market information sharing practice with major customers					
9.	The speed of customer collaboration has been maintained as a result of SCI					

4.External Integration						
10.	There is external SC integration that fastens flow such as physical and funds					
11.	Distribution and delivery are made at the right time and place due to SC integration, information sharing and coordination					
12.	There is integration of objectives, planning and resource with external organization					
5.Information Integration						
13.	The organization share information with implementing Partners on supply chain strategy and operational processes preparedness					
14.	My organization share information with implementing partners in undertaking assessment					
15.	My organization share information with implementing partners in terms of forecasting demand planning					
6.Mesurment integration						
16.	With an integrated SC technologies and systems established, Inter and intra organizations communications are optimized					
17.	Distribution and delivery are made at the right time and place due to SC integration, information sharing and coordination					
18.	Firms in our supply chain create a compatible communication and information system					

Part Three: supply chain performance and Barriers to supply chain integration

Using the following Rating Scales under the columns, tick (□) mark, in the box under those columns ***strongly disagree, disagree, moderate, agree and strongly agree after*** reading the variable on the lefthand.

No	Supply chain performance	Rating				
Responsiveness		S. Disagree	disagree	moderate	agree	S. agree
18.	The company has short raw material sourcing cycle time					
19.	The company continuously collect the market price of inputs to align with the competitor within short period of time					
20.	The company responds customer requests with in an appropriate time frame digitally					
21.	UFC provide or prepare required input for collection within short period of time					
Reliability						
22.	UFC always deliver consistent service to suppliers					
23.	UFC is committed to provide the production according to local and international standard					
24.	UFC deliver according to agreed quality on contract or agreement within agreed time					
25.	The company chooses their suppliers on the basis of high quality					

Agility						
26.	The company supply chain is capable to react internally and externally towards market change					
27.	The company chooses suppliers who are flexible in responding to request of the company when needed					
28.	The company has the ability to respond to changes in production volumes					
29.	The company amend the characteristics of the products according to customers' needs without conflicting the regulations and instructions					
Cost						
26.	The company uses automated system in order to minimize (decrease) order related costs associated with issuing purchase order.					
27.	The company is working to reduce defective in output (the proportion of damaged products)					
28.	The company uses the cheapest transportation means without compromising the quality of the products					
29.	The company is working on economic of scale (large scale production to reduce the cost per unit)					
Asset management						
26.	UFC set quality parameters and collection plan per warehouse					
27.	UFC uses automated system to manage and follow up inventory					
28.	UFC select strategic locations of warehouse for building or renting					

3.	**Internal Barriers to Supply chain integration**					
Lack of information Technology						
29	Lack of education and knowledge, about IT management					
30	Lack of digitalized supply chain infrastructure					
31	Inadequate technology and lack of an integrated logistics system to support infrastructure requirement and inter channel commitment					
Lack of information sharing						
32	Lack of transparency of information and knowledge across the supply chain					
33	Limited communication planning affects the food supply chain					
34	Poor internal communication of company					

Lack of management commitment						
35	lack of management support in SCI					
36	Lack of qualified SCM personnel					
37	Lack of understanding SCM concept					
4.	**External barriers to supply chain integration**					
Lack of Trust						
38	Lack of trust restricts the integration between your company					
39	Lack of willingness to share information					
40	Lack of trust restricts the integration between your company and suppliers					
Government Regulation						
41	Lack of government support					
42	Changing government rules and regulation					
43	Low level of readiness among government institution					
Uncertainty						
44	Supplier uncertainty (supplier inability to carry out as promised)					
45	Irregular orders from inconsistent customer demand					
46	Manufacturing uncertainty like breakdown of machineries, interruption of power, poor process design etc.					
Bullwhip effect						
47	Inventory fluctuation due to inaccurate information sharing					
48	Inefficient planning and forecasting tool					
49	Response time for receiving an order being long					

Part Four: Identify Enablers of supply chain integration

Using the following Rating Scales under the columns, tick (□) mark, in the box under those columns ***strongly disagree, disagree, moderate, agree and strongly agree after*** reading the variable on the lefthand

5.Enablers of supply chain integration		S. Disagree	disagree	moderate	agree	S. agree
Interorganizational factor						
50	Trust in supply chain linkages					
51	Successful long-term relationships are dependent on trust and commitment to networks between supply chain members					
52	It is essential for organizations to have centralized					

	decision-making having focus on win win scenario					
53	Staff in organization are involved in the decision-making process to some degree					
54	Top management commitment					
Technology						
55	Internal innovation process					
56	Using legally permitted and activated supply chain software					
57	State of art technologies, materials and process					
ICT						
58	Reliable IT strategy					
59	Awareness about use of IT in supply chain					
60	Supply chain wide IT strategy					
Top Management Support						
61	Support the organization climate for adopting new technologies					
62	Create necessary infrastructure within the organization					
63	Provide financial support					

Please write any additional points to be considered in this study

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Thank you for your response!!!