THE EFFECT OF AGILITY FACTORS ON OPERATIONAL PERFORMANCE; IN THE CASE OF ETHIO TELECOM SUPPLY CHAIN DIVISION

BY

MESERET BITSU KASSA

A THESIS SUBMITTED TO ADDIS ABABA UNIVERSITY, COLLEGE OF BUSINESS AND ECONOMICS, SCHOOL OF COMMERCE, FOR THE PARTIAL FULFILLMENT OF THE REQUIREMENT FOR THE DEGREE OF MASTERS OF ART IN LOGISTICS AND SUPPLY CHAIN MANAGEMENT

ADVISOR: TESFAYE BELAY (ASSISTANT PROFESSOR)

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Declaration

I, Meseret Bitsu Kassa hereby declare that this thesis entitled “The effect of Agility factors on operational performance; in the case of Ethio telecom supply chain division” has been carried out by me for the partial fulfilment of the requirement for the degree of Masters of Arts in Logistics and Supply Chain Management from the Addis Ababa University. This thesis is original and has not been submitted to any other university for any diploma or fellowship.

Meseret Bitsu Kassa

Signature: _____

Date: _____

Certification

This is to certify that the thesis entitled “The effect of Agility factors on operational performance; in the case of Ethio telecom supply chain division” submitted to Addis Ababa University School of Commerce for the award of the Degree of Master of Arts in Logistics and Supply Chain Management has been carried out by Meseret Bitsu under my guidance and supervision.

Advisor: Tesfaye Belay(Asi.Prof)

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Date: _____

Abstract

In order to respond to the market's competitive challenges and to use these capabilities to outperform rival organizations, supply chain agility (SCA) is a critical component for the success of businesses operating in global marketplaces. The main purpose of this study is to assess The effect of Agility factors on operational performance; in the case of Ethio telecom supply chain division. The research conceptualizes and develops five supply chain agility factors: alertness, accessibility, decisiveness, swiftness, and flexibility in operational performance. In order to determine the effect of agility factors and operational performance, the researcher used a descriptive and explanatory research strategy. Also Descriptive design is appropriate for providing accurate and valid representation of variables. For the purpose of the study, the researcher uses probability sampling particularly the stratified sampling technique since the total population of the study is large and heterogeneous in type. The target population for the study is classified into four strata based on the departments in the Supply Chain Division. The sample size was 203. Quantitative data has been collected and analysed using frequency tables and percentage. The result of the study indicated that the dependent variable of agility determinant factors alertness, accessibility decisiveness; swiftness and flexibility have a relationship with supply chain operational performance. But Ethio Telecom needs to invest and work more on moderate result variables alertness and accessibility.

Keywords: Supply chain, Agility, Alertness, Accessibility, Decisiveness, Swiftness, Flexibility

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Abbreviations

ADS Asymmetric Digital Subscriber Line

CRBT Caller Ring Back Tone

CSCMP Council of Supply Chain Management Professionals

ETC Ethiopian Telecommunication Corporation

SC Supply Chain

SCD Supply Chain Division

SCM Supply Chain Management

SPSS Software Packages for Social Science

TTM Time-To-Market

CHAPTERONE

INTRODUCTION

Emerging technologies and innovative developments cause the Supply Chain Management (SCM) to change dramatically due to global market and continuous changes in customer demands. Over recent years, advanced companies for being afloat and protecting their positions in the competitive markets, must gain new customers and provide differences against their competitors in increasing competition world (Şahin, et al., 2017). In such dynamic changes in customer demands and rising pressure in marketplace, many company has considered a strategic issue in Supply Chain Management (SCM) which could improve their competitiveness and increase market share both at national and international levels. Effective supply chain management (SCM) requires agility to manage uncertainties and improve operational efficiency, especially when organizations face extreme pressure. Agility plays a crucial role in facilitating operational activities across different stages of the supply chain.(Gligor, 2014). Thus, agility assists the supply chain management to bring dynamic change in operational activities and facilitate the Supply chain management operation to deliver the product and service in timely manners. Therefore, this paper will assess the Agility performance of supply chain division overall in EthioTelecom. The section of the proposal primarily covers and offers an understanding of the study's background, the problem statement, research questions, research objectives, significance of the study, study scope, limitations, definitions of terms, and how the study is organized.

1.1.Background of the Study

The supply chain (SC) concept is theorized from the formation of a value chain network consisting of individual functional entities committed in providing resources and information to achieve the objectives of efficient management of suppliers as well as the flow of products, service, information, and cash(Bidhandi&Valmohammadi, 2017).Furthermore, Supply Chain Management (SCM) includes a set of approaches and practices to effectively integrate suppliers, manufacturers, distributors, and customers for improving the long-term performance of the individual firms and the supply chain as a whole in a cohesive and high-performing business model (Valmohammadi, 2013). The Council of Supply Chain Management

Professionals(CSCMP)has definedSupply Chain Management (SCM) as discipline which encompasses the planning and management of all activities involved in sourcing and procurement conversion and all logistics management activities as well as coordination and collaboration with channel partners (Koh et al., 2007).

The tortoise and the hare, an ancient Greek fable, depicts the repercussions of the fast and overconfident rabbit falling asleep on the job, while the "slow and steady" turtle wins the race. Although this was true in Aesop's day, it is no longer valid in today's competitive business world. In today's world, "slow and steady" will not get a corporation out of the gate, let alone win any races. Modern managers recognise that delivering items to clients faster than the competition is the key to strengthening a company's competitive position. The intense competition in today's markets is driven by factors such as enhanced globalization of supply and demand, increased availability of information, advanced industrial technology, ample venture capital, as well as innovative business designs that necessitate the rapid provision of goods and services to customers (Bovet and Sheffi, 1998).

The cornerstone of business growth does not solely rely on strategies, technology, or people. Instead, it lies in the ability to manage the chain of critical inputs required to create products and services. Every company has a supply chain that is crucial to its survival, but not every company recognizes the significance of improving and refining its supply chain to ensure long-term success. The key to success is having an agile and flexible supply chain.

The intense competition in today's global market, coupled with the emergence of products with shorter life cycles and the elevated expectations of customers, has compelled businesses to invest in and prioritize their supply chain. This, alongside the ongoing advancements in communication and transportation technologies, has spurred the continuous evolution of supply chain and methods to manage it efficiently (Simchi-levi and kaminsky, 2000).

Supply chain is one of the essential and undeniable elements for success in producing and there is a belief that superior supply chain can be leading to a competitive advantage. Parallel developments in the field of agility and supply chain management lead to introduction of supply chain agility (Christopher, 2000).

By its former name Ethiopian Telecommunication Corporation (ETC)now,EthioTelecomis public property rendering telecom service for the country. Telecommunications service was

introduced in Ethiopia by Emperor Menelik II in 1894 when the construction of the telephone line from Harar to the capital city, Addis Ababa, was commenced. Then the interurban network continued to expand satisfactorily in all other directions from the capital. Many important centres in the Empire were interconnected by lines, thus facilitating long distance communication with the assistants or operators at intermediate stations frequently acting as verbal human repeaters between the distant calling parties (Source: www.Ethio Telecom.et , Accessed on Feb, 8 2023).

With a large market share and network coverage, Ethic Telecom is one of the telecommunication service provider in the country. In the present era, Day today activity is an imaginable without strong and 24/7 functioning telecom infrastructure and uninterrupted power supply.The sector is much technology based and volatile by its behaviour. To achieve organizational strategies and to assure business operation is functional, having agile and effective supply chain assists availability of commercial equipment just like sim card, modem,dongles,apparatus, spare parts and services like telebirr adequately.

Since the financial system of the country is chaining, paramount importance of accurate Telecom service is very essential than ever before, for instance gas station payment is now on telebirr all over the country and it needs uninterrupted telecom service. Therefore, to insure perfect operation and to avoid inefficiency assessing the supply chain agility and its impact on overall performance is important.

1.2 Statement of the Problem

Presently, companies encounter a distinct set of supply chain challenges than those experienced during the peak of the economic downturn. As economies worldwide work towards recovering from the financial crisis caused by the Covid-19 outbreak and adapting to a new normal, businesses face new obstacles in their supply chain. Increasing consumer expectations, pressure from global competition, and the complexity of demand patterns are a few of them.

As the business environment becomes increasingly challenging, companies must expand their operations to remain competitive. For individual firms operating in dynamic economies, efficient management of their supply chain activities is crucial. Markets may span national or international borders, while production or service delivery may be restricted to specific locations. Supply chain activities serve as a link between production and market locations that are

separated by distance and time (Klundert, 2003), making their effective management a significant concern.

The success of any organization depends on performance assessment, as it enables the understanding and shaping of observed behaviours to improve competitiveness (Manian et al., 2010). In supply chain management, the goal is to enhance the supply chain process to deliver products to customers properly, timely, and at the lowest cost possible. The potential for supply chain management to improve customer responsiveness and increase profits has attracted the attention of many managers (Husseini et al., 2010). Achieving the most efficient supply chain involves meeting or exceeding customer expectations at the lowest possible cost, which presents a challenge for companies like Ethio Telecom. To improve supply chain performance, large companies like Ethio Telecom must identify the factors that hinder their efficiency.

In the late couple of years the business environment; specifically telecom industry has drastically changed due to the dynamics in the volatile technology and environment, which has made organizations to become more complex. This has therefore made organizations to search for new ways such as making their supply chains efficient, effective and adopting Agile supply chain.

