ADDIS ABABA UNIVERSITY

COLLEGE OF BUSINESS AND ECONOMICS

Program of Master of Business Administration

ASSESSMENT OF THE EFFECT OF VERTICAL INTEGRATION IN THE CASE OF ETHIOPIAN COMMODITY EXCHANGE COFFEE TRADING.

BY: TIGIST GETACHEW

For the partial fulfillment of the award for the Master of Degree in Business Administration

ADVISOR: Dr. ABEBAW

May, 2024

Addis Ababa, Ethiopia

DECLARATION

I hereby declare that the thesis entitled "Assessment of the Effect of Vertical Integration in The Case of Ethiopian Commodity Exchange Coffee Trading" is my original work prepared under the guidance and support of my advisor Dr. Abebaw. It has been carried out and submitted in partial fulfilment of the requirements for the Master Degree in Business Administration; Department of Business Administration, Addis Ababa University College. I also would like to confirm that it has not been previously submitted to any diploma or degree to any college or university as well as all the sources of materials used in th. study are duly acknowledged.

Name Tigist Getachew Signatures  Date 25/06/24

APPROVAL

The thesis entitled "Assessment of the Effect of Vertical Integration in The Case of Ethiopian Commodity Exchange Coffee Trading" submitted by Tigist Getachew in partial fulfilment of the requirements for the award of Master Degree in Business Administration; Department of Business Administration, Addis Ababa University College. The college has been carried out under my supervision. Therefore, I hereby approve and recommend that it has fulfilled the thesis requirements and can be submitted to the department for examination as the College advisor.

Name of thesis Advisor	Signature	Date
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CERTIFICATION

(APPROVAL BY THE BOARD OF EXAMINERS)

We, hereunder, as members of the examining board of the final MA open defence, have read and evaluated the thesis entitled "Assessment of the Effect of Vertical Integration The Case of Ethiopian Commodity Exchange Coffee Trading" submitted by Tigist Getachew. We certify/ recommend that it has fulfilled the requirements for the partial fulfilment of the requirement for a Master Degree in Business Administration; Department of Business Administration, Addis Ababa University College.

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CERTIFICATION

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We, here under, as members of the examining board of the final MA open defence, have read and evaluated the thesis entitled "Assessment of the Effect of Vertical Integration in Coffee Trading:The Case of Ethiopian Commodity Exchange" submitted by Tigist Getachew. We certify/ recommend that it has fulfilled the requirements for the partial fulfilment of the requirement for a Master Degree in Business Administration; Addis Ababa University College of Business and Economics.

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ACRONYMS

A.A Addis Ababa

ECX Ethiopian Commodity Exchange

SPSS Software Package for Social Science

VI Vertical Integration

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ABSTRACT

The purpose of this study was to assess the Effect of Vertical Integration in the Case of Ethiopian Commodity Exchange Coffee Trading. To accomplish the goal of the study both primary and secondary data were used. The primary data was collected through structured questionnaires. Descriptive and explanatory research design was applied. The target population of this study was all staff members of the Ethiopia Commodity Exchange head office, excluding supporting divisions. A sample of 245 respondents was taken by using simple random sampling technique. Based on the collected data from the respondent, the study found that there was a strong positive correlation between the performance of coffee trading in Ethiopian Commodity Exchange and distribution ownership, warehouse ownership, transport ownership, supplier relationship management. And also, all three variables have a significant impact on the performance of coffee trading in Ethiopian Commodity Exchange. The findings demonstrate that vertical integration factors such as warehouse ownership, transport ownership, supplier relationships, and distribution ownership play a pivotal role in enhancing the performance of Ethiopian Commodity Exchange. These factors serve as the backbone of operational efficiency and contribute significantly to the overall success of Ethiopian Commodity Exchange. Ethiopian Commodity Exchange should align its vertical integration efforts with specific capabilities that directly contribute to their profitability and wealth generation goals.

***Keywords**: Vertical integration, warehouse ownership, transport ownership, supplier relationships, and distribution ownership.*

CHAPTER ONE

1. INTRODUCTION

This chapter encloses the background of the study; statement of the problem; Objectives of the study; research questions; the significance of the study; scope of the study; limitation of the study; definition of key terms; and organization of the paper.

1.1. Background of the study

In recent years, global markets have witnessed significant transformations driven by economic globalization, technological advancements, and evolving consumer preferences. One notable evolution in organizational strategy is the increasing adoption of vertical integration, particularly prominent in sectors dealing with agricultural commodities. Vertical integration entails the consolidation of various stages of the supply chain under a single corporate entity, thereby enhancing control and efficiency (Maina & Kavale, 2016).

