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The effect of Global Supply chain on firm's performance: The case of Ethiopian manufacturing Private sector

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THE EFFECT OF GLOBAL SUPPLY CHAIN ON FIRM'S PERFORMANCE: THE CASE OF ETHIOPIAN MANUFACTURING PRIVATE SECTOR

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DECLARATION

The undersigned, Hilina Gizat, declares that this thesis, entitled "THE EFFECT OF GLOBAL SUPPLY CHAIN ON FIRM'S PERFORMANCE: THE CASE OF ETHIOPIAN MANUFACTURING PRIVATE SECTOR" is my original work, and it has not been submitted in part or in whole to any other universities, the sources used in various stages of this research are properly credited.

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ABSTRACT

This study examines the effect of global supply chains (GSCs) on productivity within the Ethiopian manufacturing sector. Utilizing a mixed-method approach, data were gathered from 15 manufacturing firms in Addis Ababa, combining both qualitative and quantitative methods. The study's explanatory and descriptive research design enabled an investigation of relationships between variables, using primary data collected via structured questionnaires and semi-structured interviews with firm representatives. Secondary data from the Central Statistical Authority provided firm-specific productivity metrics, input usage, and additional contextual information. Data were analyzed using descriptive statistics, correlation, and regression analyses to evaluate the impact of GSCs on productivity. The findings indicate that strategic supplier relationships, product diversity, advanced technology adoption, and information sharing significantly influence productivity in the manufacturing sector. The study highlights that foreign inputs of high quality and technological advancement offer potential productivity gains. However, challenges such as supply chain disruptions, geopolitical risks, and managing complex supplier networks remain critical. These results provide insights for manufacturing firms and policymakers to optimize GSC benefits while addressing related risks.

Keywords: Global Supply Chain, Manufacturing, Productivity, Foreign Inputs, Technology Adoption, Ethiopia, Supplier Relationships, Mixed-Method Research

CHAPTER ONE

1. Introduction

1.1. Background of the study

In contemporary business environments, organizations are no longer isolated entities but rather interconnected components within a broader supply chain network. This perspective emphasizes the interdependence of businesses in the flow of goods, services, finances, and information, both upstream and downstream. Understanding the structure of the supply chain is crucial for businesses, as it involves analyzing the relationships between suppliers, the configuration of the network, and the various connections that link activities within the supply chain. (Slam, Monjur & Akon,2023)

The development of global supply chain management is closely tied to the growth of globalization. While its exact origins cannot be pinpointed to a specific date, as it varies across companies, it has become an essential aspect of modern business practices. Global supply chain management encompasses the strategic planning, implementation, and control of supply chain activities with the goal of maximizing value, establishing a competitive infrastructure, managing global logistics, aligning supply with demand, and measuring performance on a worldwide scale. (Mutangili,2019)

Traditionally, the term "global supply chain" encompassed the intricate network of entities involved in fulfilling customer requests, transcending geographical boundaries (Chopra & Meindl, 2007). The term "global supply chain" traditionally referred to the interconnected network of entities involved in fulfilling customer orders across different regions. This network included manufacturers, consumers, suppliers, transporters, wholesalers, retailers, and other intermediaries. Supply chain management (SCM) emerged as a comprehensive approach to managing the flow of information, materials, and services through this complex network of stakeholders, emphasizing a holistic perspective rather than isolated management of individual components. (Muheesi, 2022).

The manufacturing supply chain, spanning from raw material procurement to post-sales service, is essential in transforming raw materials into finished products. Effective supply chain

management is crucial for achieving efficiency and requires a holistic perspective of the supply chain, often facilitated by modern technology and automation (Luther, 2023).

The global supply chain in the manufacturing sector is a complex network of individuals and companies involved in producing and distributing goods and services. It includes processes like sourcing raw materials, manufacturing, quality control, distribution, and post-sales service. Globalization has made supply chains more complex, presenting new challenges for manufacturers. Key aspects of the manufacturing sector's global supply chain include disruptions, visibility, diversification, technology improvements, and inventory management. Manufacturers need a thorough understanding of their supply chains to mitigate risks and improve efficiency. Supply chain disruptions can negatively affect the manufacturing industry, leading to issues like a lack of diversified supply chains, longer production times, higher costs, and reduced customer satisfaction. To address these vulnerabilities, manufacturers should diversify their suppliers, explore alternative supply sources, and increase stock levels of critical materials. Effective supply chain management involves balancing production capacities with demand while minimizing lead times and product costs. This can be achieved through efficient inventory management and the implementation of manufacturing software for enhanced visibility and control over the supply chain. (Alessandro Nicita, Ognivtsev and Shiratori, 2013)

The COVID-19 pandemic has had a significant effect on global value chains (GVCs), disrupting supply chains and highlighting the need for greater resilience and diversification. However, GVCs remain crucial for the economic development of Africa, offering opportunities for African firms to add value and participate in international trade. GVCs also play a vital role in shaping environmental practices and promoting sustainability within Africa. (Hofstetter , Mcgahan etal, 2021)

While some studies suggest a positive correlation, indicating that companies with strong sustainability practices tend to perform better financially, others have found no significant or even negative relationships. Factors such as industry sector, company size, and geographic location can influence this relationship. To address these complexities, researchers have developed various frameworks and methodologies to measure the relationship between environmental, social, and governance performance and firm performance, considering a range of financial and non-financial metrics. (Almulhim, Almubarak & Aljabr)

This study deviates from conventional understandings of global supply chains by focusing on the strategic utilization of foreign inputs that possess three key characteristics: superior quality, diverse varieties, and advanced technology. These foreign inputs outperform domestic alternatives in terms of performance, reliability, or durability, provide access to a wider range of options, and incorporate cutting-edge technology that can lead to process improvements, efficiency gains, and a stronger competitive advantage.

1.2. Statement of the problem

Productivity is generally defined as the ratio of output volume to input volume, measuring how efficiently inputs like labor and capital are utilized in an economy to produce a specific level of output. Productivity is a crucial driver of economic growth and competitiveness, making it essential statistical data for international comparisons and country performance evaluations. For instance, productivity data is used to examine the effect of product and labor market regulations on economic performance. Productivity growth is a key component in modeling economic productive capacity, enabling analysts to determine capacity utilization, assess economic position within the business cycle, and forecast economic growth. Furthermore, production capacity is used to evaluate demand and inflationary pressures. (Paul, 1994).

Supply chain performance refers to the effectiveness of a supply chain in delivering products efficiently and cost-effectively. It encompasses factors such as timely delivery, accurate fulfillment, and minimizing logistics costs while considering the value provided to the end customer. (Leończuk,2016)

An effective supply chain system is a vital aspect in production and operations management of ensuring quality distribution of goods. Over time, firms have devised new means to ensure that their supply chains meet the primary function of effective and efficient delivery of goods and the secondary function of innovating better systems, reduced unemployment, and overall growth of the (Arora, Haleem, & Farooquie, 2017) ;(Wijetunge, 2017). The proactive approach of businesses contributes to a more effective, functional, and productive distribution system. Due to the globalization of world businesses, the uncertainty of supply chain networks and the growing diversity of product varieties have compelled firms to adopt a proactive stance in ensuring an effective and efficient supply chain management system for their production activities. (Chi & Tai, 2005).

This research explores into this gap by specifically focusing on the future effect of foreign inputs on firm productivity within the manufacturing sector. The researcher proposes to investigate whether access to foreign inputs, characterized by superior quality, diverse varieties, and advanced technology, will lead to distinct productivity gains for firms.

To achieve these objectives, we employed both qualitative a quantitative approach. We will utilize firm-level data from Central Statistic Authority (CSA) to analyze the future relationship between the use of high-quality foreign inputs and various measures of firm productivity, such as sales per worker or total factor productivity. Advanced statistical techniques will be used to establish causality and control for potential confounding factors.

This research enhances our understanding of the dynamic relationship between GVCs and firm productivity, offering valuable insights specifically on the role of foreign inputs. The findings will equip firms and policymakers with knowledge to navigate the complexities of GVCs and unlock their potential for sustainable growth and competitive advantage.

1.3. Research questions.

The following are basic research questions the study answer.

- How does the quality of raw materials affect the productivity of the global supply chain in the Ethiopian manufacturing industry?
- How would a strategic supplier relationship influence the productivity of the global supply chain in the Ethiopian manufacturing industry?
- How does the level of product diversity and variety affect the productivity of the Ethiopian manufacturing sector?
- What effect will advance technology have on the efficiency of the global supply chain in the Ethiopian manufacturing industry?
- How does information sharing enhance the level of productivity in the global supply chain of the Ethiopian manufacturing industry?

1.4. Objectives of the study

1.4.1. General Objective

The general objective of the study examines the effect of Global Supply chain on firm's performance in Ethiopian manufacturing Private sector.

1.4.2. Specific Objective

- To determine the effect productivity has the global supply chain in the Ethiopian manufacturing industry
- To indicate the effect of a strategic supplier relationship, have on global supply chain's productivity in the Ethiopian manufacturing industry.
- To evaluate level of diversified and varieties of products effect in the productivity of an Ethiopian manufacturing sector
- To identify the type of effect will an advanced technology have in the efficiency GSCM of Ethiopian manufacturing industry?
- To determine how type of information sharing will enhance the level of global supply chain productivity in the Ethiopian manufacturing industry.

1.4. Significance of the study

It's important to note that the global supply chain also introduces challenges, such as the risk of disruptions, geopolitical issues, and increased complexity in managing a diverse network of suppliers.

This research aims to explore into the world of global supply chains within the manufacturing sector. Here, the focus is twofold: first, to understand how global supply chains effect productivity and the challenges manufacturers face in implementing them. Second, the research will identify the key factors that significantly affect productivity within these global supply chains. This will provide valuable insights into how manufacturing manages global supply chain linkages compared to other sectors. By gathering sufficient data on the level of these linkages and their effect on productivity, the research will not only provide valuable knowledge for the manufacturing sector but also serve as a strong foundation for future research papers.

1.5. Scope of the study

Ethiopia's manufacturing sector is vast, with data from 2021 indicating over 2400 companies. To ensure a focused study, this research targets a specific sample. While many of these companies manufacture goods, not all participate in global supply chains. Therefore, a purposive sampling approach is being used to select 15 large manufacturing firms in Addis Ababa that actively engage in global supply chains. To gather in-depth data on these companies' experiences, a multifaceted approach is being employed. Primary data collection involves questionnaires and interviews conducted directly with representatives from the chosen firms. This will allow for a nuanced understanding of their perspectives and challenges. To supplement this primary data and provide broader context, the study is incorporating secondary data from the Central Statistical Agency (CSA). This study seeks to provide a holistic overview of the present scenario for major multinational manufacturers in Addis Ababa in 2024 by utilizing a combination of primary and secondary sources.

1.6. Definition of terms

Supply chain refers to the interconnected network of organizations involved in the production and distribution of goods and services, from raw materials to the final customer. It encompasses various activities such as sourcing, procurement, production, logistics, and distribution (Christopher, 2011).

Supply chain management is the coordinated management of these activities to ensure efficient and effective flow of goods and services. It involves planning, organizing, controlling, and coordinating the various processes and stakeholders within the supply chain (Orlicky, 1975).

Central Statistical Agency (CSA) is a government agency responsible for collecting, analyzing, and disseminating statistical data in Ethiopia. It plays a crucial role in providing reliable and accurate information for policymakers, researchers, and businesses (CSA, 2023).

Global value chain is a network of interconnected firms that collaborate to produce and distribute goods and services across different countries. It involves the division of production processes into various stages, which are often located in different regions or countries (Gereffi & Korzeniewicz, 1994).

Global supply chains are essential for companies with a global presence, requiring partnerships with foreign organizations. These international supply chains are typically longer than domestic ones, and often benefit from cheaper labor, making overseas manufacturing more cost-effective than in the United States. Parent companies must ensure that the interests of all foreign partners in their supply chain, including suppliers, assemblers, distributors, and retailers, align with their own objectives. (Sadiku, Olaleye et al., 2020).

Global supply chain management (GSCM) is essentially the same as supply chain management but focuses on operations that extend beyond national borders. GSCM addresses key issues like the growth of multinational corporations, collaborations, global brands, and outsourcing. The main drivers of GSCM include lower costs for materials, products, and labor, as

well as access to goods that are not available domestically. GSCM effectively integrates globalization, technology, and the global supply chain. (Sadiku, Olaleye et al., 2020)

Manufacturing sector: The U.S. government defines manufacturing as establishments involved in the mechanical, physical, or chemical transformation of materials into new products, as well as those assembling components for non-construction purposes. However, this definition doesn't fully capture the economic value created by manufacturers and workers. The value of a manufactured good and related employment can come from various activities beyond physical transformation. Business services like research, design, marketing, logistics, and information technology, as well as software development, significantly contribute to value creation and employment in the manufacturing process. (Levinson, 2017)

1.7. Operational Definition of variables

These conceptual definitions of terms down below are meant to explain the variables in this research.