Public organization in Ethiopia especially service Providers Company like Ethio Telecom must adapt agile supply chain. Since, based on researchers view currently there is no organized an end-to-end supply chain integration and the process of supply chain is too much long to avail Goods, Service and Other consultancy works for their end user and customer. However, as per the researcher observation, there is almost very few research or study conducted in Ethiopia, which deals with supply chain agility. One of the few studies focused on *Supply Chain Agility of Combat Ration in Response to Urgent Military Mission*) and its effects operational performance (Yohannes, 2020).

In today's global market, a crucial factor in achieving success is a company's ability to confront competition and leverage it as a competitive advantage. The rapidly changing competitive landscape underscores the vital importance of agility, which refers to a firm's capacity to handle unforeseen challenges, withstand the unique threats of the business environment, and convert changes into opportunities and advantages (GÜNER, et al., 2018). An agile supply chain necessitates several distinctive capabilities to meet customer demands, navigate the volatile market, and adapt to environmental changes.

Therefore, this study will attempt to identify the agility factors in Ethio Telecom's supply chain and further assesses the influence of this supply chain agility factors on operational performance.

1.3 Research Question

To fulfil the study's goals, it will attempt to answer the following research questions:

i. Does alertness have an effect on operational performance?
ii. Does accessibility have an effect on operational performance?
iii. Does decisiveness have an effect on operational performance?
iv. Does swiftness have an effect on operational performance?
v. Does flexibility have an effect on operational performance?

1.4 Research Objective

1.4.1 General Objective

The General objective of this study to assess the effect of Agility factors on operational performance; in the case of Ethio telecom supply chain division.

1.4.2 Specific Objective

Specifically, this study proposes to;

i. Assess the effect of alertness on operational performance
ii. Assess effect of accessibility on operational performance
iii. Assess the effect of decisiveness on operational performance
iv. Assess the effect of swiftness on operational performance
v. Assess the effect of flexibility on operational performance

1.5 Significance of the Study

Considering the current business environment changes, the study tried to elucidate knowledge about supply chain Agility performance of the organization. On one hand, this knowledge will be significant helping the company in realizing agile supply chain in providing goods and services on timely manner while on the other hand; the study findings will serve as lessons to be shared by responsible stakeholders within the sector for considering policy changes with a view to liberal and competitive telecom business environment. Inaddition the study will offer a spring

board to other researchers to work more on the area by incorporating broader scope, since the concept of agile supply chain is new for the country and additionally previous studies done when the Ethiopian telecom service was under monopoly type of business.

1.6 Scope of the Study

The scope of the study is limited to assess the Agility Performance of Supply Chain taking five variables: Alertness, Accessibility, Decisiveness, Swiftness and Flexibility. Even if the research needs to incorporate all zonal and regional Ethio Telecom offices, the study covered only Head Quarter offices since the upper hand of supply chain activity will be done centrally. The geographic scope of the study included the Supply chain Division Head quarterstaffs and management located in Addis Ababa, which is namely Head Office, Central Ware House (AroundWolloSefer) and Akaki Ware house.

1.7 Limitation of the Study

The Research exclusively conducted on Supply chain division of Ethio Telecom within its four department; specifically, and may face a small focal point for a study of this nature. Since telecom sector is liberalized lately, having adequate literature on Ethiopian telecom perspective on agile supply chain management was in some extent difficult.

1.8 Definition of Terms

Supply chain: - As illustrated by Reis (2014), a supply chain comprises a web of organizations and business processes participated in the selection of raw materials, their transformation into intermediate and finished products, and the distribution of these finished products to customers.

Agility: - Maintaining a competitive advantage requires an organization's critical ability to adapt and respond to unforeseen or unexpected changes, as noted by Aziz (2013).

Supply chain agility: - supply chain agility can be described as the capacity of the entire supply chain and its members to quickly adjust the network and its operations to meet dynamic and turbulent customer requirements. (Sharifi, 2006; Yohannes, 2020)

Alertness: - The ability of an enterprise to notice deviations, opportunities, and threats instantly (Gligor, 2015).

Accessibility: -As noted by Gligor (2015), Accessibility is an enterprise's ability to promptly identify deviations, opportunities, and threats is a crucial skill.

Decisiveness: - According to Gligor (2015), Decisiveness is an enterprise's ability to make decisive choices about how to act is an important skill.

Swiftness: -Gligor (2015) states that Swiftness is an enterprise's ability to swiftly implement those choices is a valuable skill.

Flexibility: -According to Gligor (2015), a vital skill is an enterprise's capacity to alter its range of supply chain strategies and processes as needed to implement its goal.

1.9 Organization of the Study

This research work is organized in five chapters that is; the first chapter includes an introduction section, which incorporates background of the study, statement of the problem, objectives, significance, scope, limitation of the study and definition of terms. The second chapter consists of: Theoretical, empirical literature review as well as the conceptual framework. In the third chapter, the research approach, research design, population and sample, data sources and types, data collection procedures, ethical considerations, and data analysis are presented.

CHAPTER TWO

RELATED LITERATURE REVIEW

2.1 Review of the Theoretical Framework

2.1.1 Definition

There are many definitions for supply chain. Here are some referred definitions obtained from various literatures. Supply Chain is the life cycle of physical, informational, and financial processes that aim to meet the needs of the final consumers with goods and services from various and interconnected suppliers, according to Ayers,J. B, 2001. Mentzeret al., 2001 describe Supply Chain as a group of entities (Organizations or individuals) that are directly involved in supplying and distributing goods, services, finances, and information from a source to a destination (customer). According to Bridgefield Group (2006), a supply chain is "a connected set of resources and processes that begins with the sourcing of raw materials and extends through the delivery of finished goods to the end consumer." Many researchers have recently proposed a more comprehensive definition of supply chain, taking into account modern teamwork, efficiency, customer demands, and market developments, as indicated in the following paragraph.

R. Hughes (2008) defines the Supply Chain as a group of organizations, processes, and flows that involve multiple enterprises, such as suppliers, manufacturers, distributors, and retailers. These entities work together by collaborating and coordinating throughout the entire value chain to obtain raw materials, transform them into specific final products, and deliver them to customers. Blackstone (2013) similarly describes the Supply Chain as a network of firms that transport products and services from raw materials to end customers through a structured flow of information, physical distribution, and cash system.

The term "Supply chain" refers to a series of activities involved in the movement of goods and conversion of raw materials, from the early preparation phase to the delivery of the final product to the end consumer. According to Houshmandi Maher et al. (2012), the transmission process not only includes the flow of materials but also encompasses the movement of information and finances. The primary objective of the supply chain is to provide products and services to the end

customer by establishing connections and collaborations between various businesses. In this context, the type of collaboration between these businesses is determined by aspects such as capital, information, raw material, intermediate goods, and others (Tabibi, Mazlumi, 2009). In simpler terms, it could be argued that an organization's effectiveness and efficiency are determined by the management performance and structure of its supply chain (Rahmanis, 2008).

The book written by Min, 2015definesupply chain as an integrated system that synchronizes a series of interrelated business processes in order to-

(1) Generate demand for products; (2) source raw materials and parts; (3) process these raw materials and parts into finished products; (4) increase the value of these products; (5) deliver and market these products to either retailers or customers; (6) enable information sharing among various business entities (suppliers, manufacturers, distributors, third-party logistics providers, and retailers). Its main objective is to improve the operational efficiency, profitability, and competitive position of a firm and its supply chain partners.

In a recent book co-authored by Chopra and Meindl (2016), it is asserted that a supply chain encompasses all parties involved, either directly or indirectly, in fulfilling a customer's request. This includes not only the manufacturer and suppliers, but also transporters, warehouses, retailers, and even customers themselves. Within each organization, such as a manufacturer, the supply chain encompasses all functions involved in receiving and fulfilling a customer's request, including but not limited to new product development, marketing, operations, distribution, finance, and customer service.

2.1.2 Supply Chain Agility

Dove (1996) is a proponent of supply chain agility as a means of dealing with market fluctuations through collaboration and integration. According to Swafford et al. (2006), Christopher & Beck (2004), and Christopher (2000), supply chain agility entails responding to unforeseen obstacles in supply and demand on time and quickly returning to normal state.

Agility refers not only to the capabilities of the firm, but also to the agility of other partners in the supply chain network (Lee, 2004). Thus, Braunscheidel and Suresh (2009:126) expanded the definition of supply chain agility as "the firm's ability, internally and in collaboration with its key

suppliers and customers, to adapt or respond quickly to marketplace changes as well as potential and actual disruptions, contributing to the agility of the extended supply chain."

In their literature review, Do et al. (2021) stated that supply chain agility has shifted from a customer demand-centric approach focusing on competitive advantage to a disruption and risk management initiative. Furthermore, agility can help firms provide value while gaining a competitive advantage (Tse et al., 2016).

To meet the demands of customers and the volatile market, as well as environmental changes, an agile supply chain necessitates several distinctive capabilities.These may include responsiveness, flexibility, adaptability, and other capabilities. To be truly agile, an organization must possess the following elements: market sensitive, process integration, network based and virtual as described by (Christopher, 2000).(Braunscheidel and Suresh 2009) define supply chain agility as a firm's capacity to work together with its core suppliers and customers in a collaborative manner. The reason for this is to respond promptly to changes in the environment. Supply chain agility has been recognized to be a determinant of firms' competitive success in turbulent and volatile market conditions. Ganguly (2009) provides a definition of agility as an organization's capability to adjust and respond to unexpected or unforeseen changes. Agility is measured to be one of the fundamental characteristics needed for a supply chain to survive and thrive in an environment of turbulent and volatile markets (Agarwal et al., 2007) Agility has been noted as an organizational enabler of quick and effective reaction that enables the firm to establish a competitive advantage towards the customer demands. Agile companies are capable of operating profitably in a competitive environment of continually unpredictable and changing customer needs and opportunities. Therefore, here we can conclude that, the primary meaning of agility according to (Narasimhan et al., 2006) suggests "the ability to respond to customer demands in timely and effective manner"

Gligor (2015) notes that alertness, accessibility, decisiveness, swiftness, and flexibility are widely recognized dimensions of supply chain agility. These dimensions represent the abilities that firms need to develop to achieve the desired level of agility. To assess their level of agility, firms can use a self-assessment survey based on these five dimensions. This survey can assist businesses in determining where they fall on the agility spectrum, determining whether

corrective measures are required, and determining where those corrective actions should be implemented.