Ethiopia's economy has also been changing quickly, with the country's agriculture sector being essential to job creation, revenue generation, and general economic expansion. 2008 saw the founding of the Ethiopian Commodity Exchange, which was a major step forward for the nation's efforts to modernize its agricultural trade and improve market efficiency and openness. According to Gabre-Madhin (2022), ECX serves as a consolidated marketplace for the trading of a range of agricultural commodities, such as pulses, coffee, and sesame.

Examining the possible impacts of vertical integration in the context of Ethiopia's agriculture sector and the ECX is crucial as they develop. Aspects of the agricultural value chain such as production, processing, distribution, and marketing may be impacted by vertical integration. In order to improve the effectiveness, sustainability, and competitiveness of the Ethiopian agricultural sector, policymakers, business leaders, and stakeholders must have a thorough understanding of these consequences (Etsubdink T., 2018).

An increasingly popular strategic tool for supply chain optimization and competitive advantage is vertical integration, a long-standing practice in enterprises, especially in the agricultural commodities sector. According to Boitumelo Pooe and Virimai Mugobo (2020), vertical integration results in a fully integrated supply chain by requiring ownership of both upstream suppliers and downstream customers. Regarding agriculture, there is a prevalent belief that the sector is going through a revolutionary stage of vertical integration, expanding into related industries. As a result, there is increasing agreement that the agricultural business itself may be responsible for the governance of the sector in the future.

Getting into the details, Johannes Boehm (2020) states that assessing vertical integration requires a two-pronged approach that considers both internal costs and benefits and how it affects competitive positioning. The profitability landscape is influenced by the pursuit of internal benefits, but a strong competitive posture enables businesses to react quickly to market dynamics and defend themselves against competitor moves.

According to Kim and Mahoney (2018), a process of production disintegration has coincided with the growing tendency of vertical integration in international markets. This means combining domestically carried out activities with offshore manufacturing or service activities. The development of trade in tandem with the division of production across international borders is a crucial aspect of this integration.

The importance of vertical integration is particularly evident in the trading of agricultural commodities. According to Zhao and Liu (2020), this approach is essential for raising an organization's level of competitiveness. It makes it easier to source from markets with plenty of supply to satisfy the needs of areas experiencing scarcity, so balancing the distribution of goods. Additionally, vertical integration enables businesses to add value at every stage of the supply chain. This is demonstrated by the agricultural commodities sector's procurement and processing of products into end consumables.

Recent studies continue to highlight the strategic importance of vertical integration in enhancing firm performance and sectoral competitiveness. For instance, a study by Kim and Mahoney (2018) emphasizes that vertical integration strategies can lead to improved coordination and efficiency across agricultural supply chains.

Furthermore, the research also illustrates how vertical integration can mitigate transaction costs and improve market access for agricultural producers in developing economies.

Thus, against the backdrop of global economic shifts and Ethiopia's agricultural modernization efforts through ECX, investigating the impact of vertical integration on coffee trading performance becomes imperative. This study aims to provide insights that can inform strategic decisions, foster sectoral competitiveness, and contribute to the sustainable growth of Ethiopia's agricultural economy.

This study embarks on a journey to analyze the effects of vertical integration on the performance of coffee trading within the Ethiopian Commodity Exchange. The concern of the study is to shed light on the extent of vertical integration within ECX. By uncovering the effects of vertical integration, the study aim to contribute to the existing body of knowledge on agricultural markets and provide valuable insights that can inform policymakers, stakeholders, and investors in making informed decisions within the Ethiopian agricultural sector.

1.2. Statement of the Problem

ECX has emerged in Ethiopia as a critical institution by modernizing the country's agricultural trade, fostering transparency, and enhancing market efficiency. However, as the Ethiopian agricultural sector undergoes transformation and stakeholders explore various strategies for growth and competitiveness, the potential effects of vertical integration on the ECX and the broader agricultural value chain need thorough investigation.

The potential effects of vertical integration on the operations of the ECX and its implications for the entire agricultural value chain in Ethiopia are not well understood, despite the ECX's establishment and notable influence on agricultural trade. More precisely, it is uncertain how much of the Ethiopian agricultural industry is currently vertically integrated, especially in connection to coffee that is traded on the ECX (Johannes Boehm, 2020). The extent of vertical integration and its several manifestations, such as the integration of downstream distributors and retailers or upstream suppliers, must be determined.

For price discovery, efficient trading, and transparency in the coffee market, ECX is essential. Nevertheless, there hasn't been a thorough investigation of the possible effects of vertical integration on the market efficiency, price stability, and liquidity of coffee trading at ECX (Bekele, A. 2019). In the Ethiopian agricultural context, a number of factors, including market structure, the regulatory environment, and technology improvements, may impact the decision to integrate vertically. It is essential to comprehend these factors and how they could affect market structure and competition (Negash, S, 2018).