Quality: The extent to which a product or service meets or exceeds customer expectations, considering factors such as performance, features, reliability, durability, conformance, aesthetics, and perceived quality.

Strategic Supplier Relationship: A long-term partnership between a company and its suppliers characterized by trust, cooperation, and shared goals. It involves close collaboration and integration to create mutual benefits.

Product Diversity: The range of products offered by a company, considering their features, functions, and target markets. A diverse product portfolio can help reduce risk, expand into new markets, and differentiate the company from competitors.

Information Sharing: The exchange of information between individuals or organizations to improve decision-making, collaboration, and efficiency. Effective information sharing requires open communication, trust, and a shared understanding of its importance.

Advanced Technology: The use of modern tools and techniques to enhance business processes, products, and services. It can include automation, artificial intelligence, data analytics, and other innovative technologies that increase a company's competitiveness and efficiency.

Productivity: A general measure of production efficiency calculated as the ratio of output to inputs used in production. Total productivity includes all outputs and inputs valued in economic terms. It measures the overall efficiency of a production process and is the objective to be maximized.

1.8. Organization of the study

This study investigates the effect of global supply chains on manufacturing productivity and the challenges faced in this sector. Chapter one sets the stage, outlining the background, specific problems, research questions and objectives. It will also establish the significance of the study and define its scope. Chapter two dives into the existing knowledge base through a review of theoretical frameworks, relevant empirical studies, and the development of a conceptual framework based on these findings. Chapter three details the research methodology, explaining the chosen design, population and sample selection, data collection methods, and the data analysis techniques employed. Chapter four presents the data gathered through tables, charts, and graphs, followed by analysis using chosen statistical methods. Here, this study will show how these factors influence productivity and the challenges manufacturers face. Finally, chapter five will provide a summary of key findings, conclusions drawn from the research, and recommendations for both practitioners and future research endeavors based on the insights gained.

CHAPTER TWO

2. Literature Review

This review explores the existing literature on the effect of supply chain depth, specifically through high-quality raw material sourcing, on the productivity of Ethiopian manufacturing firms within the context of global supply chains. It examines the current state of knowledge, identifies research gaps, and suggests potential areas for further investigation.

2.1. Theoretical Literature Review

2.1.1. Supply Chain

The concept of "supply chain" is well established in the literature and is generally referred to as the alignment of firms that bring products or services to market (Lambert, Stock and Ellram, 1998). The supply chain encompasses manufacturers, suppliers, transporters, warehouses, wholesalers, retailers, other intermediaries, and even customers. Any product sold on the consumer goods market goes through a series of business-to-business transactions as it progresses from raw materials to finished products. (Felea1 and Irina Albăstroiu, 2013).

As firms strive for greater global competitiveness, supply chains face new challenges, including the need to reduce costs, improve quality, enhance customer service, and ensure sustainability. Globalization, increased consumer responsiveness, channel integration, and advancements in information and communication technology all contribute to the evolving supply chain environment. (Min & Zhou, 2002). Figure1. Indicates the supply chain process.

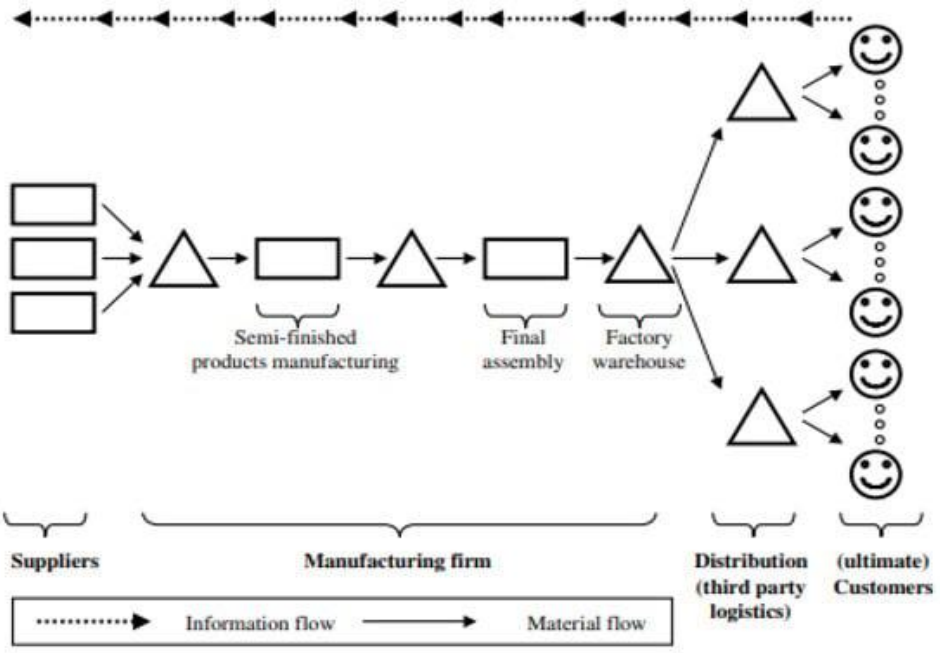

Figure 1. Supply Chain Process (Stadler,2008)

2.1.2. Supply Chain Management (SCM)

Supply chain management (SCM) involves coordinating the various tasks required to deliver a finished product or service. This process starts with procuring raw materials and ends with distributing the final product or service to the consumer. Additionally, supply chains manage the recycling, remanufacturing, or disposal of products at the end of their useful life. The supply chain includes all entities and operations that are involved in or can influence this process, such as suppliers, contractors, logistics companies, and government agencies like customs authorities. (World Bank, 2023).

Understanding and effectively managing the supply chain is essential for borrowers who purchase goods from manufacturers that rely on input materials from various suppliers. Manufacturers may depend on multiple suppliers to produce their final output. Supply chain management (SCM) is not just for manufacturing; it's also crucial for borrowers awarding contracts to infrastructure contractors. Understanding the entire chain of events ensures that supply chain operations are efficient, effective, and safe. This guidance applies not only to manufacturing but also to infrastructure and construction sectors, referring to entities providing necessary inputs as "Suppliers/Contractors." (World Bank, 2023)

Given the increasing globalization and complexity of supply chains, disruptions or failures at any point can significantly jeopardize a borrower's project. These breakdowns can also harm the borrower's reputation. Supply chain disruptions demonstrate that even a single organization's delays or poor quality can affect the entire project. If a borrower's project involves environmental, social risks, or requirement violations, even if they occur at a supplier or contractor not directly contracted by the borrower, it can still damage the reputation of both the borrower and the bank. Therefore, borrowers must not only focus on the final product or service but also consider the processes involved in its production and delivery. (World Bank, 2023)

2.1.3. Supply Chain Management and Globalization

The term "supply chain" has become widely recognized primarily due to the globalization of manufacturing since the mid-1990s, especially the growth of manufacturing in China. Imports from China to the U.S. surged from approximately $45 billion annually in 1995 to over $280 billion in 2006. This globalization has necessitated logistics strategies to manage complex networks involving multiple entities across various countries with diverse control. (Vidrova, 2020)

The increasing reliance on suppliers has elevated the significance of supply chain management (SCM) to unprecedented levels. Various additional factors and obstacles have played a significant role in this development, including:

- **Globalization:** has become a common practice for organizations as they seek to expand their supply base globally. This is primarily due to the potential benefits of overseas suppliers and contractors, such as cost-effectiveness, improved quality, and the availability of unique input services. However, it is important to acknowledge that relying on overseas suppliers and contractors also introduces certain risks. The physical distance between the organization and the supplier/contractor can make it more difficult to control and monitor the supply chain effectively. To mitigate these risks, borrowers should prioritize the identification of critical inputs and thoroughly examine the supplier/contractor's supply chain. This examination should include an assessment of the geographic locations of higher-tier suppliers/subcontractors and an evaluation of any potential risks associated with different legal systems, challenges related to border crossings, and the reliability of infrastructure and transportation. Information technology (IT)

plays a crucial role in managing and facilitating globalization, as it enables organizations to gather and analyze data that can aid in the effective management of global supply chains.

2.1.4. Global supply chain

Over the past three decades, the increasing liberalization of international trade, advancements in production technology and information services, and improvements in transportation logistics and services have encouraged firms to fragment and geographically disperse their production processes. Global supply or production chains (GSCs), where cost-reduction strategies lead to goods often being produced with intermediate inputs from multiple countries, are now prevalent in many industries and expanding into a growing number of developing countries.

From an economic perspective, the emergence of GSCs is linked to the concept of comparative advantage. By dispersing production processes (such as R&D, concept, design, manufacturing, packaging, marketing, distribution, and retailing) across different countries, transnational corporations (TNCs) can leverage the best available human and physical resources in each location. This approach aims to maintain competitiveness by increasing productivity and reducing costs.

For developing countries and their enterprises, the potential benefits of joining GSCs are significant. Integration into GSCs has become a key pillar of their export-led development policies. GSCs enable producers to acquire modern management practices, quality standards, and technology, enhancing their competitiveness. Producers also gain insights into demand patterns and consumer preferences in high-income markets. Participation in GSCs can create economy-wide benefits for developing countries, including increased employment, improved technology and skills, upgraded productive capacity, and diversified exports with higher value-added. These potential gains explain the strong interest of policymakers in many developing countries in connecting their private sectors to GSCs.

The increasing globalization of supply chains has led to confusion among many managers about its true meaning. Often, the term is used loosely without much practical value for those managing value creation and cost reduction processes in the movement of goods. While globalization implies cross-border movement of goods and the emergence of global competitors and opportunities, managers often question the differences between a global market and a single market, as many similar conditions exist in both. However, the complexities of cross-border operations are significantly greater than within a single country, and the ability to compete globally often relies on understanding the nuances that arise only in cross-border trade, which is the focus of GSCM.

Global supply chain management involves overseeing a supply chain that spans multiple countries. Implementing a global supply chain requires strategic planning to ensure its integration. The goal of a global supply chain is to improve customer service while reducing costs. Adopting a global supply chain offers numerous opportunities for cost savings, including lower production, shipping, and communication costs, reduced tariffs, and outsourcing non-core activities. This can lead to significant cost-saving efficiencies and open up new markets for businesses.

2.2. Empirical Review

2.2.1. Productivity and Supply Chain

Before exploring strategies and tools to enhance supply chain productivity, it's important to consider motivation. Employees' performance is influenced by the encouragement they receive from their company. To improve productivity, companies should guide their employees toward desired behaviors and results, and measure and reward them accordingly.

Motivation and productivity are closely linked. In many cases, supply chain productivity can be improved by focusing on business activities that align more closely with supply chain capabilities. By remembering the connection between productivity and profitability, companies can retain and expand activities that generate good profits while modifying, replacing, or

discarding those with poor profitability or losses. This might involve reducing costs, but it could also mean increasing costs to achieve significantly higher revenue and profit.

However, companies often lack compensation or recognition systems for such changes. There might only be a bonus system for total dollars saved, without considering value created. Salespeople's compensation may be based solely on total revenue or, less commonly, total profit. If sales orders drive supply chains based on this, poor productivity may result. In fact, a significant cause of poor productivity in supply chains is rooted in these misaligned sales compensation methods.

If an organization desires its supply chain managers to assume individual responsibility for supply chain productivity, it must implement appropriate motivators for these managers and for those, such as the sales force, who indirectly influence supply chain productivity.

2.2.2. Steps for Boosting Productivity in Supply Chains

Individual supply chain manager accountability is crucial to improving productivity at a micro level, so that the overall macro result is boosted too. Each individual concerned should:

1. **Receive any necessary training.** This includes training in the importance of productivity improvements, the productivity details to be monitored, the scope of the productivity improvements sought (see below), change management techniques to be used, and how incentives will be applied.
2. **Collect productivity data.** For different activities, including the levels of inventory kept per individual product, order and customer, together with the revenue and net profit generated by each.
3. **Decide where to focus.** Recommend which activities to keep, change, replace, or eliminate.
4. **Determine optimal operating methods.** Also, define adequate productivity performance measures for different assets and resources used.

5. **Coordinate with counterparts.** These are the people in other departments, whose actions affect supply chain productivity. In particular, agree with the sales department about the accounts to be addressed, and in each case the type of sales process and relationship, the order cycle and product inventory to be held.