Agility is considered a novel approach to addressing supply chain challenges (Pan and Nagi, 2013) that differs from other concepts like lean production and efficiency, as it takes a broader and strategic operating perspective. To achieve agility, organizations must have a thorough understanding not only of their own customers but also of their customers' customers and all other parties involved in the supply chain (Simchi-Levi et al., 2002). Managing information effectively is a practical way to enhance the agile capabilities of organizations in such supply chains (Ngai et al., 2011; Sangari and Razmi, 2015).

According to a review of recent studies, there are five aspects of agility that are shared by military and sports science as well as the supply chain world: awareness, accessibility, decisiveness, swiftness, and flexibility. Each dimension indicates a competence that businesses must develop in order to reach the required level of agility (Gligor, 2015).

Many aspects of agility are related to supply chain networks as much as they are to individual enterprises. Christopher and Peck, 2004, and Gligor et al., 2013 define supply chain agility as having five dimensions. These factors are related with the company's physical and cognitive capacities. Cognitive talents (alertness, accessibility, and decisiveness) are required to detect and gather information for decision making in a timely manner, whereas physical abilities (swiftness and flexibility) permit actual operational modifications and execution.

As a supply chain agility component, **alertness** refers to the ability to be aware of supply and demand changes in a timely manner (Gligor et al., 2013). To keep awake, it is necessary to retain market sensitivity, which means being able to detect market patterns and occurring (Christopher, 2000). Furthermore, analytical capabilities can improve prediction of uncertainties, which Jindal et al. (2021) identify as one of the most essential criteria in evaluating supply chain agility. Another key prerequisite for alertness is end-to-end visibility of the supply chain, which offers a clear awareness of the current status of demand and supply, procurement, production, and stocks (Christopher and Peck, 2004).

Accessibility is critical in agility because it helps organisations to access the most important data for decision making. Agile supply chains must be information-driven (Gligor et al., 2013), with stakeholders sharing real-time data and collaborating on collaborative planning.

Informationintegration enables supply chain partners to better coordinate processes, get visibility, adapt resources, and respond to changes (Braunscheidel& Suresh, 2009). Tse et al., (2016) also statein their study that active knowledge searching and engagement with suppliers and customers allows access to the most recent market demand and partner competencies.

Decisiveness is an important aspect of supply chain agility because it stimulates additional operations to be performed in response to changes or disruptions. The most influential aspect in attaining agility is senior management's strategic commitment, which is supported by a well-understood need for agility, alignment of agility with the supply chain's vision and objectives, and technical and financial management support (Sangari et al., 2015). Using supply chain technology, such as an MRP system, can assist managers in making well-informed decisions in a timely way (Ishak et al., 2022). Firms' cognitive capacities to process information into actions are formed by decisiveness, alertness, and accessibility (Gligor et al., 2013).

In the context of supply chain agility, **swiftness** or speed relates to how rapidly choices may be implemented (Gligor et al., 2013). Christopher and Peck (2004) propose three main building blocks for improving supply chain speed: streamlined processes (simplified processes with fewer steps and parallel activities), reduced in-bound lead-times (subject to supplier competence and responsiveness), and non-value-added time reduction (reducing non-value adding time in the supply chain pipeline). According to Agarwal et al. (2007), among the characteristics contributing to supply chain speed are delivery speed, process integration, and IT capability.

The final aspect of supply chain agility is flexibility, which refers to the operational capacity to make efficient adjustments both internally and across the supply chain network through effective stakeholder relationship management (Fayezi et al., 2017). Swafford et al. (2006) identified three flexibility characteristics that affect supply chain agility: sourcing flexibility, production flexibility, and distribution flexibility. Procurement flexibility relates to the ability to explore a wide range of supply options in response to changing sourcing needs. Manufacturing flexibility enables a company to adjust its capabilities and product variety in response to changes in component supply and demand or to leverage technological advancements in processes (Swafford et al., 2006). Distribution flexibility, on the other hand, pertains to a company's ability to utilize its logistics infrastructure and change its delivery capabilities to meet customer demands.

2.1.3 Impact of Supply Chain Agility

According to Eckstein et al. (2015), supply chain agility positively affects organizations both operationally and financially.

An agile supply chain benefits a company's financial performance in a variety of ways. It enables better supply and demand synchronisation (Christopher, 2000) and effective supply chain disruption management (Swafford et al., 2006; Blome et al., 2013). Elements of agility, such as information alertness and supply chain flexibility, aid in the cost-effective implementation of contingency plans to deal with market velocity and uncertainty (Lee 2004). Improved customer demand fulfilment and on-time delivery enabled enterprises to ensure customer satisfaction and hence increase profitability (Braunscheidel& Suresh, 2009; Gligor et al., 2013).

Supply chain agility also has various benefits on operational performance, which is reflected through "customer satisfaction, quality improvement, cost minimization, delivery speed, new product introduction, service level improvement, and lead-time reduction." (Agarwal et al., 2007:453). Flexible and timely adjustment of manufacturing processes, relocation of inventories and production facility, ability to switch supplier contribute to shortened lead times, enhanced delivery accuracy and service quality (Swafford et al., 2006; Eckstein et al.,2015).

Because supply chain agility is driven by collaboration, data sharing, and market sensitivity, it not only reduces uncertainty but also identifies new market opportunities to boost competitive advantage (Perera et al., 2019). Supply chain agility improves responsiveness to changing customer demand by enabling flexibility in product design and engineering under high product complexity (Braunscheidel& Suresh 2009). Supply chain agility also allows for speedy recovery from disruptions while preserving consistent firm continuity and limiting long-term negative impacts (Lee, 2004). Empirical studies have found that supply chain agility has a positive impact on firm performance in a variety of industries, including telecommunications (Collin and Lorenzin, 2006), oil and gas (Yusuf et al., 2014), electronics (Tse et al., 2018), fashion (Chan et al., 2017), and manufacturing (Blome et al., 2013).

2.2 Empirical Review

In the current organizational environment, characterized by intense changes and unexpected events at both industry and global levels, the ability to respond with agility to rising competition

and evolving customer expectations is increasingly crucial.Even thou the Agile strategy is emerging worldwide in Ethiopia it in an infant stage. The below are some of studies the research reviewed.

(Afera, 2014)analysed internal supply chain performance of EthioTelecomusing three processes of SCOR model. Planning, sourcing and delivering are main variables and the research come up with the following conclusions.

- Ethio telecom must be able to produce multi-site distribution plans that take into account material and capacity limits, as well as promptly adapt those plans as demand changes, to ensure that customer orders are delivered on time.
- Ethio telecom should adopt Distribution requirements planning (DRP), a system that refills inventories at branch sites across a distribution network using a timephased order point or other logic for every item that incorporates commercial, network, and 40 stationery supplies.
- Ethio telecom should collaborate with its suppliers to improve inward material quality, reduce procurement costs, influence supplier price fixing, and reduce failure rates.

The work did not incorporate other departments within the division like contract management department, logistics department and supply strategy departments. Which is more focused on procurement.

Siddharth Shankar Rai and Sunil Giri (2019) conducted a study that focused on two main points: the key determinants of agile supply chain performance and how to assess supply chain agility in the Indian garment industry. The study's findings indicated that:

The goal of the study is to develop a framework for supply chain agility that includes a stage-by-stage evaluation of the performance and interdependent linkages.

The three stages of supply, manufacturing, and distribution are where agility is examined in the study.

The impact of key drivers such strategic partnerships, information sharing, resilience, sourcing flexibility, and order fulfilment flexibility on stage-wise agility in the supply chain is examined using structural equation modelling.

The investigation has shown that in the Indian garment sector, supply agility is unaffected by any of the constructs of flexibility in sourcing and order fulfilment, whereas manufacturing agility is affected by all of the factors.

With the exception of information sharing and resilience, which could be affected by infrastructure issues in India, all variables have a significant impact on distribution agility.

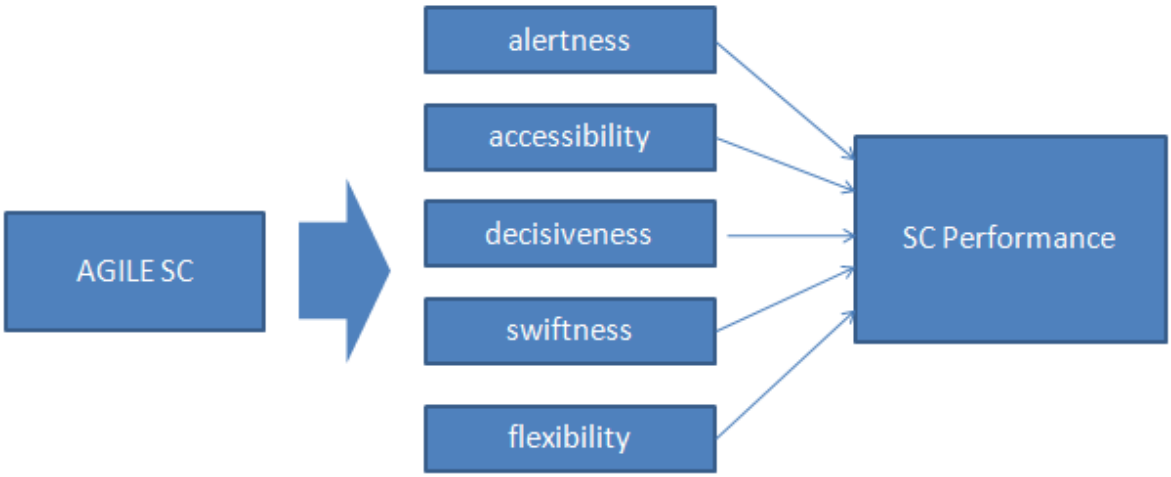
According to a study carried out by Ateke et al. (2017) on the conceptualization of Agile Supply Chain Management Practices and Competitiveness of SMEs, the following statement was made.