Although the functions and effects of the Ethiopian Commodity Exchange (ECX) have been studied in the literature, vertical integration has not received as much attention as it should. While examining commodities exchange performance metrics such trade volume, price stability, market accessibility, and overall impact on the agricultural sector, (Gebre-Madhin, 2022) did not specifically address the significance of vertical integration. There is a gap in the literature regarding the Ethiopian Commodity Exchange, despite the fact that it offers insightful information about the general relationship between vertical integration and commodity exchange performance. The research conducted by Johannes Boehm (2020) is either out of date or fails to consider the particularities of the Ethiopian agriculture industry. In spite of the ECX's increasing significance, the available literature does not comprehensively address the specific effects of vertical integration on its performance.

To address these limitations, this study aims to provide a current and dynamic analysis, focusing specifically on the impact of vertical integration on the performance of coffee trading within the ECX. By doing so, it seeks to offer relevant insights into the performance metrics of the commodity exchange, considering the intricacies of the Ethiopian agricultural landscape and contributing timely information for stakeholders and policymakers. As Ethiopia seeks to optimize its agricultural sector's potential, evidence-based policy recommendations are needed to guide stakeholders and policymakers. The study also aims to provide insights into how vertical integration can be strategically leveraged to enhance the overall performance and sustainability of coffee trading at ECX and the agricultural value chain.

1.3. Research Questions

The research questions answered by this research are:

- ✓ What are the key indicators that can be used to measure the extent of vertical integration within the Ethiopian agricultural sector, focusing on the coffee traded on the Ethiopian Commodity Exchange?
- ✓ How does warehouse ownership influence the performance of coffee trading on the Ethiopian Commodity Exchange?
- ✓ What is the impact of transport ownership on the performance of coffee trading on the Ethiopian Commodity Exchange?
- ✓ How does supplier relationship management affect the performance of coffee trading on the Ethiopian Commodity Exchange?
- ✓ What is the effect of distribution ownership on the performance of coffee trading on the Ethiopian Commodity Exchange?

1.4. Objectives of the Study

1.4.1. General Objective of the Study

The general objective of the study was assessing the Effect of Vertical Integration in the Case of Coffee Trading: The Case of Ethiopian Commodity Exchange.

1.4.2. Specific Objectives of the Study

- ✓ To examine the extent of vertical integration within the Ethiopian agricultural sector, focusing on the coffee traded on the ECX;
- ✓ Analyze the effect of vertical integration on ECX trading performance;
- ✓ Assess warehouse ownership impact on Ethiopian Commodity Exchange coffee trading performance;
- ✓ Examine the impact of transport ownership on coffee trading performance on the Ethiopian Commodity Exchange;
- ✓ Analyze supplier relationship management's effect on Ethiopian Commodity Exchange coffee trading performance; and

- ✓ Assess the effect of distribution ownership on Ethiopian Commodity Exchange coffee trading performance.

1.5. Scope of the Study

The study's scope encompasses both geographical and conceptual dimensions. Conceptually, it was centered on investigating the effect of vertical integration in the Case of Coffee Trading: The Case of Ethiopian Commodity Exchange. Specifically, the focus was on the agricultural sector, with a detailed examination of the coffee traded on the Ethiopian Commodity Exchange.

Geographically, the study narrowed its focus to the ECX, which stands as the sole commodity market within the country. While firmly rooted in the Ethiopian context, the study may draw relevant insights from analogous experiences in other countries, particularly those related to vertical integration practices in agricultural markets.

Methodologically, the study relies on a semi-structured questionnaire survey and interviews. The research explored various facets of vertical integration, encompassing aspects such as warehouse ownership, transport ownership, supplier relationship management, and distribution ownership. The variables are rooted in their pivotal roles in the operational dynamics of vertical integration within the ECX. These variables are critical indicators of operational control, efficiency, and strategic decision-making within the supply chain. Warehouse and transport ownership reflect the extent of control over storage and transportation, impacting operational efficiency. Additionally, supplier relationship management and distribution ownership are key factors influencing the reliability of commodity availability and timely delivery, thereby contributing to the overall performance of the ECX. Their selection aligns with industry best practices and the unique characteristics of agricultural commodity trading, offering a practical and specific lens to explore the facets of vertical integration that drive efficiency and competitiveness in the Ethiopian agricultural sector.

The respondents for this study includes key stakeholders in the Ethiopian Commodity Exchange (ECX) coffee sector, such as farmers, traders, warehouse owners, transportation providers, and distribution representatives. The respondents were selected to gain insights into the impact of vertical integration on ECX performance indicators in the coffee market.