6. **Monitor and ensure good productivity performance.**

Each of steps 1 to 4 may require a month or more to be accomplished, meaning several months for putting a productivity improvement program into action. Steps 5 and 6 are continual processes. Step 5 in particular relies on supply chain managers proactively seeking out their counterparts. Sitting and hoping that others see the light will not work, nor will trying to hand off the responsibility for boosting supply chain productivity.

2.2.3. Productivity and Global Supply Chain Management

Studies suggest deeper supply chain integration can enhance productivity through access to advanced technologies, specialized inputs, and knowledge transfer (Amiti & Konings, 2007; Görg & Seric, 2016).

Many experts have already commented on theme of globalization and supply chains. In the following paragraphs we bring some of the answers.

Greg Shnerer, a supply chain and logistics expert from Toronto, emphasizes that to comprehend the role of globalization in supply chains, it is essential to first understand what a supply chain is and how it operates. A crucial element of supply chain logistics is global transportation, which is indispensable in our interconnected world. (Stank, Burnette and Dittmann, 2014)

Greg defines supply chains as the channels connecting suppliers and receivers. He describes supply chains as the "behind-the-scenes work" involved in bringing a product from its inception to a consumer's hands. To reach a wider range of markets, these products must cross international borders. Without supply chains, the products suppliers produce wouldn't efficiently reach global markets, making them crucial for markets worldwide. (Stank, Burnette and Dittmann, 2014)

Ani Mithra, a supply chain analyst, believes that globalization and supply chain management (SCM) are interdependent. They cannot exist independently. Globalization provides access to new customers and procurement sources. However, global reach necessitates understanding different markets, including potential partners, risks, and regulations.(Mentzer, Myers and Stank. 2006)

A World Bank study (2019) found that a 1% increase in GVC participation can boost per capita income growth by over 1%, twice as much as standard trade. Firms involved in global value chains have higher productivity than other firms and those involved in standard trade (World Bank, 2019). The study also concluded that countries like Bangladesh, Cambodia, and Vietnam, which have become key players in GVCs through importing-to-exporting basic manufacturing products like garments, have experienced substantial economic growth.

Global supply chains contribute to higher productivity by attracting people away from less productive activities toward more productive ones. Ethiopia is a prime example: the establishment of numerous industrial parks for GVC manufacturing has drawn a large number of young people out of agriculture and into manufacturing jobs for major international brands. This has also led to significant employment growth.

2.2.4. DIMENSIONS OF GLOBAL SUPPLY CHAIN

Quality

SCM has emerged and gained significance since the 1980s, recognizing the interdependencies between levels in channels from suppliers or manufacturers to consumers. Mentzer et al. (2001) view SCM as a management philosophy focused on improving long-term performance for individual companies and the entire supply chain. Svenson (2002) similarly defines SCM as a business philosophy that addresses the bidirectional dependencies of activities, actors, and resources at operational, tactical, and strategic levels, from origin to consumption within and between channels. A review of the literature reveals various definitions of SCM, encompassing

different types of dependencies within, between, and across companies in channels from manufacturers/suppliers to customers/consumers.

Strategic Supplier Relationship

Strategic supplier relationships are crucial for organizational success. Collaborating with strategic suppliers fosters competitive advantage through information sharing, joint decision-making, and shared benefits, leading to greater customer satisfaction and profitability. Modern company-supplier relationships have evolved from adversarial transactional exchanges to long-term, collaborative partnerships. These relationships often involve complex interactions, including knowledge and information exchange, mutual adaptation, and long-term investments, requiring a strategic approach. Devolved government systems necessitate strategic supplier relationship management, particularly when dealing with strategic suppliers. Studies have highlighted the importance of strategic supplier relationships in supporting organizational competitive advantage and differentiation in the eyes of customers. Sharing information with suppliers has been shown to increase profitability and customer satisfaction for firms (Tunisini & Sebastiani, 2015; Mumelo et al., 2017).

Diversified and varieties of products.

The diversification strategy to effect an advantage in a competitive market, (Vargas et al, 2014) consists of three points:

1) Enter the market with new products,
2) Extend in the same market with new products, and
3) Enter new markets based on a different area of technology.

By the theory of economics and marketing from Michel Porter (1981). Based on a strategy, he proposed three strategies to differentiate his offerings from competitors. These three main groups of strategies are:

1) Cost leadership strategy,

2) Differentiation strategy and,
3) Focus strategy.

Advanced technology adaption

Organizations that foster a culture of openness and flexibility are better equipped to navigate technological advancements. Their employees are more likely to embrace change and adapt to new processes and tools. This adaptability enables companies to adopt innovation and remain competitive in a rapidly changing business environment, especially if they empower and motivate their employees (Ezzamel et al., 1996). Kitchell (1995) found that organizations with flexible, open cultures and a long-term orientation were more likely to adopt advanced manufacturing technology.

The literature suggests a direct correlation between firm performance and manufacturing strategy. Several authors have acknowledged the importance of this relationship and analyzed the connection between the two. A manufacturing organization that adopts a flexible approach capable of handling changes in product mix and volume while maintaining high quality and low costs will be more responsive to market demands and achieve higher performance. (Darbanhosseiniamirkhiz and Ismail, 2012)

Information Sharing

A firm's supply chain network has become a crucial agenda item for top-level management, accelerating decision-making. Every supply chain practice seeks to minimize costs while meeting customer service standards. In an ideal supply chain system, suppliers and customers are integrated into a unified business process that spans the entire chain from the source to the consumer (Nazifa & Ramachandran, 2019). This implies that each firm relies on others to deliver its goods or services to customers (Seggie et al., 2006). It's clear that firms benefit from information sharing practices (Baba, Wang, et al, 2021).

Cost

Trading on a global or international scale is significantly more complex than domestically. Longer transit times lead to time costs, and there are operational costs associated with conducting business in different regions. These include differences in labor productivity, access to labor skills, transportation and infrastructure, and technology availability. Additionally, there are significant risks such as political instability and currency fluctuations (SANDERS, 2012).

2.2.5. Ethiopian Manufacturing Context:

- **Emerging Economy:** Ethiopia's manufacturing sector is growing but faces challenges like limited infrastructure and access to high-quality inputs (World Bank, 2020).
- **Limited Studies:** Research specifically examining the effect of high-quality raw material sourcing on Ethiopian manufacturing productivity is scarce.

In recent years, domestic sourcing, a strategy where companies purchase inputs locally, has been gaining popularity due to the cost savings it offers across the supply chain, especially as costs rise in traditionally low-cost regions. However, Ethiopia lags behind in this area, despite investments from multinational and local companies. While the lack of local raw materials forces companies to rely on imports, the scarcity of foreign currency adds further pressure to their survival. Ashenafi E., 2018). Unraveling Local Sourcing Problems. Ethiopian Business Review, (Volume 65), Page (14).

The growing importance of trade in intermediate inputs and vertically integrated multinational firms in international trade necessitates a reevaluation of industrial and trade policies in developing countries. These policies must ensure that developing countries participate in global and regional value chains and maximize their potential benefits. The increasing role of GVCs in international trade and investment has shifted the focus of comparative advantage from final goods production to specific parts of the production process. This is advantageous for developing countries as it facilitates industrialization and boosts their exports by enabling them to find a niche in global or regional value chains. Even without a comparative advantage or the need to build the entire supply chain domestically, developing countries and their firms can integrate into

global trade and industrialization (Baldwin, 2013; Dollar, 2016; Dollar & Kidder, 2017; Engel & Taglioni, 2017

Ethiopia faces significant challenges in promoting exports. Despite government strategies to support exports through favorable exchange rates and efficient transportation and logistics, these issues remain major obstacles. The industrial parks project, aimed at boosting exports, has not yet yielded substantial results. The country's weak industrial base has contributed to the rapid growth of imports and a widening trade balance. The manufacturing sector struggles to generate the resources needed to finance imports or produce import substitutes (G. Molla, 2021).

To increase Ethiopia's future participation in GVCs, it's crucial to understand the challenges hindering its integration and the factors contributing to other countries' success. Before discussing China's successful involvement in GVCs, we'll outline the primary obstacles hindering Ethiopia's participation. As previously mentioned, high trade costs due to high import taxes, inefficient logistics, bureaucratic border clearance, macroeconomic challenges, institutional qualities, and overall business environment issues make it difficult for Ethiopia to actively engage in GVCs (G. Molla, 2021).

2.3. Research Gap:

This research seeks to address a knowledge gap in how productivity in manufacturing is influenced. While existing research examines factors like raw material quality, information sharing, supplier relationships, and product variety, there is a lack of understanding about how these factors interact and collectively effect productivity. This study will investigate how these elements work together, rather than individually, to influence manufacturing productivity. By exploring questions such as how to optimize these factors for maximum productivity gains and whether moderating effects exist between factors, the research will provide a more comprehensive understanding of how to achieve optimal productivity in the manufacturing sector.

2.4. Conceptual framework

A conceptual framework helps researchers organize their worldview on the phenomenon under investigation (Grant & Osanloo, 2014). It's a clear way for researchers to present their proposed solutions to the defined problem (Liehr & Smith, 1999; Akintoye, 2015). In this research, the independent variables are derived from the dimensions of the global supply chain, such as information flow, advanced technology, and raw material quality. The dependent variable, the effect caused by these factors, is the overall supply chain process and coordination outcomes, as depicted in the figure below.

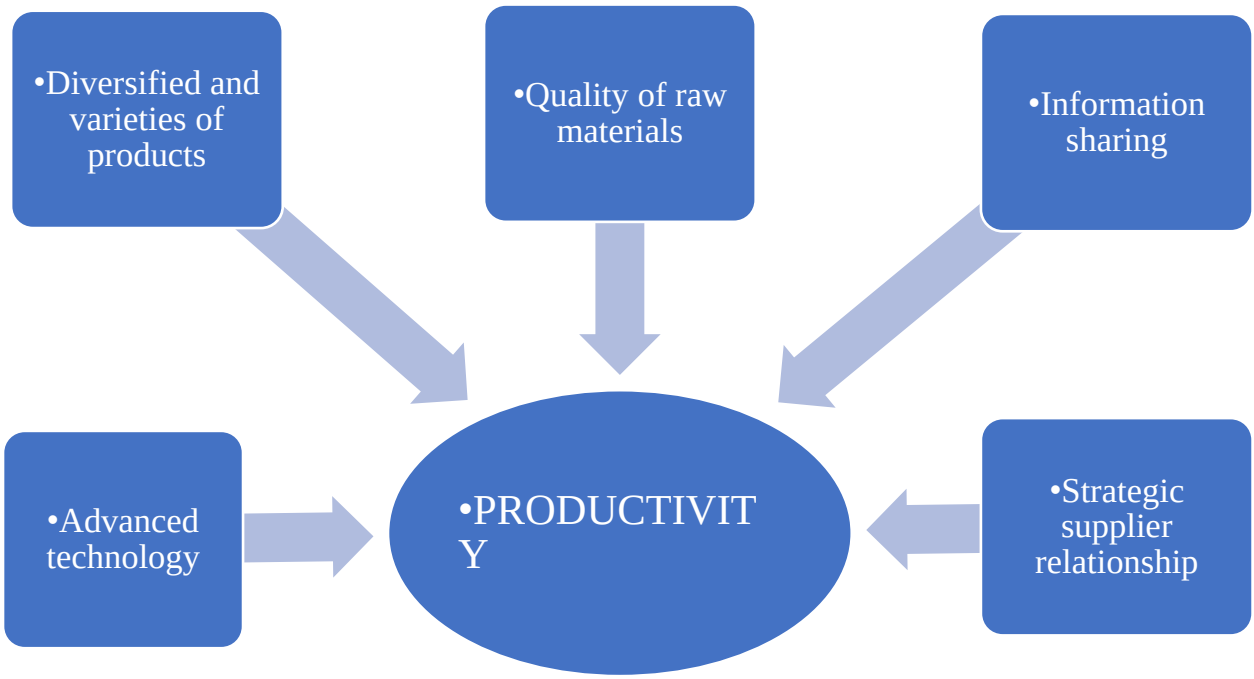

Figure 2: Factors affecting the productivity of global supply.
Source: Constructed by the student

CHAPTER THREE

3. Research Methodology

3.1. Introduction

This chapter describes the research approach that is used to carry out the investigation. It goes over the research design, demographic, data source, sampling, data collecting, data analysis methodologies and some ethical issues.

3.2. Research Approach and Methodology

3.2.1. Research Approach

Research can be categorized into qualitative, quantitative approaches considering the type of data sought. Also, a mixture of these methods is known as mixed-method study that covers advantages of both methods. (Taherdoost,2022)

This approach is pragmatic, focusing on consequences, problems, and pluralism. Researchers collect data simultaneously or sequentially to gain a comprehensive understanding of research problems. Data collection includes both numeric information (e.g., from instruments) and text information (e.g., from interviews), resulting in a final database that represents both quantitative and qualitative data (Bhawna1 & Gobind, 2015). This study will use a mixed approach.