“the supply chain of firms must be sensitive, responsive and adaptive to customers’ requirements; and that firms must accord as much importance to the way(s) they source for inputs as they do to the way(s) they deliver value to their customers” is thus very appropriate. The journal has a good insight on agile supply chain, it needs other additional variables. Which will be incorporated in this research paper.

2.3 Conceptual Framework

The researcher defined supply chain agility (alertness, accessibility, decisiveness, swiftness, and flexibility) as an independent variable based on the examined theoretical and empirical literature, while supply chain performance was identified as the dependent variable.

Figure 1: Conceptual Framework



Source: Modified from (D.M.Gilgor, 2015)

CHAPTER THREE.

METHODOLOGY

In this chapter, the appropriate research methodology used in the study is presented. This includes a description of the study area, research approach, research design, population and sample, data sources and types, data collection procedures, ethical considerations, and data analysis.

3.1 Description of the Study Area

The study area is in one of the country's oldest telecom service provider and operator Ethio Telecom Head Quarter around Filwuha supply chain division and Central warehouse and Akaki Warehouse.

Ethio Telecom follows a LEAD strategy and offers a range of services and telecom equipment to its customers. Some of the service included but not limited to Tele birr, 3G, 4G, 4G LTE, and 5G mobile, fixed wireless CDMA, fixed-line telephone service, various internet services including mobile internet, Dongles, Modems, ADSL (Asymmetric Digital Subscriber Line), and value-added services like CRBT (Caller Ring Back Tone) and roaming services that enable customers to access home services while traveling abroad.

The Supply Chain division is responsible for procuring the necessary goods and services to ensure the successful operation of the company in the competitive telecom market. It comprises four departments: Logistics, Sourcing, Strategy, and Contract. Given the company's strategy, achieving supply chain agility is essential, particularly in the current era of new competition.

3.2 Research Approach

The study applied the quantitative research method since the final report will be structured consisting of Introduction, Literature, method, result and discussion.

3.3 Research Design

The study used both Explanatory and Descriptive research designs. The reason behind using both designs - since the concept of Agile, supply chain is new and emerging in Ethiopia there is very

little existing research on the subject matter and Descriptive design appropriate for providing accurate and valid representation of variables.

3.4 Population and Sample

Because the study's overall population is broad and diverse, the researcher used probability sampling, specifically stratified sampling. The study's target population is divided into four strata based on the departments within the Supply Chain Division. The samples are then drawn from each stratum in proportion to their population size. Because the study requires diverse personnel with knowledge and awareness of various supply chain management operations, stratified sampling is employed to ensure that the appropriate proportion of employees from each concerned department is present. The departments considered strata from which data was taken are:Sourcing, Contract Management, Supply Strategy & Relation and Logistics Departments. Under these four departments, there are 15 sections available.

To determine the sample size, the researcher divided the division in to four stratum (Contract Management, Logistics, Supply Strategy & Relation and Sourcing Departments) and select sample from each stratum using Taro Yamane's (1973) sample selection formula. According to Yamane, for any sample, given the estimated population proportion of 0.05 and 95% confidence level, the sample size calculated as:

$n = N / [1+N (e) ^2]$ Where,

N = Total population size n = Total sample size

e = Precision level (sampling error) with 95% confidence interval.

Accordingly, the sample size for each stratum and as whole presented in the below table

Department	Total Population of each Stratum	Target Population	Sample Size Based on Yamane (1973)
Logistics	172	172	120
Sourcing	97	97	78
Sourcing Contracts Management	42	42	38
Supply Strategy and Relations Management	36	36	33
Total	**347**	**347**	**269**

Table 1 Sample Size Determination for the Study

Therefore, the sample size will be 269.

3.5 Data Source and Type

The study utilized both primary and secondary data sources. The primary data was collected through a questionnaire, and additional data was gathered through interviews with various staff members in the division. Despite the emerging nature of the subject matter, secondary data was obtained from various published sources, including books, journal articles, websites, manuals, reports, and other relevant materials.

3.6 Data Collection Procedure

To conduct the study fruitful, the researcher used both primary and secondary sources of the data collection. The primary data is collected through standardized questionnaire from supply chain division staff and management and other secondary sources was used. Questionnaires was given to the Supply Chain Division staff and management based on random selection. The

questionnaire was selective because the information can be easily obtained and supplied directly by the respondents.

3.7 Ethical Consideration

Respondents were reassured by the researcher that the information they provided would be kept private and used only for academic purposes. This prevents respondents from giving biased answers or providing false information, and it gives participants the peace of mind that they won't be tracked down while giving them the opportunity to freely and safely share their opinions. Moreover, the researcher provided fair chance of being selected for the respondents to respond on the questionnaire

3.8 Data Analysis

The study results were edited, coded, and categorized, and various descriptive statistical tools, such as tables and percentages, were utilized for analysis, along with qualitative information. The data analysis was supported by the use of the Software Packages for Social Science (SPSS).

3.9 Reliability Test

Reliability refers to the degree of consistency with which a method measures a specific quantity. When the same method produces consistent outcomes under identical circumstances, the measurement is considered reliable. The summary table below presents the results of the reliability test conducted on the survey questionnaire, which yielded Cronbach's alpha coefficient values ranging from 0.901 to 0.932, with an overall value of 0.928. These values exceed the minimum alpha value of 0.7, indicating that the reliability test conducted on the entire research data demonstrated the internal consistency and reliability of the study tool

No	Variables	Items in Each Category	Cronbach’s alpha coefficient
1.	Alertness	6	.919
	Accessibility	7	.917

2.			
3.	Decisiveness	7	.901
4.	Swiftness	7	.904
5.	Flexibility	7	.913
6.	Performance	7	.932
Overall		36	.928

Table 2, Summary of Cronbach's Alpha Coefficient Result

CHAPTER FOUR

DATA PRESENTATION, ANALYSIS, AND INTERPRETATION

Chapter four of the study presents and analyses the quantitative data collected to address the study's objectives and theoretical aspects. The data was analysed, interpreted, and discussed using SPSS-26 software. The researcher collected and analysed around 203 responses from the total sample. To achieve the study's objectives, a multiple linear regression model was employed to examine the relationship between the independent and dependent variables.

4.1 Sociodemographic Characteristics of the Respondents

The following section presents the demographic results of the first part of the analysis, which includes findings related to gender, age category, work experience, academic qualification, and job title or position in the organization.

Table 3: Gender

Gender of the staff and Management			
		Frequency	Valid Percent
Valid	Male	141	69.5
	Female	62	30.5
	Total	203	100.0

Source: own survey finding, 2023

As indicated in the above frequency table 69.5 % (i.e.141) of the respondents who responded to the distributed questionnaires are male and 30.5% (i.e.62) of the respondents who responded to the distributed questionnaires are female.

Table 4: Age of the Respondent

Age		
	Frequency	Valid Percent

Valid	25-34	101	49.8
	35-44	91	44.8
	45-54	11	5.4
	Total	03	100.0

Source: own survey finding, 2023

As considered form the table, 49 % of the respondents has within the age category 25-34 followed by 44.8% for the Age category of 35-44, 5.4% has between 45-54. From this we can considered that 94.6%≈ (95%) of the respondents of supply chain division has adult staff and management and this have big implication and opportunity for the division if the organization use this potential properly.

Table 5: Work Experience in Organization (in years)

Work Experience in organization (in years)					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0-4	1	.5	.5	.5
	5-9	92	45.3	45.3	45.8
	10-19	88	43.3	43.3	89.2
	20-30 years	21	10.3	10.3	99.5
	30 years and above	1	.5	.5	100.0
	Total	203	100.0	100.0	
Work experience on current job (In years)					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0-7	131	64.5	64.5	64.5
	8-14	62	30.5	30.5	95.1
	15-21	10	4.9	4.9	100.0

	Total	203	100.0	100.0	

Source: own survey finding, 2023

Regarding the work experience of the sample,.5% has less than 4-year experience in Ethio Telecom, 45.3% has between 5-9 years of experience followed by 43.3% which have within the category of 10-19 years of experience, 10.3% within the category of 20-30 years of experience and .5% above 30 years. The sample revealed that the divisions possess a staff and management team with over 5 years of experience in the company, indicating a significant opportunity for the division.Further if we consider the work experience under current job, which is Supply chain division 64.5% of the respondent have less than 7 years of supply chain experience followed by 30.3% who has between 8-14 years. This indicated that most of the staff and management are new to the supply chain division with different background and experience from other divisions.

Table 6: Educational Qualification and Job Role of the Respondents

Educational qualification					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	High school graduate/V& Technical school gradu	3	1.5	1.5	1.5
	College diploma	4	2.0	2.0	3.4
	BA/BSC Degree	104	51.2	51.2	54.7
	Master's Degree	92	45.3	45.3	100.0
	Total	203	100.0	100.0	
Your Position/Job role					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Administrator	50	24.6	24.6	24.6
	Specialist	86	42.4	42.4	67.0
	Supervisor	47	23.2	23.2	90.1

	Expert	9	4.4	4.4	94.6
	Manager	10	4.9	4.9	99.5
	Director	1	.5	.5	100.0
	Total	203	100.0	100.0	

Source: own survey finding, 2023

Education background of the respondents indicated that supply chain Division have an educated staff and management that 51.2% have BA/BSC Degree and 45.3% have master's degree. Thus, we can also consider that Ethic Telecom supply chain have potential staff and management who have capacity to overcome any challenge especially during this competition. Furthermore, the job role data composition indicates that 24.6% Administrator, 42.4% specialist, 23.3% supervisor 4.4% of expert followed by 4.9% manager and 1 Directors looks the pyramid structure. Here, the percentage of specialist indicates the division have potential professional that able to improve the supply chain performance subject to daily division operation.

4.2 Descriptive Result of the Study

The descriptive result of the study with respect to the objective of the study illustrated here below. The independent variables, namely Alertness, Accessibility, Decisiveness, Swiftness, and Flexibility, were analysed in relation to the dependent variable, performance.

4.2 Alertness of supply chain response to supply chain operational performance

No	Item	Mean	Mode	SD
1.	Alertness - Our supply chain quickly detects changes	3.72	4	1.006
2.	Our Supply chains quickly detects opportunities	3.79	4	0.980
3.	Our Supply chains quickly detects threats	3.80	4	0.950

4.	Our Supply chains quickly responds to changes	3.92	5	1.064
5.	Our Supply chains quickly responds to opportunities	3.80	4	0.930
6.	Our Supply chains quickly responds to threats	3.92	4	1.061

Source: own survey finding, 2023

The table presented above provides a summary of the respondents' level of agreement with the supply chain's quickness in detecting changes, opportunities, and threats. The mean value for the first item in the table is 3.72, indicating a moderate level of agreement in detecting changes. The mode value of 4 confirms the tendency of respondents to agree or strongly agree. The standard deviation is 1.006, with 16.3% of respondents disagreeing, 10.3% remaining neutral, 52.2% agreeing, and 19.7% strongly agreeing. The responses suggest that the supply chain can quickly detect changes, but there is still room for improvement since 25% of respondents disagreed or remained neutral.

Moving on to the second item in the table, the mean value is 3.79, indicating a moderate level of agreement in detecting opportunities. The mode value of 4 and a standard deviation of 0.980 suggest that 51.7% of respondents agreed or strongly agreed that the supply chain can quickly detect opportunities

For the third item in the table, the mean value is 3.80, indicating a general agreement in detecting threats. The mode value of 4 and a standard deviation of 0.950 suggest that 50.7% of respondents agreed or strongly agreed that the supply chain can quickly detect threats.

Overall, the responses to detecting changes, opportunities, and threats show that 52.7%, 36.9%, and 37.9% of respondents agreed or strongly agreed respectively. For further reference, please see the table in the appendix section.

Generally, the data analysis illustrated, the Mean value is between 3.72 up to 3.92, which means skill to immediately detect deviation, opportunity and threat, and in quickly responding to changes, opportunities and threats that means the supply chain is moderate and needs to become alert enough.

Regarding 20% up to 25% respondent's response on disagreement neutral and strongly disagree shows there is a work more to do on it.

Accessibility of supply chain to supply chain operational performance

As shown in the above table, regarding item 1, the value of Mean is 3.80, which is moderate, and the value of Mode is 5. In addition, Standard Deviation is 1.214. 37.9% of the respondents responded agree on user working unit are quickly responded to Supply chain request.

In item 2, which is supply chain partner quick access to demand information, centralized and integrated planning, and 39.9% respondents responded Agree. The Mean Value is 3.81 and Mode is 4.

From item 3 on same table. The Men value is 3.96 and Mode is 5. The organization demands and deliverable requirement. The respondents showed the use of automation end to end which is 39.4% strongly Agree. Regarding item 4, the Mean value is 3.98, Mode = 5 and Stand Deviation 1.024. Which means exploring new markets, create new supply strategy to enhance supply chain operation, the respondents responded 39.4% strongly agree which means quick.

In relation to item 5 of the same table, the value of Mode is 3.93, Mode = 5 a Standard Deviation 1.083. To meet customer demand The Time for Market assessment, sourcing, Delivery, inspection, Payment, custom clearance, and distribution is fast since the result of the questionnaire showed 38.4% strongly agreed and 33 % agree.

4.3 Accessibility of supply chain to supply chain operational performance

No	Item	Mean	Mode	SD
	Our user working unit are quickly responded to Supply	3.80	5	1.214

1.	chain request			
2.	Our supply chain partner has quick access to demand information, centralized and integrated planning	3.81	4	1.050
3.	We use an end-to-end Automated system to quickly respond to our company's demands and deliverable requirement.	3.96	5	1.082
4.	We are quick in exploring new markets; create new supply strategy to enhance supply chain operation.	3.98	5	1.024
5.	The Time for Market assessment, sourcing, Delivery, inspection, Payment, custom clearance, and distribution meets our customers' demands.	3.93	5	1.083
6.	Our suppliers are always fast to provide us the information and order we request	3.85	4	1.072
7.	Overall, we are quick to reduce the supply chain's Lead time for operational excellence and cost optimization	3.94	5	1.108

Source: own survey finding, 2023

Regarding item 6 of the above table, 37.4% of the respondents responded agree on suppliers are always fast to provide the information and order requested. The value of Mean is 3.85, Mode = 4 and Standard Deviation 1.072.

In relation to item 7 of the table, the Mean Value is 3.94, Mode = 5 and Standard Deviation 1.108. Overall, 37.4% of respondents strongly agree on quick to reduce the supply chain's Lead-time for operational excellence and cost optimization.

Generally, Thee Mean value is between 3.81 up to 3.98, which is moderate, and we can say the supply chain community in Ethic Telecom can easily access relevant information for supply chain operational activity and more effort is needed.

In addition, the result of respondent in strongly disagree, disagree and neutral summed up and near to 25 %. Therefore, it shows more improvement is needed in information accessibility to make supply chain activity mode agile.

4.4 Decisiveness of supply chain to supply chain operational performance

No	Item	Mean	Mode	SD
1.	Our Supply chain Partner (User work unit and supplier) has quickly to respond to Supply chain's request.	3.88	5	1.177
2.	Our system support team has quick to solve Supply chain's working system problem like ERP	4.00	4	1.074
3.	The Response of Management and sourcing committee to supply chain issue/request is quick	3.87	4	1.033
4.	We are prepared and capable of adapting to future changing market needs	3.96	4	0.951
5.	Our customers and suppliers are quick to share relevant information with us.	4.07	4	0.895
6.	We are quick in improving responsiveness to predict market demand and changing needs in supply chain.	3.94	4	0.976
7.	User working unit has realize the importance of time-to-market (TTM) and respond accordingly to avoid inventory obsolescence	3.90	4	1.005

Regarding the decisiveness of the supply chain, the above table shows that the mean value for item 1 is 3.88, indicating a moderate level of agreement. The mode value is 5, and the standard deviation is 1.177. The mode value and percentage suggest that 34.5% of respondents agreed, 37.9% strongly agreed, 7.9% remained neutral, 16.7% disagreed, and 3.0% strongly disagreed.

Based on the responses, most of the respondents believe that the supply chain partners need to respond swiftly.

Regarding item 2 of the above table also 42.4% of respondents agreed and 37.9% strongly agree on ERP team quickly supports supply chain activity to be functional.

Concerning item 3 of the table, the Mean Value is 3.87, Mode = 4 and Standard Deviation 1.033. 39.4% and 31.0% of the respondents replied The Response of Management and sourcing committee to supply chain issue/request is quick, which is agree and strongly agree respectively.

With respect to item 4 in the table above, the mean value is 3.96, the mode is 4, and the standard deviation is 0.951. A total of 44.8% of the respondents agreed that they are prepared and capable of adapting to changing market needs in the future.

Concerning item 5 of the above table 41.9% of respondents responded that customers and suppliers are quick to share relevant information which is very essential for decisiveness.

Item 6 in the above table shows a mean value of 3.94, a mode value of 4, and a standard deviation of 0.976. The responses indicate that 44.8% of respondents agreed and 31.0% strongly agreed with the statement, which suggests a need to improve responsiveness in predicting market demand and changing needs in the supply chain.

In the same table of item 4, indicates 42.4% respondents also replied user working unit has realize the importance of Time-To-Market (**TTM**) and respond accordingly to avoid inventory obsolescence.

In General majority of respondents replied Decisiveness in supply chain operation of Ethio Telecom is positive , but he respondents in neutral, disagree and strongly disagree shows there is much more work to be done to become perfectly decisive in competitive Telecom industry.

Swiftness of supply chain to supply chain operational performance

Table 4.5 displays the findings related to Swiftness. For instance, considering the results for item one, the mean value is 3.96, the mode is 4, and the standard deviation is 0.964. Around 50.2% of the respondents agreed that the management is committed to making appropriate responses and decisions.

With respect to item 2 in the table above, the mean value is 4.14, Mode = 4 and Standard Deviation is 0.792. In addition, 52.7% of respondents agreed on the ability of supply chain's employees to support top management's and implement the organizational task are remarkable

Concerning item 3 of the above table, the Mean value is 3.92, Mode =4 and Standard Deviation is 0,909. The respondents agreed by 53.2% which means there is Decentralized decision making, Collaborative goals and measures and Adoption of new working techniques.

In same table of item 4, the value of Mean is 4.11, Mode = 4 and Standard Deviation is 0.916. Also 52.2% of respondents replied agree on well-defined Policy, procedures, Process, and methods to integrate, analyze, and organize supply chain operation.