The general objective of the study is to determine the effect of Global Supply chain on firm's productivity of manufacturing sector in Ethiopia will be purely quantitative obtained from close-ended questionnaire.

3.2.2. Research Design

Research design serves as the framework for research, unifying its various elements. It's essentially a plan for the proposed research (Akhtar, 2016). This study employs an explanatory and descriptive research design. The explanatory method was used to examine the relationship

between independent and dependent variables, while the descriptive technique was used to collect data from respondents through questionnaires and interviews. Therefore, both explanatory and descriptive research designs were utilized (Sharma, 2019). The study is conducted within a specific timeframe.

3.2.3. Research Population and Sampling

Population of the Study

A population refers to the entire group of individuals or objects that share a specific characteristic as defined by the researcher's sampling criteria. (Stewart,2022). The population of this study is the total number of manufacturing companies in Ethiopia. And according to the data collected from CSA there are over 2414 manufacturing companies in Ethiopia. The study sampled that for this research purpose.

Sample Design

Purposive sampling is a method used to select respondents who are most likely to provide relevant and valuable information (Kelly, 2010). It's a way to identify and choose cases that effectively utilize limited research resources (Palinkas et al., 2015).

The researcher employed a purposive sampling technique to select companies based on their involvement in the global supply chain. From an initial population of 2,414 manufacturing companies, the researcher identified 1,068 companies that are importers. Out of these importers, 15 large companies from different sectors were purposefully chosen for the survey. This selection was made to ensure the companies surveyed are highly relevant to the study's focus on global supply chain practices, leveraging the insights and influence of larger companies to gather meaningful and effectful data.

Sample Size Determination

The student determined the sample size for this research by focusing on the primary objective of analyzing how the global supply chain effects the productivity of manufacturing firms in Ethiopia. The firms within the population were then categorized according to their level of involvement in global supply chain linkages.

3.3. Data Collection

3.3.1. Data Source

Primary data

In two parts, this survey investigates how company traits affect productivity. The first section simply collects basic details about the participating firms. The second section gets to the core of the research by using a both an explanatory and Likert scale questionnaires. These questions explore the five independent variables of this study and how they relate to a company's productivity, which is the variable the research is trying to explain (the dependent variable). The Likert scale allows participants to rate their level of agreement with statements connected to these goals.

Secondary Data

The study use data from annual survey by Central Statistics Authority (CSA). The CSA survey has detailed information on sales, sector types, number of employees, owners gender and educational status, initial and current paid up capital, gross value of production, industrial and non-industrial costs, operating surplus, value added, value of fixed assets, investment, quantity of major manufactured articles and raw materials by industrial group, number of persons engaged by literacy status, highest grade completed and type and duration of training for the country and selected items are presented.

3.3.2. Data Collection Methods & Tools

Data Collection Methods

Surveys can be conducted in various ways. One common survey method is the use of a questionnaire (Cherrie et al., 2021). Even though getting primary data is getting more expensive and time-consuming, primary data is the most important when acquired using structured surveys. As a result, the major research method employed to collect data for this study was a questionnaire survey.

In this study, quantitative data will be collected in questionnaire-based survey assessment using closed-ended questions. The data collection process will be done online. The questionnaire consisted of two main parts. The Five-Point Liker scale having the ratings of "strongly disagree" (1) and "strongly agree" (5) will be used.

Data Collection Tools

Questionnaire

Questionnaires are a primary tool for collecting quantitative data in a standardized way, ensuring internal consistency and coherence for analysis. Questionnaires should have a clear purpose aligned with research objectives and clearly outline how the findings will be used (Roopa and Satya, 2012). Close-ended questionnaires are suitable for collecting quantitative data.

3.3.3. Data Analysis Method

Following the collection of all data via questionnaires, it will be refined and organized. The data collected through a questionnaire will be conducted. For the broad questions, descriptive analysis will be utilized to give the results in a summary. The percentage, mean, and standard deviation will be utilized to examine each respondent's response. To assess the effect of global supply chain on firm’s productivity: The case of Ethiopian manufacturing sector inferential analysis such as correlation and regression will be employed. Before the regression, analysis assumptions of classical linear regression will be checked.

3.4. Reliability and Validity

Cronbach's alpha is a commonly used measure of reliability in social and organizational sciences. While it's standard to report the sample value of Cronbach's alpha, a confidence interval for the population reliability value should also be included. The traditional confidence interval for the population value of Cronbach's alpha makes an overly restrictive assumption about equal variances and covariances among multiple measurements (Bonett, 2014).

$\alpha = (N \cdot \bar{c}) / (N - 1 \cdot \bar{v})$

where:

- α (alpha) is the Cronbach's Alpha coefficient (ranging from 0 to 1).
- N is the number of items in your measure.
- $\bar{c}$ (c bar) represents the average covariance between all possible pairs of items.
- $\bar{v}$ (v bar) represents the average variance of all the items.

The reliability of the research was presented in the following table.

Table 1: Reliability Statistics

Quality	
Cronbach’s Alpha	No of items
.72	5
Strategic Supplier Relationships	
Cronbach’s Alpha	No of items
.93	6
Diversified and varieties of products	
Cronbach’s Alpha	No of items
.82	5
Advanced technology	
Cronbach’s Alpha	No of items
.73	4
Information sharing	
Cronbach’s Alpha	No of items
.902	4

Source: Own SPSS data

Analysts often use 0.7 as a benchmark value for Cronbach's alpha. If Cronbach's alpha reaches or exceeds this value, it suggests that the items are sufficiently consistent to indicate a reliable measure. (Frost, 2024).

The reliability test results for the independent variables in this study demonstrate strong internal consistency, indicating that the items within each construct are measuring a common underlying factor. Specifically, the Cronbach's Alpha values for Quality, Strategic Supplier Relationships, Diversified and Varieties of Products, Advanced Technology, and Information Sharing range from .72 to .93. These values exceed the commonly accepted minimum threshold of .70, suggesting that the items are reliable indicators of their respective constructs. This reliability is crucial for the validity of subsequent analyses, such as correlational studies or regression analysis, which aim to examine the relationship between these independent variables and the dependent variable, Productivity. The high internal consistency of these variables provides a solid foundation for further investigations into their potential influence on organizational performance.

3.5. Ethical Consideration

Confidentiality - respondents will be guaranteed that their responses would not be misconstrued and that they would remain confidential. The information they supply will be kept private and is solely used for academic purposes. To ensure the ethical conduct of my research, I will obtain informed consent from participants, protect their privacy and data security, minimize potential harm, disclose any conflicts of interest, maintain research integrity, and consider cultural sensitivity and the needs of vulnerable populations. By addressing these ethical principles, I can contribute to responsible and trustworthy research.

CHAPTER FOUR

4. DATA PRESENTATION, RESULTS, ANALYSIS, AND INTERPRETATION

Introduction

The study's findings were presented in this section along with data analysis, interpretation, and discussion. The process of data analysis and interpretation applied to information gleaned from primary data sources by handing out printed questionnaires to 15 large importer manufacturing companies in Ethiopia. The researcher compiled the gathered data into a condensed collection of examined data by organizing, interpreting, and analyzing it using regression.

4.1. Response Rate

The researcher planned to distribute 120 surveys to supply managers, operational managers, import and export officers and general managers at large manufacturing companies in Ethiopia that function as importers. Out of these, 100 surveys were returned, providing the necessary data for the thesis. This response rate represents 83.33% of the targeted sample size, indicating a high level of participation and ensuring that the collected information is robust enough to support the research objectives. The successful return of these questionnaires underscores the relevance and engagement of the selected respondents, contributing valuable insights into the study's examination of global supply chain effects on firm productivity.

4.2. Demographic Characteristics of Study Participants

Table 2: Demographic Characteristics of Study Participants

Gender					
		Frequency	Percent	Valid Percent	Cumulative Percent
	F	32	32.0	32.0	32.0
	M	68	68.0	68.0	100.0
	Total	100	100.0	100.0	
Age					
		Frequency	Percent	Valid Percent	Cumulative Percent
	20-30	55	55.0	55.0	55.0
	31-40	30	30.0	30.0	85.0

	41-ABOVE	15	15.0	15.0	100.0
	Total	100	100.0	100.0	

Educational Background

		Frequency	Percent	Valid Percent	Cumulative Percent
	BA/BSC	57	57.0	57.0	57.0
	Diploma	5	5.0	5.0	62.0
	MA	38	38.0	38.0	100.0
	Total	100	100.0	100.0	

Years of Experience

		Frequency	Percent	Valid Percent	Cumulative Percent
	1-5	55	55.0	55.0	55.0
	10-15	15	15.0	15.0	70.0
	5-10	30	30.0	30.0	100.0
	Total	100	100.0	100.0	

Type of Sector

	Frequency	Percent	Valid Percent	Cumulative Percent
Coffee	27	27.0	27.0	27.0
Food &Beverage	19	19.0	19.0	46.0
Furniture	18	18.0	18.0	64.0
Leather	10	10.0	10.0	74.0
Oil seed	9	9.0	9.0	83.0
Textile	17	17.0	17.0	100.0
Total	100	100.0	100.0	

Gender

The demographic data reveals a significant gender imbalance in the sample, with a notably higher representation of males (68%) compared to females (32%).

Age

The age distribution shows a concentration in the younger demographic, with 55% of respondents aged between 20 and 30. This suggests that the study primarily focuses on early-career individuals or recent graduates. The smaller proportions of respondents in the older age groups (31-40 and 41+) indicate a limited representation of more experienced professionals.

Educational Background

The educational background analysis indicates a strong emphasis on academic qualifications, with most respondents (57%) holding bachelor's degrees (BA/BSC). The presence of a significant number of master's degree holders (38%) suggests a relatively high level of educational attainment among the participants. However, the small proportion of respondents with Diplomas might suggest there is less representative of individuals with lower levels of formal education.

Years of Experience

The years of experience data reveals 55% of respondents having only 1-5 years of experience. The smaller proportions of respondents with 5-10 and 10-15 years of experience indicate a limited representation of mid-career and senior professionals.

Type of Sector

The collected data reveals a diverse range of sectors, each contributing to a varying degree. The Food & Beverage sector accounts for 19% of the total observations, followed closely by Furniture at 18%. Leather and Oil Seed sectors each represent 10% and 9%, respectively. Textile, while not as prominent, still constitutes 17% of the overall data. However, the coffee sector stands out, dominating the landscape with a significant 27% collected data.

4.3. Descriptive statistics of the Study Variables

Raw Materials		SD	D	N	A	SA

The respondents were asked to in regarding to the independent and dependent variables of the study. Using the scale: 1= Strongly Disagree, 2= Disagree 3 = Neutral, 4 = Agree, 5 = Strongly Agree.

There are 5 independent variables in this study **Quality of raw materials, s Strategic Supplier Relationships, Diversified and varieties of products, Advanced Technology Adaption Information Sharing** and one dependent variable which is **Productivity.**

A. RESULTS OF FINDINGS

Table 3: Quality of raw materials

		1	**2**	**3**	**4**	**5**
Strategic Supplier relationship		**SD**	**D**	**N**	**A**	**SA**
	%	**1**	**2**	**3**	**4**	**5**
My firm imports raw material globally.	**n**	0	0	0	0	100
	%	0%	0%	0%	0%	100%
I describe my relationship with my key import suppliers as strategic /long-term partnership.	**n**	0	14	9	52	25
	%	0%	14%	9%	52%	25%
The global supply chain has made it more difficult for my firm to maintain consistent on quality of raw materials.	**n**	0	0	12	43	45
	%	0%	0%	12%	43%	45%
I hold joint planning meetings or discussions with Profit have arisen for obtaining raw materials globally for my firm.	**n**	7	7	18	41	27
	%	7%	7%	18%	41%	27%
The global supply chain has improved the overall efficiency of my firm's raw material procurement process.	**n**	0	0	0	50	50
	%	0%	0%	0%	50%	50%
The global supply chain has improved the quality of output products.	**n**	0	1	5	17	27
	%	0%	1%	5%	17%	27%

All respondents confirmed engaging in global raw material sourcing. A significant majority (75%) believe that the global supply chain has either improved or significantly improved procurement efficiency. However, maintaining consistent product quality is a challenge, with 41% indicating increased difficulty. Notably, 68% of respondents reported increased profits due to global sourcing. While 42% believe global supply chains have improved product quality, a considerable portion (22%) remain neutral or disagree with this notion. These findings highlight the dual nature of globalization in the supply chain: offering efficiency gains and potential profitability while posing challenges in quality management.

Table 3: Strategic Supplier relationship

my key import suppliers to discuss production schedules and potential issues frequently.	**%**	0%	0%	12%	43%	45%
I involve my key import suppliers in my product development process (e.g., providing feedback on material suitability or co-developing new products).	**n**	41	26	16	16	1
	%	41%	26%	16%	16%	1%
My company has increased the level of diversification in its product offerings for import/export.	**n**	9	12	2	35	9
My relationship with my key import suppliers effected my ability to respond to fluctuations in demand for my products.	**n**	0	5	42	45	8
	%	9%	12%	2%	35%	9%
The overall complexity of my production process due	**%**	0%	5%	42%	45%	8%
	n	8	0	2	30	54
I am satisfied with the overall reliability of my key import suppliers in terms of on-time deliveries and quality consistency.	**n**	40	41	17	2	0
	%	40%	41%	17%	2%	0%
The relationship I have with my key suppliers has affected the productivity of my firm.	**n**	0	0	2	50	48
	%	0%	0%	2%	50%	48%

Diversified and Varieties of Products | **SD** | **D** | **N** | **A** | **SA**

Survey results highlight a strong emphasis on strategic supplier relationships, with 59% of respondents describing their key import supplier ties as strategic or long-term partnerships. Regular collaboration is evident, as 43% engage in frequent joint planning meetings. However, only 41% involve suppliers actively in product development. Despite this, these relationships positively effect business performance, contributing to improved demand responsiveness (45%) and overall firm productivity (50%).

Table 4: Diversified and Varieties of Products

to the level of product diversification is high.	%	8%	0%	2%	30%	54%
Advanced Technology Adaption	**n**	**SD**	**D**	**N**	**A**	**SA**
		1	**2**	**3**	**4**	**5**
The adoption of advanced technology has increased the average production time per unit for my imported/exported products.	%	0%	0%	0%	60%	40%
Pre-implementation of advanced technology has been integrated into my existing production processes.	n	8	43	31	15	3
	%	8%	43%	31%	15%	3%
Product diversification effected my overall capacity utilization in my manufacturing operations.	n	0	6	24	53	17
	%	0%	6%	24%	53%	17%
The practice of global supply chain has exposed me to an adoption of advanced technology.	n	0	5	12	44	39
	%	0%	5%	12%	44%	39%
Product diversification in the global supply chain increased the productivity of my firm.	n	0	20	24	40	16
	%	0%	20%	24%	40%	16%
Since implementing advanced technologies at my	n	35	32	11	6	16
	%	0%	20%	24%	40%	16%

Survey results indicate that while increasing product diversification can lead to expanded market reach (52.2%), it also introduces complexities. Most respondents reported heightened production complexity (57.4%) and extended production times (60%) due to diversification. Despite these challenges, it positively effected capacity utilization (53%) and firm productivity (40%). These findings suggest that while product diversification can be beneficial, careful consideration of the associated challenges is crucial for overall success.

Table 5: Advanced Technology Adaption

firm, my overall manufacturing productivity has increased.	**%**	35%	32%	11%	6%	16%
Information Sharing		**SD**	**D**	**N**	**A**	**SA**
There are observed changes in productivity of my company since the implementation of advanced technology.	**n**	45	33	6	3	13
		1	**2**	**3**	**4**	**5**
	%	45%	33%	6%	3%	13%
I frequently share basic information with my key	**n**	0	0	0	51	49

Close to half (43%) of respondents indicated that advanced technology has been integrated into their existing production processes, while only 8% disagreed. Exposure to global supply chains appears to be a significant driver of advanced technology adoption, with nearly half (44%) of respondents reporting this influence. While there were mixed responses regarding observed changes in productivity since implementing advanced technologies (45% disagreeing or strongly disagreeing), a significant portion (35%) did report an increase in overall manufacturing productivity. These findings suggest that advanced technology adoption is on the rise within the manufacturing sector, and that this trend is likely driven by participation in global supply chains.

Table 6: Information Sharing

import suppliers.	%	0%	0%	0%	51%	49%
I have a secure and standardized platform for sharing information with my import suppliers.	n	0	0	0	47	53
	%	0%	0%	0%	47%	53%
Frequent information sharing with my import suppliers effected the efficiency of my global supply chain.	n	0	0	0	0	100
	%	0%	0%	0%	0%	100%
The type of information I share with my suppliers have a huge effect on my firm's productivity.	n	0	0	52	37	11
	%	0%	0%	52%	37%	11%
Information sharing with my suppliers has kept me from unexpected disruptions in the manufacturing sector.	n	0	19	33	48	0
	%	0%	19%	33%	48%	0%

Productivity		SD	D	N	A	SA
		1	2	3	4	5
Practicing global supply chain has positively effected my manufacturing productivity.	n	0	0	0	0	100
	%	0%	0%	0%	0%	100%

Survey results indicate frequent information sharing (98%) between companies and their key import suppliers, positively effecting supply chain efficiency (100%) and firm productivity (52%). While basic information exchange is prevalent, secure platforms are less common (53%). Respondents emphasized the importance of information quality, as 52% noted its significant influence on productivity. Additionally, information sharing demonstrated its role in enhancing business resilience by mitigating unexpected supply chain disruptions (48%).

Table 7: Productivity

Timely delivery of materials from global suppliers positively effects my company's productivity.	**n**	0	0	0	16	84
	%	0%	0%	0%	16%	84%
My company's global supply chain practices ensure consistent product quality.	**n**	0	0	0	56	44
	%	0%	0%	0%	56%	44%
I believe my company's productivity will continue to improve as we refine our global supply chain practices.	**n**	0	0	0	29	71
	%	0%	0%	0%	29%	71%
There is potential for further productivity gains through innovation and optimization of our global supply chain.	**n**	0	0	0	0	100
	%	0%	0%	0%	0%	100%

The survey results on productivity reveal a positive effect of global supply chain practices. All respondents (100%) agreed that practicing global supply chains positively effects manufacturing productivity. Similarly, a vast majority (84%) acknowledged that timely delivery of materials from global suppliers positively effects company productivity. In terms of quality, over half (56%) of the respondents indicated that their company's global supply chain practices ensure consistent product quality. Looking ahead, nearly three-quarters (71%) of the respondents believe that their company's productivity will continue to improve as they refine their global supply chain practices. There is also strong agreement (100%) on the potential for further productivity gains through innovation and optimization of global supply chains.

Table 8: COST

Questions		**Transportation**	**Labour**	**Raw materials**		

Which of the following supply chain costs effect your firm the most?	**n**	**37**	**7**	**56**		
	%	**37%**	**7%**	**56%**		
Rate the level of global supply chain cost on a scale of 1-5		**1**	**2**	**3**	**4**	**5**
	n	**0**	**0**	**0**	**41**	**59**
	%	**0%**	**0%**	**0%**	**41%**	**59%**
How do you rate your cost efficiency since global supply chain practices in your firm	**n**	**0**	**0**	**8**	**45**	**47**
	%	**0%**	**0%**	**8%**	**45%**	**47%**
How have global supply chain disruptions (e.g., COVID-19, geopolitical issues) effected your company's costs in the past year?		**Increase**	**Decrease**			
	n	**95**	**5**			
	%	**95%**	**5%**			
How does the cost of international shipping effect		**Very significant,**	**Somewhat significant**	**Somewhat insignificant**	**Very insignificant**	

your overall production costs?	**n**	**82**	**18**	**0**	**0**	
	%	**82%**	**18%**	**0%**	**0%**	
Does your company utilize any strategies to minimize costs associated with your global supply chain? (Yes/No)		**Yes**	**No**			
	n	**83**	**17**			
	%	**83%**	**17%**			

The survey highlights the significant effect of various SC costs on firms, emphasizing the critical areas where companies face challenges. Among the supply chain costs, raw materials are the most effectful, with 56% of respondents indicating that this cost affects their firms the most, followed by transportation (37%) and labor (7%). When rating the level of global supply chain costs on a scale of 1 to 5, most respondents (59%) rated it as a 5, indicating a very high level of cost, with 41% rating it as a 4, further underlining the substantial burden of global supply chain expenses. Regarding cost efficiency since adopting global supply chain practices, nearly half of the respondents (47%) rated their efficiency at the highest level (5), and 45% rated it as 4, suggesting that while costs are high, firms have managed to maintain relatively high-cost efficiency. The effect of global supply chain disruptions, such as COVID-19 and geopolitical issues, has been overwhelmingly negative, with 95% of respondents reporting an increase in costs. International shipping costs are also a significant concern, with 82% of respondents stating that these costs are very significant to their overall production costs, while 18% find them somewhat significant. To mitigate these challenges, 83% of firms are utilizing strategies to minimize global supply chain costs, indicating a proactive approach to managing these financial

pressures. Overall, the data suggests that while global supply chain costs are substantial and have been exacerbated by recent disruptions, many firms are actively working to improve their cost efficiency through strategic measures.

4.4. Descriptive analysis of independent variables

Descriptive statistics is a basic statistical tool that helps individuals organize and summarize the variability found in collections of real observations or scores (Dong, 2023).

4.4.1. Quality of raw materials: Descriptive analysis

Quality of raw materials		
	Mean	Std. Deviation
My firm imports raw material globally.	5	0
The global supply chain has made it more difficult for my firm to maintain consistent on quality of raw materials.	3.88	0.946
Profit have arisen for obtaining raw materials globally for my firm.	3.74	1.143
The global supply chain has improved the overall efficiency of my firm's raw material procurement process.	4.5	0.503
The global supply chain has improved the quality of output products.	4.33	0.842
Grand mean	4.29	

4.4.2. Strategic Supplier Relationships: Descriptive analysis

Strategic Supplier Relationships	Mean	Std. Deviation
I describe my relationship with my key import suppliers as strategic /long-term partnership.	4.59	0.494
I hold joint planning meetings or discussions with my key import suppliers to discuss production schedules and potential issues frequently.	4.33	0.682
I involve my key import suppliers in my product development process	2.1	1.142

(e.g., providing feedback on material suitability or co-developing new products).		
My relationship with my key import suppliers effected my ability to respond to fluctuations in demand for my products.	3.56	0.715
I am satisfied with the overall reliability of my key import suppliers in terms of on-time deliveries and quality consistency.	1.81	0.787
The relationship I have with my key suppliers has effected the productivity of my firm.	4.46	0.54
Grand mean	3.475	

4.4.3. Diversified and varieties of products: Descriptive analysis

Diversified and varieties of products	Mean	Std. Deviation
My company has increased the level of diversification in its product offerings for import/export.	3.43	1.533
The overall complexity of my production process due to the level of product diversification is high.	4.16	1.229
Product diversification effected the average production time per unit for my imported/exported products.	4.6	0.492
Product diversification effected my overall capacity utilization in my manufacturing operations.	3.81	0.787
Product diversification in the global supply chain increased the productivity of my firm.	3.52	0.99
Grand mean	3.904	

4.4.4. Advanced Technology Adaption: Descriptive analysis

Advanced Technology Adaption	Mean	Std.

		Deviation
The implementation of advanced technology has been integrated into my existing production processes.	2.62	0.94
The practice of global supply chain has exposed me to an adoption of advanced technology.	4.17	0.829
Since implementing advanced technologies at my firm, my overall manufacturing productivity has increased.	2.36	1.425
There are observed changes in productivity of my company since the implementation of advanced technology.	2.06	1.347
Grand mean	2.8025	

4.4.5. Information Sharing: Descriptive analysis Information Sharing

Information Sharing	Mean	Std. Deviation
I frequently share basic information with my key import suppliers.	4.49	0.502
I have a secure and standardized platform for sharing information with my import suppliers.	4.53	0.502
Frequent information sharing with my import suppliers effected the efficiency of my global supply chain.	5	0
The type of information I share with my suppliers have a huge effect on my firm's productivity.	3.59	0.683
Information sharing with my suppliers has kept me from unexpected disruptions in the manufacturing sector.	3.29	0.769
Grand mean	4.18	

Source: Own SPSS data

The arithmetic mean is a basic statistical concept and a central topic in introductory statistics courses (Landrum 2005).

The average satisfaction with the quality of raw materials is 5 out of 10, which is considered high. Importantly, all respondents reported the same level of satisfaction, indicating a lack of variation in quality perception. This consistency might suggest a very stable and predictable quality of raw materials, which could be beneficial for production processes and overall product quality. However, it also raises the question of whether there is room for improvement in quality, as a lack of variation could indicate a lack of innovation or differentiation in the raw materials used.