Regarding item 5, the Mean value is 4.13, Mode = 4 and Standard Deviation 0.914. Moreover, 45.8% of respondents replied agree on supply chain decisions mostly are made based on accurate, valid, and reliable information and knowledge.

No	Item	Mean	Mode	SD
1.	Our management is Committed in Making appropriate response and decision.	3.96	4	0.964
2.	The ability of supply chain's employees to support top management's and implement the organizational task is remarkable	4.14	4	0.792
3.	Decentralized decision-making, Collaborative goals, measures, and Adoption of new working techniques is our supply chain's identity	3.92	4	0.909
4.	We have well defined Policy, procedures, Process, and methods to integrate, analyze, and organize supply chain operation.	4.11	4	0.916
5.	Our supply chain decisions mostly are made based on accurate, valid, and reliable information and knowledge	4.13	4	0.914

6.	We effectively use appropriate tools and technologies to support supply chain operations.	4.14	5	0.972
7.	Our supply chain is linked to its partners and suppliers through integrated information technologies/systems	4.09	4	0.921

4.5 Swiftness of supply chain to supply chain operational performance

Concerning item 6, the Mean Value is 4.14, Mode = 4 and Standard Deviation is 0.972. In addition, 43.8% of respondents replied agree on effectively use of appropriate tools and technologies to support supply chain operations. Regarding item 7, the Mean value is 4.14, Mode = 5 and standard Deviation is 0.921. Also 42.9% of respondents replied agree on supply chain is linked to its partners and suppliers through integrated information technologies/systems.

Generally, the result depicts the response and capacity of management, capability of employees in improving and supporting supply chain issue and management respectively, the capability of the supply chain policy procedure and working tools are improved and appropriate to improve the supply chain operational performance and maintain agility in Ethio Telecom supply chain division. However, the response on strongly disagree, disagree and neutral summed up and near to 25%. Therefore, it needs additional work on it.

Flexibility of supply chain to supply chain operational performance

No	Item	Mean	Mode	SD
1.	Our Supply chain is flexible in Sourcing from different Suppliers and sources.	3.92	4	0.948
2.	Our Supply chain is flexible in supplier and contract management, as well as logistics process	3.89	4	0.894
3.	Our Supply chain staffs and Management can quickly deal	4.11	4	0.938

	with sudden changes.			
4.	Our Supply chain policy, procedure, Process and working tool are flexible to overcome any dynamic changes	3.92	4	1.012
5.	Supply chain Staffs and Management are flexible to perceive an upcoming threat and competition	4.02	4	0.895
6.	When needed, we can adjust our supply chain operations to the extent necessary to execute our decisions.	4.16	5	0.952
7.	Overall, our Supply chain is quick to adjust its strategic decisions in response to internal or external changes	4.12	5	1.018

4.6 Flexibility of supply chain to supply chain operational performance

The above table summarizes flexibility of supply chain in different items and results. When we take item 1, the Mean result is 3.92, Mode = 4 and Standard Deviation 0.948. Sourcing from different Suppliers and sources result illustrates 56.2% respondents replied agree, 24.6% strongly agree. This means supply chain more flexible in sourcing. Nearly 17% of respondents responded strongly disagree, disagree and neutral. This shows still work is needed to be more flexible.

Regarding item 2 of the same table, the Mean value is 3.89, Mode = 4 and Standard Deviation 0.894.whcih means logistics and contract management tends to more flexible. As per the respondents, result 57.6% agreed and 21.7 strongly agree.

Regarding item 3 in the table above, the mean value is 4.11, the mode is 4, and the standard deviation is 0.938. The results indicate that 46.3% of the respondents agreed, and 37.4% strongly agreed that the supply chain staff and management could quickly cope with sudden changes.

The result of item 4 shows, 47.8% of respondents replied Supply chain policy, procedure, Process and working tool are flexible to overcome any dynamic changes. its Mean Value is 3.92, Mode = 4 and Standard Deviation 1.012.

Regarding item 5 of the aforementioned table, the Mean Value is 4.02, Mode = 4 and Standard Deviation 0.895. 53.2% of respondents agreed and 29.6% respondents disagree. Which means Staffs and Management are flexible to perceive the upcoming threat and change.

Concerning item 6 of same table, the Mean Value is 4.16, Mode = 5 and Standard Deviation 0.952. 42.4% of respondents strongly agree and 42.4% respondents strongly agree on When needed, they can adjust their supply chain operations to the extent necessary to execute decisions.

Regarding the last item on the table, the Mean value is 4.12, Mode = 5 and Standard Deviation 1.018. And also 43.3% strongly agree and 38.9% agree of the respondents replied Supply chain is quick to adjust its strategic decisions in response to internal or external changes.

In the general the above result depicts flexibility in sourcing from different supplier, customs clearance, distribution activities, the staff and management flexibility to react to sudden changes. In addition, the flexibility in supply chain policy, procedure and working tool is responded as in good status in Ethio Telecom.

However, nearly 15% up to 20% of respondents respond on strongly disagree, disagree and neutral shows still more effort is needed to be more flexible to win upcoming Telecom industry competition.

Operational performance the performance results from the supply chain's operational excellence subject to supply chain's agility factors.

Table 4.7 summarizes operational performance in respect to supply chain agility factors. the item 1 result shows the Mean value is 4.15 which means the organization is Good, Mode = 4 and Standard Deviation 0.716. 61.6% of respondents responded agree, 29.1% of respondents responded strongly agree. This implies the supply chain is able to adjust tactics in operational performance.

Regarding item 2 of same table, the Mean value is 4.26, Mode = 4 and Standard Deviation is 0.768 respondents result also shows, 49.3% of respondents responded agree and 40.9% of respondents responded disagree. Nearly 10% of respondents responded neutral and disagree. This shows supply chain operational performance improved by lead-time reduction and being quick in task process.

No	Item	Mean	Mode	SD

1.	The Supply chain ability to adjust the range of tactics and operations enhances supply chain's Operational performance	4.15	4	0.716
2.	The quickness in Supply Chain task, process and lead times reduction improves supply chain's operational performance	4.26	4	0.768
3.	Supply chain reaction is key to Our supply chain agility and operational performance at all	4.22	4	0.684
4.	Supply chain's Staff and Management competency improves Supply chain performance	4.31	4	0.700
5.	All supply chain department and section has actively work together to enhances supply chain's operations	4.25	4	0.763
6.	Supply chain agility improves supply chains operational performance	4.32	4	0.758
7.	The Supply chain ability to adjust the range of tactics and operations enhances supply chain's Operational performance	4.15	4	0.716

4.7 Operational performance the performance results from the supply chain's operational excellence subject to supply chain's agility factors.

Concerning item 3 of the above table, the mean value obtained is 4.22, Mode = 4 and standard Deviation 0.684.60.6% of respondents responded agree and 32.5% result is strongly agree. Which means majority of respondents believed that, supply chain reaction is key in overall supply chain agility and supply chain operation?

Concerning item 4 of same table, the resulting mean value is, 4.31, Mode = 4 and Standard Deviation 0.700. 53.7% of respondents responded agree and 40.4% of respondents responded strongly agree. Staff and management competency enhance which means supply chain performance.

Regarding item 5 of the above table, the mean result is 4.25, Mode = 4 and Standard Deviation 0.763. Respondents result also, 52.2% agree and 38.9% strongly agree. This implies sections and departments over the division working together to improve supply chain operation.

Concerning the last item in the table presented above, the mean outcome is 4.32, Mode = 4 and Standard deviation 0.758. Respondents result is also, 48.3% agree and 44.3% strongly agree. Which means the respondents believed that, supply chain agility improves supply chain operational performance.

In general, the majority of the respondents highly agreed on supply chain agility does high impact on supply chain operational performance. Furthermore, the study revealed a direct correlation between supply chain agility factors and performance.

4.3. Regression Analysis

The regression analysis for the relationship between supply chain agility and performance is presented below.

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Sig. F Change
1	.723[a]	.523	.511	.404	.000

a. Predictors: (Constant), Flexibility, Alertness, Accessibility, Decisiveness, Swiftness

Source: SPSS Output (2023)

The results of the analysis indicate that the model has a moderate-to-strong positive correlation with the outcome variable, as indicated by the R-value of .723.

The coefficient of determination (R-square) value of 0.723 indicates that the independent variables, namely Supply Chain Agility (Alertness, Accessibility, Decisiveness, Swiftness, and Flexibility), explain 72.3% of the variation observed in the dependent variable (performance). The P-value of 0.000 is less than the significance level of 0.05, indicating that the model is both fit and significant.

The adjusted R squared value of .511 takes into account the number of predictors in the model and

ANOVA Table of Regression

	Model	Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	35.298	5	7.060	43.161	.000[b]
	Residual	32.222	197	.164		
	Total	67.521	202			

a. Dependent Variable: Performance

b. Predictors: (Constant), Flexibility, Alertness, Accessibility, Decisiveness, Swiftness

adjusts the R squared value accordingly. This suggests that the model is still a relatively good fit for the data even after taking into account the number of predictor variables.

The value of test F (43.161) and the ANOVA table, the model reaches statistical significance (Sig. =.000, and $p \leq .01$) shows that the regression model is valid and can be used to analyze the dependence between variables.