The average level of collaboration and strength in relationships with key suppliers is moderate, falling somewhere between averages and strong. However, there is a noticeable amount of variation among respondents regarding their perception of these relationships. This suggests that some companies have established strong partnerships with their suppliers, while others may be struggling to maintain effective collaboration. Understanding the reasons behind this variation could be crucial for improving supplier relationships across the board and ensuring a more consistent and beneficial supply chain for all involved.

The average level of product diversification is relatively high, suggesting that companies are offering a diverse range of products. However, there is a significant amount of variation among companies in terms of their diversification strategies. Some companies have a much wider product portfolio than others, indicating a greater focus on offering a variety of choices to customers. Understanding the factors driving this variation could be valuable for companies considering diversification as a growth strategy. It might reveal insights into the benefits and challenges associated with different levels of product diversification, helping businesses make informed decisions about their own product mix.

The data reveals a limited adoption of advanced technologies within the firm's production processes. While the average score (2.8) suggests some integration, the standard deviation (1.087) indicates some inconsistency in this adoption. This could mean that certain areas are more reliant on advanced technology than others. To fully leverage the potential of global supply chain, exploring opportunities to increase technology adoption across production processes could significantly improve efficiency and productivity.

These companies demonstrate a strong commitment to information sharing with suppliers, as evidenced by the high mean value of 4.18. This suggests that frequent and effective communication is a common practice. However, the standard deviation of 0.623 indicates some variability in the level of information sharing among different sectors.

While the overall trend is positive, it's important to ensure consistency in information sharing practices across an organization. This can help to avoid potential disruptions and improve overall supply chain efficiency.

4.5. INTERPRETATION AND DISCUSSION

4.5.1. Secondary data Results

Empirical Results

Before diving into the effect of high-quality imported raw materials on Ethiopian manufacturing productivity, it's crucial to establish a baseline understanding of the country's manufacturing sector. To achieve this, we leverage data from the Central Statistical Authority (CSA) referenced in 2021. This data indicates a substantial presence of manufacturing in Ethiopia, with over 2,416 companies currently operating. However, our research is particularly interested in firms that participate in the global supply chain. These companies play a vital role in integrating Ethiopian manufacturing into the international market. To identify these specific players, we will employ a strategic sorting process. By categorizing the 2,416 companies based on their size and industry sector, we can efficiently target those most likely to be engaged in global supply chains. This refined focus will ensure our subsequent analysis on the influence of high-quality imports is concentrated on the most relevant segment of Ethiopian manufacturing.

A. Share of firms importing raw materials

The analysis of firms engaging in importing high-quality raw materials in Ethiopia sheds light on the country's integration into the global value chain. With 44% of firms involved in importing

such materials, Ethiopia demonstrates a significant participation in sourcing inputs from international markets, thereby linking its production processes to global networks. Importing firms play a pivotal role in accessing specialized raw materials not readily available domestically, thereby contributing to the diversification, sophistication, and productivity of firms in Ethiopia.

Conversely, the presence of most non-importing firms, comprising 56% of the total, signifies a segment of the Ethiopian economy that relies on domestic sources or alternative supply chains for raw materials. While these firms may demonstrate a degree of self-sufficiency in certain aspects of production, their limited engagement in importing raw materials suggests potential opportunities for further integration into global value chains. Enhancing the participation of these non-importing firms in global value chains could potentially unlock avenues for accessing new markets, technologies, and knowledge, thereby fostering greater competitiveness and resilience in Ethiopia's industrial landscape. Overall, the coexistence of importing and non-importing firms highlights the dynamic nature of Ethiopia's engagement with global value chains and underscores the multifaceted strategies employed by businesses to navigate the complexities of international trade.

Table 9: Share of firms importing high quality raw materials.

Firm Size	**Non importing**	**Importing**	**Grand Total**
Small	925	569	1494
Medium	293	305	598
Large	129	194	323
Grand Total	**1347**	**1068**	**2415**

Source: Student's calculation from CSA

B. Share of firms importing raw materials by sector

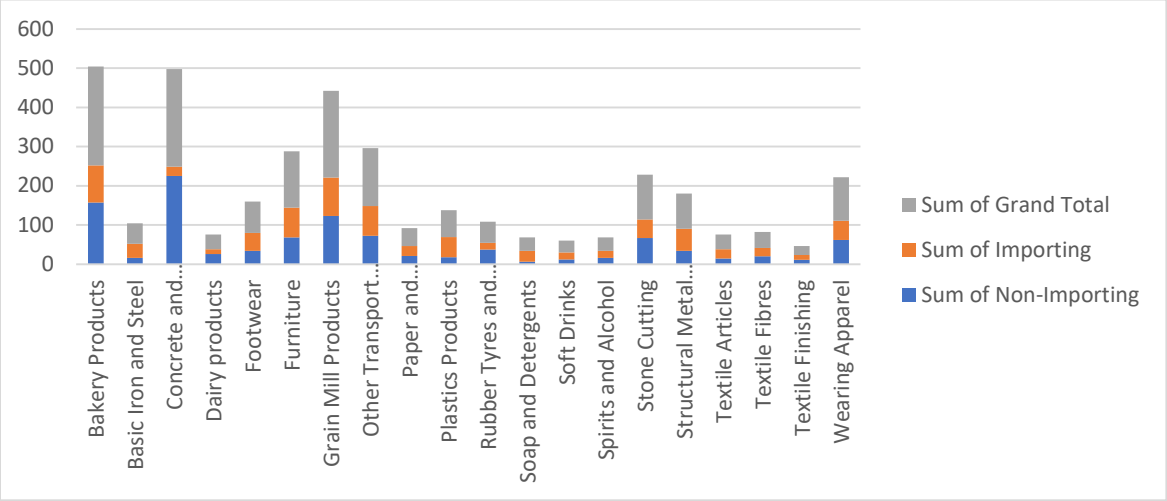

Figure 3: Source: Student's calculation from CSA.

An analysis of over 2,400 Ethiopian manufacturing firms reveals a diverse import landscape. While nearly half operate without importing raw materials, sectors like plastics, soap, and steel show high import reliance (over 65%), suggesting a mix of self-sufficient and import-dependent manufacturers across industries. This data is a springboard to identify potential global players, with sectors heavily reliant on imports being prime targets for further research on reasons for self-sufficiency in other sectors, the nature of imported materials, and the effect of imports on production costs, quality, and export potential.

C. Share of firms importing raw materials by size

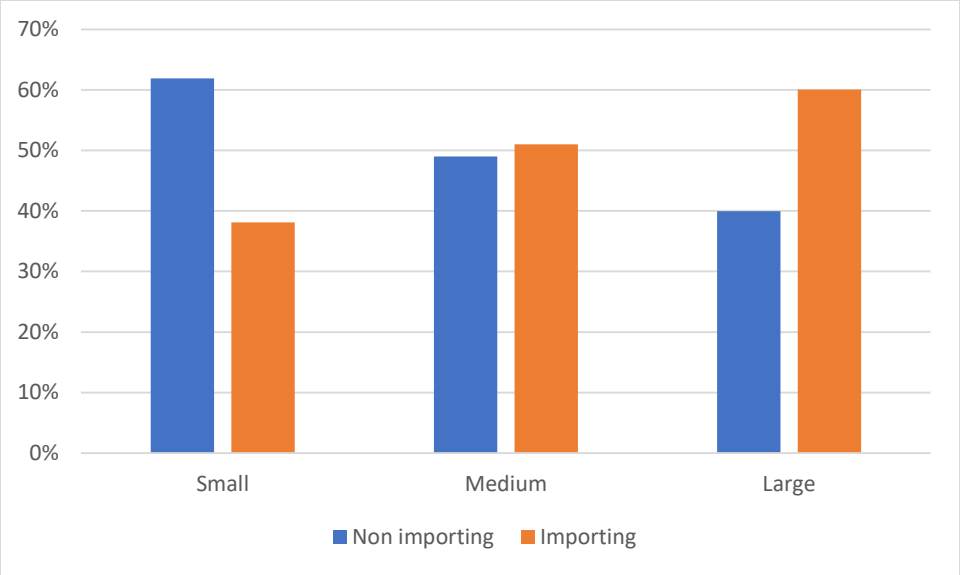

Figure 4: Source: Student's calculation from CSA.

Analyzing Ethiopian manufacturing firms by size reveals a surprising trend in import reliance. Despite most firms across all sizes (small, medium, and large) importing raw materials, medium-sized company's show a slightly lower dependence (around 40%) compared to small and large firms (around 60% for both). This suggests that import reliance might not be directly correlated with company size in the Ethiopian manufacturing sector.

The following table presents the results of a regression analysis conducted on the CSA data, with productivity as the dependent variable and raw materials serving as the independent variable, contributing to the exploration, and understanding of their interdependent relationship within the context of our objective.

4.6. Correlation Analysis

Correlation refers to the association between variables. In correlated data, changes in one variable are linked to changes in another, either in the same (positive correlation) or opposite (negative correlation) direction. Correlation is often used in the context of a linear relationship between two continuous variables, expressed as the Pearson product-moment correlation. The Pearson correlation coefficient is typically used for jointly normally distributed data. For non-normally distributed continuous data, ordinal data, or data with outliers, the Spearman rank correlation can measure a monotonic association. Both correlation coefficients range from -1 to +1, with 0 indicating no linear or monotonic association and values closer to 1 indicating stronger relationships (Boer & Schober, 2018).

Table 10: Correlation analysis

	Quality	**Strategic Supplier Relationships**	**Diversified and varieties of products**	**Advanced Technology Adaption**	**Information Sharing**	**Productivity**
Quality	1	-0.433**	0.025	-0.797**	-0.104	-0.226*
Sig. (2-tailed)		0	0.803	0	0.303	0.024
N	100	100	100	100	100	100
Strategic Supplier Relationships	-0.433**	1	-0.301**	0.544**	0.341**	0.207*
Sig. (2-tailed)	0		0.002	0	0.001	0.039
N	100	100	100	100	100	100
Diversified and varieties of products	0.025	-0.301**	1	-0.440**	-0.176	0.312**
Sig. (2-tailed)	0.803	0.002		0	0.079	0.002
N	100	100	100	100	100	100
Advanced Technology Adaption	-0.797**	0.544**	-0.440**	1	0.132	0.093

Sig. (2-tailed)	0	0	0		0.189	0.359
N	100	100	100	100	100	100
Information Sharing	-0.104	0.341**	-0.176	0.132	1	-0.043
Sig. (2-tailed)	0.303	0.001	0.079	0.189		0.671
N	100	100	100	100	100	100
Productivity	-0.226*	0.207*	0.312**	0.093	-0.043	1
Sig. (2-tailed)	0.024	0.039	0.002	0.359	0.671	
N	100	100	100	100	100	100

Source: Own SPSS data

Strategic Supplier Relationships as a Productivity Driver:

The positive correlation between strategic supplier relationships and productivity (0.207, significant at the 0.05 level) highlights the importance of strong partnerships in enhancing efficiency. Suppliers that are closely aligned with a company's strategic goals likely contribute to more streamlined operations, better resource management, and timely access to necessary materials, all of which support higher productivity.

Trade-offs Between Quality and Innovation:

The strong negative correlation between quality and advanced technology adoption (-0.797, significant at the 0.01 level) suggests that integrating new technologies might sometimes lead to challenges in maintaining quality standards. This could be due to the learning curve or disruptions that come with adopting new systems. Companies need to carefully manage this transition, perhaps by phasing in new technologies while maintaining rigorous quality control processes.

Diversification as a Double-Edged Sword:

While diversification and variety in products positively effect productivity (0.312, significant at the 0.01 level), they are negatively correlated with advanced technology adoption (-0.440, significant at the 0.01 level). This suggests that companies focusing on a wide range of products might face difficulties in keeping up with technological advancements, possibly due to the complexity of managing diverse product lines alongside technological upgrades. Balancing product diversification with technological investment is crucial.

Limited Role of Information Sharing:

Information sharing, while positively correlated with strategic supplier relationships (0.341, significant at the 0.01 level), does not show a significant direct effect on productivity. This might imply that while information sharing strengthens relationships with suppliers, it doesn't directly translate into higher productivity, possibly because the quality or type of information shared is not effectively leveraged for operational efficiency.

Quality vs. Supplier Relationships:

The negative correlation between quality and strategic supplier relationships (-0.433, significant at the 0.01 level) suggests that a focus on supplier relationships might sometimes lead to compromises in quality. This could be due to the reliance on suppliers who may not always meet stringent quality standards, especially if the focus is on cost or speed over quality. This calls for a careful selection of suppliers who can deliver both quality and efficiency.