Coefficients of Regression of Variables

Model	Un standardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
	B	Std. Error	Beta			Tolerance	VIF
(Constant)	2.067	.160		12.893	.000		
Alertness	.047	.053	.071	.884	.378	.379	2.640
Accessibility	-.144	.054	-.235	-2.647	.009	.307	3.262
Decisiveness	.291	.081	.426	3.588	.000	.172	5.811
Swiftness	.090	.094	.118	.959	.339	.159	6.300
Flexibility	.262	.064	.361	4.106	.000	.314	3.182

a. Dependent Variable: Performance

1. **Alertness**: The coefficient is 0.047, but it is not statistically significant (p=0.378), meaning onecannotconfidently say that Alertness has a meaningful impact on Performance.
2. **Accessibility**: The coefficient is -0.144 and is statistically significant (p=0.009). This suggests that as Accessibility increases by one unit, Performance decreases by 0.144 units, assuming all other variables are held constant.
3. **Decisiveness**: The coefficient is 0.291 and is statistically significant (p=0.000). This suggests that as Decisiveness increases by one unit, Performance increases by 0.291 units, assuming all other variables are held constant.
4. **Swiftness**: The coefficient is 0.090, but it is not statistically significant (p=0.339), meaning one cannot confidently say that Swiftness has a meaningful impact on Performance.

5. **Flexibility**: The coefficient is 0.262 and is statistically significant (p=0.000). This suggests that as Flexibility increases by one unit, Performance increases by 0.262 units, assuming all other variables are held constant.

Multi-collinearity refers to a situation where two or more independent variables are highly correlated, which can make it difficult to determine the individual impact of each independent variable on the dependent variable. The VIF (Variance Inflation Factor) values arenot all below 10, which suggests that multi-collinearity isa major concern in this model.

CHAPTER FIVE

CONCLUSION AND RECOMMENDATION

This chapter provides a summary and conclusion of the entire study, including the major findings, conclusions, recommendations, and directions for future research. The aim of the research was to assess the performance of supply chain agility in the case of Ethio Telecom's supply chain division.

5.1 Conclusion

Knowing the expectations of the customers is crucial for public enterprise like Ethic Telecom in today's business environment. Agility is an emerging phenomenon that supports the organizations to move easily and quickly. Organizations must pursue agility in supply chain to survive in today’s competitive era. The success of every supply chain depends on how agile it is to deliver the value that the customers expect, and this can be done by business organization looking beyond the boundaries of their own organization. As stated in the study's objective, the main aim was to evaluate the performance of supply chain agility in the context of Ethio Telecom's supply chain division.

The study confirmed that the supply chain division is moderately alert on quickly detecting changes, opportunities and threats and also quick enough on responding to changes, opportunities and threats. But, nearly 25% of the respondent’s disagreement and neutral result implies more work is needed in alertness. And relatively the Mean value is lower than other parameters.

Regarding Accessibility, the study found that supply chain is quick in supply chain requests, supply chain partners has quick access to demanded information. In enhancing supply chain operation the division is quick new supply strategy. Customs clearing and distribution is also in a good position at the division. Overall the division is quick to reduce supply chain lead time to operational excellence. Also the study found that 20% up to 25% respondents result on accessibility disagreement and neutral, this implies still more work is needed. The Mean value also lower than other parameters.

Also the study found that Decisiveness of the division is in a good position. System support team in supply chain working tool like ERP is quick enough to fix any problems whenever it happens. Response of management team and sourcing committee to supply chain request is also quick according to the survey.

The research also found that, swiftness of the supply chain operation in a positive result. Management is committed in making in appropriate response and decision. The ability of employees and management in implementing organizational tasks is also resulted in a good position.

The study confirmed that supply chain division is highly flexible on sourcing from different suppliers and sources. Logistics process and contract management also flexible in supply chain operation. The study resulted staff and management can quickly deal with sudden changes. Regarding the upcoming Telecom industry competition the staff and management are flexible in perceiving it.

Thestudy confirmed that, supply chain agility factors alertness, accessibility, decisiveness, swiftness and flexibility positively affect supply chain operational activities.Based on the study's objective, it can be inferred that the positive impact of supply chain agility on Ethio Telecom's overall operational activity has been established.

5.2 Recommendation

Finding from this study appear to support the prevailing belief in literature that supply chain Agility is significantly affect the organizational performance. Based on the conclusion the following recommendation were forwarded by the researcher in relation to research objective.

The descriptive statics result indicated that the mean of Alertness is relatively lower than all variable. This indicated that Ethic Telecom should have work on alertness parameter such as detecting quickly changes, opportunity and threats. Quickly responding to changes, opportunities and threats.

Also the Mean result of accessibility is lower than other variables more work is needed in such parameters: user units must be quick in inspection of goods, using end to end automated system with supply chain parameters and being quick in reducing supply chain lead time.

Therefore, the researcher recommends Ethio Telecom to invest more on alertness and accessibility in order to fulfil company strategy and to stay the leading Telecom operator on the upcoming Telecom industry competition.

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Appendix

Table and Figure

4.2.1 Alertness of supply chain response to supply chain operational performance

No	Item		Response categories					Mean	Mode	SD
			SD	D	N	A	SA			
1.	**Alertness - Our supply chain quickly detects changes**	Freq.	3	33	21	106	40	3.72	4	1.006
		%	1.5	16.3	10.3	52.2	19.7			
2.	**Our Supply chains quickly detects opportunities**	Freq.		35	18	105	45	3.79	4	0.980
		%		17.2	8.9	51.7	22.2			
3.	**Our Supply chains quickly detects threats**	Freq.		30	25	103	45	3.80	4	0.950
		%		14.8	12.3	50.7	22.2			
4.	**Our Supply chains quickly responds to changes**	Freq.	1	30	27	71	74	3.92	5	1.064
		%	.5	14.8	13.3	35.0	36.5			
5.	**Our Supply chains quickly responds to opportunities**	Freq.		29	25	107	42	3.80	4	0.930
		%		14.3	12.3	52.7	20.7			
6.	**Our Supply chains quickly responds to threats**	Freq.	1	31	24	75	72	3.92	4	1.061
		%	.5	15.3	11.8	36.9	35.5			

.3 Accessibility of supply chain to supply chain operational performance

No	Item		Response categories					Mean	Mode	SD
			SD	D	N	A	SA			
1.	**Our user working unit are quickly responded to Supply chain request**	Freq.	7	34	28	56	77	3.80	5	1.214
		%	3.4	16.7	13.8	27.6	37.9			
2.	**Our supply chain partner has quick access to demand information, centralized and integrated planning**	Freq.	3	28	32	81	59	3.81	4	1.050
		%	1.5	13.8	15.8	39.9	29.1			
3.	**We use an end-to-end Automated system to quickly respond to our company's demands and deliverable requirement.**	Freq.	1	31	24	67	80	3.96	5	1.082
		%	.5	15.3	11.8	33.0	39.4			
4.	**We are quick in exploring new markets; create new supply strategy to enhance supply chain operation.**	Freq.	1	23	33	68	78	3.98	5	1.024
		%	.5	11.3	16.3	33.5	38.4			
5.	**The Time for Market assessment, sourcing, Delivery, inspection, Payment, custom clearance, and distribution meets our customers' demands.**	Freq.		34	24	67	78	3.93	5	1.083
		%		16.7	11.8	33.0	38.4			
6.	**Our suppliers are always fast to provide us the information and order we request**	Freq.	1	34	26	76	66	3.85	4	1.072
		%	.5	16.7	12.8	37.4	32.5			
7.	**Overall, we are quick to reduce the supply chain's Lead time for operational excellence and cost optimization**	Freq.	5	27	20	75	76	3.94	5	1.108
		%	2.5	13.3	9.9	36.9	37.4			

4.4 Decisiveness of supply chain to supply chain operational performance

No	Item		Response categories					Mean	Mode	SD
			SD	D	N	A	SA			
1.	**Our Supply chain Partner (User work unit and supplier) has quickly to respond to Supply chain's request.**	Freq.	6	34	16	70	77	3.88	5	1.177
		%	3.0	16.7	7.9	34.5	37.9			
2.	**Our system support team has quick to solve Supply chain's working system problem like ERP**	Freq.	4	28	8	86	77	4.00	4	1.074
		%	2.0	13.8	3.9	42.4	37.9			
3.	**The Response of Management and sourcing committee to supply chain issue/request is quick**	Freq.	3	24	33	80	63	3.87	4	1.033
		%	1.5	11.8	16.3	39.4	31.0			
4.	**We are prepared and capable of adapting to future changing market needs**	Freq.	1	21	27	91	63	3.96	4	0.951
		%	.5	10.3	13.3	44.8	31.0			
5.	**Our customers and suppliers are quick to share relevant information with us.**	Freq.		15	29	85	74	4.07	4	0.895
		%		7.4	14.3	41.9	36.5			
6.	**We are quick in improving responsiveness to predict market demand and changing needs in supply chain.**	Freq.		27	21	91	63	3.94	4	0.976
		%		13.3	10.3	44.8	31.0			
7.	**User working unit has realize the importance of time-to-market (TTM) and respond accordingly to avoid inventory obsolescence**	Freq.	1	27	26	86	63	3.90	4	1.005
		%	.5	13.3	12.8	42.4	31.0			