4.7. Multi- collinearity

Multi-collinearity occurs when there is a high degree of linear correlation between explanatory variables in a multiple regression model, leading to inaccurate regression results. Diagnostic tools for multi-collinearity include the variance inflation factor (VIF), condition index and condition number, and variance decomposition proportion (VDP) (Kim, 2019). Variance Inflation Factors (VIFs) are used to identify collinearity among predictors in regression models (Murray et al., 2012).

Table 11: Multi-collinearity

Coefficients[a]									
Model				Standardized Coefficients	t	Sig.	Collinearity Statistics		
				Beta			Tolerance	VIF	
1	(Constant)	4.136	0.992		4.168	0.000			
	Quality	-0.016	0.102	-0.029	-0.153	0.878	0.231	4.327	
	SSR	0.160	0.063	0.292	2.539	0.013	0.628	1.591	
	Div	0.165	0.049	0.436	3.377	0.001	0.500	1.998	
	Adv	0.029	0.056	0.113	0.523	0.602	0.177	5.639	
	Info	-0.132	0.155	-0.084	-0.854	0.395	0.862	1.160	

Residuals Statistics					
	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	4.6681	4.9423	4.7980	0.08217	100
Residual	-0.34233	0.26638	0.00000	0.15606	100
Std. Predicted Value	-1.581	1.757	0.000	1.000	100
Std. Residual	-2.137	1.663	0.000	0.974	100
Dependent Variable: Productivity					

Source: Own SPSS data

The collinearity statistics indicate a low level of multicollinearity among the independent variables, Quality of raw materials, s Strategic Supplier Relationships, Diversified and varieties of products, Advanced Technology Adaption Information Sharing. The VIF values for these variables are all below 10, suggesting that the variables are not highly correlated with each other. The statistics summarize the residuals from a regression model predicting productivity. The residuals, which are the differences between the actual and predicted productivity values, show a mean of 0, indicating that the model is unbiased. The standard deviation of 0.15606 suggests that the model's predictions are generally close to the actual values. The minimum and maximum residuals (-0.34233 and 0.26638, respectively) provide information about the range of prediction errors. The standardized residuals, which are calculated by dividing the residuals by their

standard deviation, help assess the relative magnitude of the errors. Overall, these statistics suggest that the regression model is a reasonable fit for the data.

Source: Own SPSS data

There is no significant evidence of heteroscedasticity in the data. The residuals appear to be randomly scattered around the horizontal line at zero, indicating that the variance of the errors is relatively constant. The absence of heteroscedasticity in the data, as evidenced by the random scattering of residuals around the zero line in the scatterplot, is a positive indication for the regression model. This suggests that the variance of the errors is relatively constant, which is a key assumption of linear regression. A constant variance ensures that the model's estimates are unbiased and efficient. If heteroscedasticity were present, it would mean that the model's predictions would be more uncertain for some data points than for others, potentially leading to biased or inefficient estimates. Therefore, the observed homoscedasticity in this case strengthens the validity and reliability of the regression model.

4.8. Autocorrelation Test

The Durbin-Watson test is a traditional test for the null hypothesis of homoscedasticity in the least squares estimator of the model (Kalina, 2013).

Table 12:Autocorrelation Test

Model Summary					
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.466[a]	0.217	0.175	0.16016	1.994

Predictors: (Constant), Info, Quality, Div, SSR, Adv

Dependent Variable: Productivity

Source: Own SPSS data

The Durbin-Watson statistic of 1.994 suggests that there is no evidence of autocorrelation in the residuals of the regression model. This means that the errors are not correlated with each other,

which is an assumption of linear regression. A Durbin-Watson statistic close to 2 indicates no autocorrelation, while values closer to 0 or 4 suggest positive or negative autocorrelation, respectively. In this case, the value of 1.994 is close to 2, supporting the conclusion of no autocorrelation.

4.9. Normality Test

Normality tests are used in various fields, including assessing the residuals from a linear regression model. If these residuals are not normally distributed, they should not be used in Z tests or other tests derived from the normal distribution, like t tests, F tests, and chi-squared tests. If the residuals are not normally distributed, it could indicate an incorrect functional form for the dependent variable or at least one explanatory variable or missing important variables. Addressing these systematic errors may result in normally distributed residuals (Khatun, 2021).

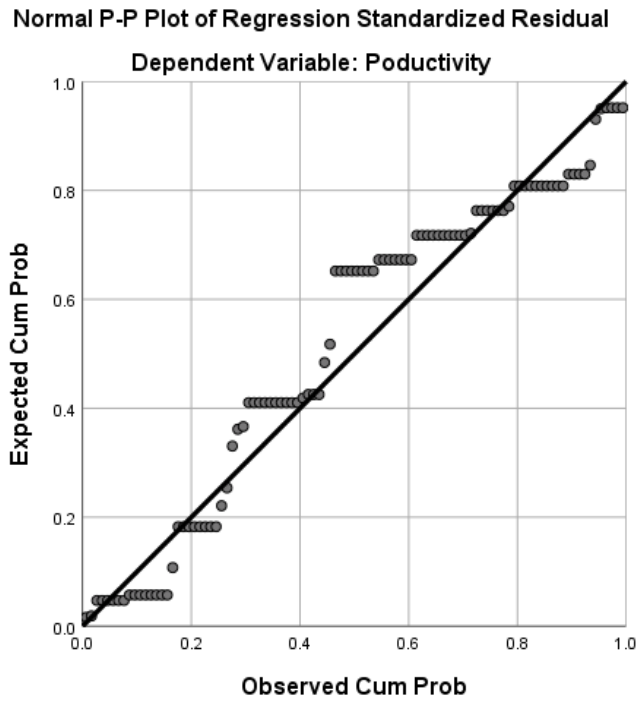

Figure 5: Normality P-P Plot

Source: Own SPSS data

The Normal P-P Plot indicates that the residuals in the regression model are approximately normally distributed. This is a desirable outcome as it supports the validity of the model's inferences. While there are some minor deviations from the diagonal line, the overall pattern suggests that the residuals follow a normal distribution. This is a positive indication for the model's reliability and the accuracy of its predictions.

4.10. Regression analysis

Regression analysis continues to be a fundamental tool in quantitative social science. Despite the emergence of more advanced statistical models in recent decades, regression analysis remains a prominent method in consumer research, criminology, economics, political science, psychology, public policy, sociology, and other social sciences. A strong understanding of the linear regression model provides the best foundation for exploring the advancements in statistical modeling that have occurred in the social sciences (Steenbergen, 2016).

Table 13:Regression analysis: Quality

Model Summary						
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate		
1	.457[a]	0.209	0.167	0.455		
a. Predictors: (Constant), Quality 5, Quality 4, Quality, Quality 3, Quality 2						
ANOVA[a]						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	5.140	5	1.028	4.956	.000[b]
	Residual	19.500	94	0.207		
	Total	24.640	99			

a. Dependent Variable: Productivity						
b. Predictors: Quality						

The table summarizes the results of a regression analysis with "Productivity" as the dependent variable and five predictors related to "Quality." The model explains a significant portion of the variance in productivity, as evidenced by the adjusted R-squared value of 0.167. This indicates that the independent variables, collectively, have meaningful predictive power for explaining productivity. The F-statistic of 4.956 and the corresponding p-value of 0.000 suggest that the model is statistically significant, meaning that the independent variables as a group significantly predict productivity. In conclusion, the regression model in this analysis provides a reasonable fit to the data, and the independent variables have some explanatory power for predicting productivity.

Table 14: Regression analysis: Strategic Supplier relationship

Model Summary						
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate		
1	.503[a]	0.253	0.204	0.445		
a. Predictors: Strategic Supplier Relationships						
ANOVA[a]						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	6.224	6	1.037	5.238	.000[b]
	Residual	18.416	93	0.198		
	Total	24.640	99			
a. Dependent Variable: Productivity						
b. Predictors: (Constant), Strategic Supplier Relationships						

The table summarizes the results of a regression analysis with "Productivity" as the dependent variable and one predictor, "Strategic Supplier Relationships." The model explains a significant portion of the variance in productivity, as evidenced by the adjusted R-squared value of 0.204. This indicates that the independent variable, "Strategic Supplier Relationships," has meaningful predictive power for explaining productivity. The F-statistic of 5.238 and the corresponding p-value of 0.000 suggest that the model is statistically significant, meaning that the independent variable significantly predicts productivity. In conclusion, the regression model in this analysis provides a reasonable fit to the data, and "Strategic Supplier Relationships" has some explanatory power for predicting productivity.

Table 15: Regression analysis: Diversified and varieties of products

Model Summary						
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate		
1	.295[a]	0.087	0.059	0.484		
a. Predictors: Diversified and varieties of products						
ANOVA[a]						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	2.145	3	0.715	3.051	.032[b]
	Residual	22.495	96	0.234		
	Total	24.640	99			
a. Dependent Variable: Productivity						
b. Predictors: Diversified and varieties of products						

The table summarizes the results of a regression analysis with "Productivity" as the dependent variable and one predictor, "Diversified and varieties of products." The model explains a small portion of the variance in productivity, as evidenced by the adjusted R-squared value of 0.059. This indicates that the independent variable, "Diversified and varieties of products," has limited

predictive power for explaining productivity. The F-statistic of 3.051 and the corresponding p-value of 0.0326 suggest that the model is marginally statistically significant, meaning that the independent variable marginally predicts productivity. However, the effect size is relatively small, and the model explains a limited amount of the variation in productivity.

Table 16: Regression analysis: Advanced Technology Adoption

Model Summary						
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate		
1	.296[a]	0.088	0.050	0.486		
a. Predictors:Advanced Technology Adaption						
ANOVA[a]						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	2.166	4	0.541	2.289	.065[b]
	Residual	22.474	95	0.237		
	Total	24.640	99			
a. Dependent Variable: Productivity						
b. Predictors: Advanced Technology Adaption						

The table summarizes the results of a regression analysis with "Productivity" as the dependent variable and one predictor, "Advanced Technology Adaption." The model explains a small portion of the variance in productivity, as evidenced by the adjusted R-squared value of 0.050.

This indicates that the independent variable, "Advanced Technology Adaption," has limited predictive power for explaining productivity. The F-statistic of 2.289 and the corresponding p-value of 0.065 suggest that the model is marginally statistically significant, meaning that the independent variable marginally predicts productivity. However, the effect size is relatively small, and the model explains a limited amount of the variation in productivity.

Table 17: Regression analysis: Information Sharing

Model Summary						
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate		
1	.508[a]	0.258	0.226	0.439		
a. Predictors: Information Sharing						
ANOVA[a]						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	6.348	4	1.587	8.242	.000[b]
	Residual	18.292	95	0.193		
	Total	24.640	99			
a. Dependent Variable: Productivity3						
b. Predictors: Information Sharing						

The table summarizes the results of a regression analysis with "Productivity3" as the dependent variable and one predictor, "Information Sharing." The model explains a significant portion of the variance in productivity, as evidenced by the adjusted R-squared value of 0.226. This indicates that the independent variable, "Information Sharing," has meaningful predictive power for explaining productivity. The F-statistic of 8.242 and the corresponding p-value of 0.000

suggest that the model is statistically significant, meaning that the independent variable significantly predicts productivity. In conclusion, the regression model in this analysis provides a reasonable fit to the data, and "Information Sharing" has some explanatory power for predicting productivity.

CHAPTER FIVE

5. SUMMARY, CONCLUCION AND RECOMMENDATION

5.1. SUMMARY

The research offers a comprehensive analysis of Ethiopia's manufacturing sector, with a focus on its integration into global value chains and the effect of high-quality imported raw materials, alongside other independent variables. Key findings from the study include:

- The thesis explores the effect of global supply chain (GSC) participation on the productivity of manufacturing firms in Ethiopia, with a particular focus on key elements such as quality of raw materials, advanced technology adoption, product diversification, supplier relationships, and information sharing. The research highlights how these elements influence the overall productivity of Ethiopian firms involved in GSCs.

- The research problem is centered on the increasing involvement of Ethiopian manufacturing firms in GSCs and the associated concerns about how this affects their productivity. Specifically, it questions how firms can maintain product quality while integrating foreign inputs and managing global supply chains. The study aims to fill this gap by analyzing the influence of key GSC factors on firm productivity.

- The study aims to determine how the quality of raw materials, strategic supplier relationships, diversified product offerings, adoption of advanced technology, and information sharing affect the productivity of manufacturing firms in Ethiopia. By focusing on these elements, the research seeks to provide valuable insights into the operational and strategic benefits and challenges associated with GSC participation.

- Chapter Three outlines the research methodology, which uses a mixed-methods approach combining both quantitative and qualitative data. This approach allowed for a more comprehensive analysis of the effect of global supply chains on the productivity of Ethiopian manufacturing firms. Quantitative data was collected through structured questionnaires, while qualitative insights were gained through interviews with key personnel from the manufacturing sector.

- The research design involved an explanatory and descriptive research approach. The explanatory design aimed to show the relationship between independent variables (quality of raw materials, strategic supplier relationships, product diversification, advanced technology adoption, and information sharing) and the dependent variable (productivity). The descriptive design was used to gather data from respondents via questionnaires, allowing for the collection of a wide range of information on global supply chain practices.

- Chapter Four presents the findings from the data analysis. It begins with an overview of the response rate and demographic characteristics of the study participants, which included operational managers, import/export officers, and general managers from large manufacturing firms. A majority of the respondents were male (68%), and most were between the ages of 20-30, indicating a younger workforce in the Ethiopian manufacturing sector.

- The regression analysis in Chapter Four further confirmed the significant relationship between global supply chain practices and firm productivity. Variables like raw material quality, strategic supplier relationships, and advanced technology adoption had strong positive correlations with productivity, while product diversification required careful management to avoid adverse effects.

- Chapters Three and Four together demonstrate that global supply chain participation has a measurable effect on the productivity of Ethiopian manufacturing firms. The findings from the data analysis indicate that firms that effectively manage raw material quality, supplier relationships, and technology adoption are more likely to experience productivity gains. However, challenges remain in maintaining consistent product quality and integrating advanced technologies, which firms need to address to fully capitalize on the benefits of global supply chains.

- Ethiopia boasts a substantial manufacturing sector with over 2,416 companies. This analysis zooms in on firms integrated into the global supply chain, the backbone connecting Ethiopian production to international markets. To identify these key players, researchers employ a strategic sorting process. By categorizing the companies based on size and industry, they can pinpoint those likely to be engaged globally.

5.2. Conclusion

The study concludes that participation in global supply chains (GSCs) has a significant positive effect on the productivity of Ethiopian manufacturing firms, but this effect varies based on how firms manage key factors like raw material quality, supplier relationships, product diversification, advanced technology adoption, and information sharing. Firms that successfully source high-quality raw materials and maintain long-term, strategic partnerships with their suppliers tend to experience enhanced efficiency, profitability, and overall productivity. However, challenges persist in maintaining consistent product quality and integrating advanced technologies, with some firms lagging in these areas. Additionally, while product diversification offers opportunities for growth and market expansion, it introduces complexities that can strain production processes if not properly managed. The study highlights the importance of frequent and secure information sharing with suppliers to mitigate disruptions and ensure operational efficiency. Overall, the findings suggest that while GSC participation presents substantial benefits, Ethiopian firms must overcome operational challenges and improve their internal capabilities to fully realize the potential of global supply chains in driving sustainable growth.

5.3. Recommendations

Based on the analysis of Ethiopian manufacturing and global supply chains, several key recommendations can be made to further enhance the positive effects and mitigate the challenges associated with this integration:

Implications of the Recommendations for Ethiopian Manufacturing

The recommendations presented offer a roadmap for Ethiopian manufacturing to enhance its competitiveness and resilience within the global supply chain. Key implications of these recommendations include:

For Ethiopian Manufacturing Importers

- **Enhanced Supply Chain Resilience:** Strong supplier relationships and diversified sourcing strategies can mitigate risks associated with disruptions, geopolitical tensions, or natural disasters.
- **Improved Product Quality and Consistency:** Collaborative product development with suppliers and the implementation of advanced technologies can lead to higher-quality products that meet international standards.
- **Increased Productivity and Efficiency:** Optimized supply chain management, secure information sharing, and the adoption of advanced technologies can streamline operations and reduce costs.
- **Strengthened Market Position:** A focus on quality, efficiency, and innovation can enable Ethiopian manufacturers to compete effectively in global markets and attract new customers.

For Ethiopian Manufacturing Non-Importers

- **Access to Higher-Quality Inputs:** Diversifying sourcing strategies and importing high-quality raw materials can improve product quality and performance.
- **Enhanced Competitiveness:** By focusing on innovation, process optimization, and domestic supply chain efficiency, non-importers can reduce costs, improve productivity, and compete more effectively in both domestic and international markets.
- **Reduced Reliance on Domestic Suppliers:** Exploring alternative sourcing options can mitigate risks associated with domestic supply chain disruptions or quality issues.
- **Opportunities for Export:** Improved product quality and efficiency can open up new export markets and generate foreign exchange earnings.

Suggestions for future Research

Based on the recommendations and implications discussed, here are some potential areas for future research to further delve into the dynamics of Ethiopian manufacturing and global supply chains:

1. Impact of Government Policies on Supply Chain Performance:

- **Policy Effectiveness:** Analyze the impact of specific government policies (e.g., industrial policies, trade policies, investment incentives) on supply chain efficiency, resilience, and competitiveness.
- **Policy Recommendations:** Propose evidence-based policy recommendations to optimize the enabling environment for manufacturing and supply chain development.

2. Digital Transformation and Supply Chain Innovation:

- **Technology Adoption:** Investigate the adoption and impact of digital technologies (e.g., IoT, AI, blockchain) on supply chain operations, particularly in terms of efficiency, visibility, and responsiveness.
- **Digital Skills Gap:** Assess the digital skills gap among manufacturing workers and explore strategies to enhance digital literacy and upskilling.

3. Sustainability and Ethical Sourcing:

- **Green Supply Chains:** Examine the implementation of sustainable practices (e.g., eco-friendly production, waste reduction, energy efficiency) within Ethiopian manufacturing supply chains.
- **Ethical Sourcing:** Investigate the ethical implications of sourcing practices, including labor standards, fair trade, and environmental impact.

4. Regional Integration and Supply Chain Collaboration:

- **Regional Value Chains:** Explore opportunities for regional integration and the development of regional value chains to enhance competitiveness and reduce costs.
- **Cross-Border Collaboration:** Analyze the challenges and benefits of cross-border collaboration between Ethiopian manufacturers and their regional counterparts.

5. Small and Medium-Sized Enterprises (SMEs) and Global Supply Chains:

- **SME Integration:** Investigate the challenges and opportunities for SMEs to integrate into global supply chains.
- **Support Mechanisms:** Explore the role of government, industry associations, and development agencies in supporting SME participation in global markets.

6. Risk Management and Supply Chain Resilience:

- **Risk Assessment:** Develop robust risk assessment frameworks to identify and mitigate potential supply chain disruptions (e.g., natural disasters, geopolitical risks, economic shocks).

- **Resilience Strategies:** Explore strategies to enhance supply chain resilience, such as diversification, contingency planning, and real-time monitoring.

By implementing these recommendations, Ethiopian manufacturing firms can become more resilient and competitive within the global marketplace. Addressing quality control challenges, improving communication and information sharing, leveraging technology for continuous improvement, and prioritizing diversification and innovation will all contribute to maximizing the benefits of global supply chain integration for Ethiopian manufacturing.

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APPENDIX

ADDIS ABABA UNIVERSITY
SCHOOL OF COMMERCE
MA IN LOGISTICS AND SUPPLY CHAIN MANAGEMENT

Questionnaire to be completed by respondents currently working in the organization.

Dear respondents!

This questionnaire is prepared by a prospect graduate of Addis Ababa University in the logistics and supply chain management department. The purpose of this questionnaire is to undertake research on Thesis Title: The effect of Global Supply chain on firm's productivity: The case of Ethiopian manufacturing sector. Your participation is greatly appreciated, and all responses will be kept confidential.

Part One: Demographic factors

1) Gender

   Male ☐ Female ☐

2) Age

   1. 20-30 ☐
   2. 31-40 ☐
   3. 41 and above ☐

3) Level of education

   1. Certificate ☐
   2. Diploma ☐
   3. BA/BSC ☐
   4. MA/MSC ☐
   5. PHD ☐

4) Years of services

   1. 1-5 Years ☐
   2. 5-10 Years ☐
   3. 10-15 Years ☐
   4. Above 15 years ☐

5) Please select the size category that best describes your firm.

1. Small
2. Medium
3. Large
4. other, type what

6) In which manufacturing sector does your firm categorise in?

    1. Furniture
    2. Textile
    3. Food and Beverage
    4. Other, type what

COST

1. Which of the following supply chain costs effect your firm the most?

- Transportation
- Labor
- Raw Materials
- Other, type what

Rate the level of global supply chain cost on a scale of 1-5

What strategies does your firm use to manage supply chain costs?

How do you rate your cost efficiency since global supply chain practices in your firm

How have global supply chain disruptions (e.g., COVID-19, geopolitical issues) effected your company's costs in the past year?

- Please specify any cost increases or decreases (e.g., raw material costs, transportation costs, lead times).

9. How does the cost of international shipping effect your overall production costs?
    - Very significant,
    - somewhat significant,
    - somewhat insignificant,
    - very insignificant

10. Does your company utilize any strategies to minimize costs associated with your global supply chain? (Yes/No)
    - If yes, please describe these strategies (e.g., negotiating with suppliers, using alternative shipping routes, utilizing just-in-time inventory management).
    -
11. Are there any additional comments you would like to share regarding the effect of the global supply chain on your company's productivity and costs?

No	**Questions**		SD	D	N	A	SA
	Raw Materials						
1.	My firm imports raw material globally.		1	2	3	4	5
2.	The global supply chain has made it more difficult for my		1	2	3	4	5

Part Two:

(1=SD= Strongly disagree, 2=D= Disagree, 3=N=Neutral, 4=A=Agree, 5=SA=Strongly Agree).

Please circle the number of your choice to measure your level of agreement presented hereunder

	firm to maintain consistent on quality of raw materials.						
3.	Profit have arisen for obtaining raw materials globally for my firm.		1	2	3	4	5
4.	The global supply chain has improved the overall efficiency of my firm's raw material procurement process.		1	2	3	4	5
5.	The global supply chain has improved the quality of output products.		1	2	3	4	5
	Strategic Supplier Relationships						
6.	I describe my relationship with my key import suppliers as strategic /long-term partnership.		1	2	3	4	5
7.	I hold joint planning meetings or discussions with my key import suppliers to discuss production schedules and potential issues frequently.		1	2	3	4	5
8.	I involve my key import suppliers in my product development process (e.g., providing feedback on material suitability or co-developing new products).		1	2	3	4	5
9.	My relationship with my key import suppliers effected my ability to respond to fluctuations in demand for my products.		1	2	3	4	5
10.	I am satisfied with the overall reliability of my key import suppliers in terms of on-time deliveries and quality consistency.		1	2	3	4	5
11.	The relationship I have with my key suppliers has effected the productivity of my firm.		1	2	3	4	5
	Diversified and varieties of products						
12.	My company has increased the level of diversification in its product offerings for import/export.		1	2	3	4	5
13.	The overall complexity of my production process due to the level of product diversification is high.		1	2	3	4	5
14.	Product diversification effected the average production time per unit for my imported/exported products.		1	2	3	4	5
15.	Product diversification effected my overall capacity utilization in my manufacturing operations.		1	2	3	4	5
16.	Product diversification in the global supply chain increased the productivity of my firm.		1	2	3	4	5
	Advanced Technology Adaption						
17.	The implementation of advanced technology has been integrated into my existing production processes.		1	2	3	4	5
18.	The practice of global supply chain has exposed me to an adoption of advanced technology.		1	2	3	4	5
19.	Since implementing advanced technologies at my firm, my overall manufacturing productivity has increased.		1	2	3	4	5
20.	There are observed changes in productivity of my company since the implementation of advanced technology.		1	2	3	4	5
	Information Sharing						
21.	I frequently share basic information with my key import		1	2	3	4	5

	suppliers.						
22.	I have a secure and standardized platform for sharing information with my import suppliers.		1	2	3	4	5
23.	Frequent information sharing with my import suppliers effected the efficiency of my global supply chain.		1	2	3	4	5
24.	The type of information I share with my suppliers have a huge effect on my firm's productivity.		1	2	3	4	5
25.	Information sharing with my suppliers has kept me from unexpected disruptions in the manufacturing sector.		1	2	3	4	5
Productivity							
26.	Practicing global supply chain has positively effected my manufacturing productivity		1	2	3	4	5
27.	Timely delivery of materials from global suppliers positively effects my company's productivity.		1	2	3	4	5
28.	My company's global supply chain practices ensure consistent product quality.		1	2	3	4	5
29.	I believe my company's productivity will continue to improve as we refine our global supply chain practices.		1	2	3	4	5
30.	There is potential for further productivity gains through innovation and optimization of our global supply chain.		1	2	3	4	5