4.5 Swiftness of supply chain to supply chain operational performance

			Response categories							

No	Item		SD	D	N	A	SA	Mean	Mode	SD
1.	**Our management is Committed in Making appropriate response and decision.**	Freq.	3	21	17	102	60	3.96	4	0.964
		%	1.5	10.3	8.4	50.2	29.6			
2.	**The ability of supply chain's employees to support top management's and implement the organizational task is remarkable**	Freq.	1	9	18	107	68	4.14	4	0.792
		%	.5	4.4	8.9	52.7	33.5			
3.	**Decentralized decision-making, Collaborative goals, measures, and Adoption of new working techniques is our supply chain's identity**	Freq.	2	19	23	108	51	3.92	4	0.909
		%	1.0	9.4	11.3	53.2	25.1			
4.	**We have well defined Policy, procedures, Process, and methods to integrate, analyze, and organize supply chain operation.**	Freq.	3	17	6	106	71	4.11	4	0.916
		%	1.5	8.4	3.0	52.2	35.0			
5.	**Our supply chain decisions mostly are made based on accurate, valid, and reliable information and knowledge**	Freq.	1	18	13	93	78	4.13	4	0.914
		%	.5	8.9	6.4	45.8	38.4			
6.	**We effectively use appropriate tools and technologies to support supply chain operations**.	Freq.	1	20	17	76	89	4.14	5	0.972
		%	.5	9.9	8.4	37.4	43.8			
7.	**Our supply chain is linked to its partners and suppliers through integrated information technologies/systems**	Freq.		19	20	87	77	4.09	4	0.921
		%		9.4	9.9	42.9	37.9			

4.6 Flexibility of supply chain to supply chain operational performance

No	Item		Response categories					Mean	Mode	SD
			SD	D	N	A	SA			

1.	**Our Supply chain is flexible in Sourcing from different Suppliers and sources.**	Freq.	5	18	16	114	50	3.92	4	0.948
		%	2.5	8.9	7.9	56.2	24.6			
2.	**Our Supply chain is flexible in supplier and contract management, as well as logistics process**	Freq.	3	18	21	117	44	3.89	4	0.894
		%	1.5	8.9	10.3	57.6	21.7			
3.	**Our Supply chain staffs and Management can quickly deal with sudden changes.**	Freq.	4	13	16	94	76	4.11	4	0.938
		%	2.0	6.4	7.9	46.3	37.4			
4.	**Our Supply chain policy, procedure, Process and working tool are flexible to overcome any dynamic changes**	Freq.	3	26	16	97	61	3.92	4	1.012
		%	1.5	12.8	7.9	47.8	30.0			
5.	**Supply chain Staffs and Management are flexible to perceive an upcoming threat and competition**	Freq.	2	17	16	108	60	4.02	4	0.895
		%	1.0	8.4	7.9	53.2	29.6			
6.	**When needed, we can adjust our supply chain operations to the extent necessary to execute our decisions.**	Freq.	4	12	18	83	86	4.16	5	0.952
		%	2.0	5.9	8.9	40.9	42.4			
7.	**Overall, our Supply chain is quick to adjust its strategic decisions in response to internal or external changes**	Freq.	2	24	10	79	88	4.12	5	1.018
		%	1.0	11.8	4.9	38.9	43.3			

4.7 Operational performance the performance results from the supply chain's operational excellence subject to supply chain's agility factors.

No	Item		Response categories					Mean	Mode	SD
			SD	D	N	A	SA			
	The Supply chain ability to adjust the	Freq.		10	9	125	59	4.15	4	0.716

1.	**range of tactics and operations enhances supply chain's Operational performance**	%		4.9	4.4	61.6	29.1			
2.	**The quickness in Supply Chain task, process and lead times reduction improves supply chain's operational performance**	Freq.		10	10	100	83	4.26	4	0.768
		%		4.9	4.9	49.3	40.9			
3.	**Supply chain reaction is key to Our supply chain agility and operational performance at all**	Freq.		8	6	123	66	4.22	4	0.684
		%		3.9	3.0	60.6	32.5			
4.	**Supply chain's Staff and Management competency improves Supply chain performance**	Freq.		8	4	109	82	4.31	4	0.700
		%		3.9	2.0	53.7	40.4			
5.	**All supply chain department and section has actively work together to enhances supply chain's operations**	Freq.		11	7	106	79	4.25	4	0.763
		%		5.4	3.4	52.2	38.9			
6.	**Supply chain agility improves supply chains operational performance**	Freq.	1	8	6	98	90	4.32	4	0.758
		%	.5	3.9	3.0	48.3	44.3			

General instruction

1. In all cases where answer options are available, please tick **(√ or X)** in the appropriate box.

2. For questions that demands your opinion, please try to honestly describe as per the questions on the space provided.

1. Demographic Information

a. Gender: Male ☐ Female ☐

b. Which of the following age categories describes your age?

Under 25 ☐ 25-34 ☐ 35-44 ☐ 45-54 ☐ 55 and above ☐

c. Number of years you have worked for the organization (in years)

0-4 ☐ 5-9 ☐ 10-19 ☐ 20-30 ☐ 30 years or more ☐

d. How long have you worked on your current job? (In years)

0-7 ☐ 8-14 ☐ 15-21 ☐ 22-28 ☐ 29 years or more ☐

e. Educational qualification/

High school graduate/V& Technical school gradu ☐ College di ☐ ma

BA/BSC Degree ☐ Master's degree ☐ PhD ☐

Other please state……

f. Your Position/Job role

Administrator ☐ Specialist ☐ Supervisor ☐

Expert ☐ Manager ☐ Director ☐ Chief Officer ☐

Other please state……

Scale of Measurement:

1. = Strongly Disagree 2. = Disagree 3. = Nuwtral /I have no idea

4. = Agree 5. = Strongly Agree

		SD	D	N/INI	**A**	SA
S. N	**Parameter: Supply Chain Agility factors**	**1**	**2**	**3**	**4**	**5**
1	**Alertness:** Deals with the skill to immediately detect deviations, opportunities, and threats					
1.1	Our Supply chains quickly detects changes					
1.2	Our Supply chains quickly detects opportunities					
1.3	Our Supply chains quickly detects threats					
1.4	Our Supply chains quickly responds to changes					
1.5	Our Supply chains quickly responds to opportunities					
1.6	Our Supply chains quickly responds to threats					
2	**Accessibility: Deals with the** skill to immediately access the applicable data.					
2.1	Our user working unit are quickly responded to Supply chain request (i.e., validation of offer, specification, Test, and inspection)					
2.2	Our supply chain partner hasquick access to demand information, centralized and integrated planning					
2.3	We use an end-to-end Automated system to quickly responds to our company's demands and deliverable requirement.					
2.4	We are quick in exploring new markets, create new supply strategy to enhance supply chain operation.					
2.5	The Time for Market assessment, sourcing, Delivery, inspection, Payment, custom clearance, and distribution meets our customers' demands.					

		SD	D	N/INI	**A**	SA
S. N	**Parameter: Supply Chain Agility factors**	**1**	**2**	**3**	**4**	**5**
2.6	Our suppliers are always fast to provide us the information and order we request					
2.7	Overall, we are quick to reduce the supply chain's Lead time foroperational excellence and cost optimization					
3	**Decisiveness:** Deals with skill to make firm choices about how to act .					
3.1	Our Supply chain Partner (User work unit and supplier) has quick to respond to Supply chain's request.					
3.2	Our system support team has quick to solve Supply chain's working system problem like ERP					
3.3	The Response of Management and sourcing committee to supply chain issue/request is quick					
3.4	We are prepared and capable of adapting to future changing market needs					
3.5	Our customers and suppliers are quick to share relevant information with us.					
3.6	We are quick in improving responsiveness to predict market demand and changing needs in supply chain.					
3.7	User working unit has realize the importance of time-to-market (**TTM**) and respond accordingly to avoid inventory obsolescence					
4	**Swiftness:** Deals with skill to quickly instrument those choices.					
4.1	Our management is Committed in Making appropriate response and decision.					
4.2	The ability of supply chain's employees to support top management's and implement the organizational task is remarkable					
4.3	Decentralized decision making, Collaborative goals and measures and Adoption of new working techniques is our supply chain's identity.					

		SD	D	N/INI	**A**	SA
S. N	**Parameter: Supply Chain Agility factors**	**1**	**2**	**3**	**4**	**5**
4.4	We have well-defined Policy, procedures, Process, and methods to integrate, analyze, and organize supply chain operation.					
4.5	Our supply chain decisions mostly are made based on accurate, valid, and reliable information and knowledge					
4.6	We effectively use appropriate tools and technologies to support supply chain operations.					
4.7	Our supply chain is linked to its partners and suppliers through integrated information technologies/systems					
5	**Flexibility:** - Deals with the ability to modify the range of tactics and operations to the extent needed.					
5.1	Our Supply chainis flexible in Sourcing from different Suppliers and sources,					
5.2	Our Supply chain is flexible in supplier and contract management, as well as logistics process.					
5.3	Our Supply chain staffs, and Management can quickly deal with sudden changes.					
5.4	Our Supply chain policy, procedure, Process and working tool are flexible to overcome any dynamic changes.					
5.5	Supply chain Staffs and Management are flexible to perceive an upcoming threat and competition.					
5.6	When needed, we can adjust our supply chain operations to the extent necessary to execute our decisions.					
5.7	Overall, our Supply chain is quick to adjust its strategic decisions in response to internal or external changes					
	Operational performance: Deals with the performance results from the supply chain's operational excellence subject to supply chain's agility factors.					

		SD	D	N/INI	**A**	SA
S. N	**Parameter: Supply Chain Agility factors**	**1**	**2**	**3**	**4**	**5**
	The Supply chain ability to adjust the range of tactics and operations enhances supply chain's Operational performance					
	The quickness in Supply Chain task, process and lead times reduction improves supply chain's operational performance					
	Supply chain reaction is key to Our supply chain agility and operational performance at all					
	Supply chain'sStaff and Management competency improves Supply chain performance					
	All supply chain department and section has actively work together to enhances supply chain's operations.					
	Supply chain agility improves supply chains operational performance					

2. **If you have additional information, please provide your genuine suggestion on how to improve your Division's Operational performance Via Supply chain Agility ……..**
   ……

I thank you for your Valuable Information and provide your scarcetime!