Moreover, the study used a descriptive and casual research design, and also the time period was during the month April 2024 and May 2024 to assess current vertical integration dynamics in the Ethiopian coffee market.

1.6. Significance of the study

Ethiopia's economy is heavily reliant on agriculture, making it crucial to examine factors that can improve the efficiency and productivity of agricultural markets. Vertical integration, the integration of various stages of the supply chain within a single entity, can potentially streamline operations, reduce transaction costs, and enhance coordination between producers, intermediaries, and consumers. The study's findings could offer insights into whether vertical integration positively impacts the ECX, leading to potential improvements in agricultural sector performance.

The findings of the study will have implications for regulatory and policy frameworks related to the Ethiopian agricultural sector. If vertical integration is found to significantly impact the ECX's performance, policymakers can explore strategies to encourage or regulate integration to achieve desired outcomes, such as increased market efficiency, reduced information asymmetry, and enhanced value chain development.

This study will significantly provide information to ECX to improve the strategy to meet consumer’s need. This study will serve as an input for both academics and practitioners. Besides, the information will serve as a springboard for those who will conduct related studies in the area. Likewise, it will provide some relevant information for those agricultural businesses which are not included on the study. In addition, it gives opportunity to the researcher for gaining deep insight in the area of coffee trading business.

Furthermore, this study will also help to fulfill the gap that exists in the literature and provide locally applicable evidence based information.

1.7. Limitations of the Study

The study's findings were influenced by the availability, accuracy, and reliability of data related to vertical integration activities, performance metrics, and stakeholder perceptions. Incomplete or outdated data could potentially impact the comprehensiveness of the analysis. The data was collected during the month of April, 2024 and May, 2024.

This may not be adequate to conclude for the whole year because Ethiopia is based on the agriculture and the business cycle fluctuations may affect the findings.

The data consists of mix of respondents because of various backgrounds. Some were found to be willing to give their responses while some have hesitations caused by factors like education, superstitions, latent biases etc. Some people can clearly understand the questionnaire and while need more explanations. All of these have an impact on the accuracy of the data. The variables in this research was only from the backward and forward integration dimensions which may influence the coefficient of determination.

1.8. Operational Definition of Key Terms

Vertical Integration: -A single organization managing various supply chain phases, such as manufacturing, processing, distribution, and marketing, inside its framework is known as vertical integration. This might entail one organization controlling or overseeing all facets of the coffee trade in Ethiopia, from farming to sale (Maina & Kavale, 2016).

Agricultural Value Chain: - The agricultural value chain represents the series of interconnected activities involved in producing, processing, distributing, and marketing agricultural products, such as coffee, from farm to consumer. Understanding this chain is crucial for assessing the impact of vertical integration on market efficiency and competitiveness in Ethiopia's agricultural sector (Etsubdink T., 2018).

Warehouse Ownership: - Warehouse ownership within vertical integration refers to a single entity owning storage facilities within the Ethiopian Commodity Exchange's coffee trading chain, impacting storage costs and commodity quality.

Transport Ownership: - Transport ownership within the Ethiopian Commodity Exchange involves the strategic management of transportation assets like vehicles, aimed at optimizing the speed, reliability, and cost-effectiveness of commodity transport throughout the supply chain. This includes acquiring and maintaining transport infrastructure, planning efficient routes, and ensuring the safe and timely delivery of commodities.

Supplier Relationship Management: - Supplier relationship management within vertical integration involves effectively managing relationships with coffee suppliers on the Ethiopian Commodity Exchange, impacting commodity availability and variety.

Distribution Ownership: - Distribution ownership entails exclusive control over distribution channels through which commodities are delivered to buyers, ensuring efficient and reliable access to commodities within the exchange. Responsibilities include managing distribution networks, optimizing delivery schedules, and maintaining inventory levels to meet customer demand promptly and effectively. Together, these ownership strategies underpin the operational efficiency and customer satisfaction within the Ethiopian Commodity Exchange by managing both the physical transport and final distribution of commodities.

Trading Performance:- Trading Performance refers to the overall profitability and success of an individual's or organization's trading activities in financial/commodity markets. It is typically measured by metrics such as return, volatility, risk-adjusted returns, and consistency (CFA 2020)

1.9. Organization of the study

The study is organized into five chapters and the content of each chapter is: The first chapter comprises the background of the study, statement of the problem, research objective, research questions, and significance of the study, the scope, limitation of the study, and operational definition of terms. The second chapter includes a review of related literature: theoretical literature review, empirical literature review, and conceptual framework of the study. The third chapter includes the methodology of the study which consists of research design, sampling design, data source, types and data collection procedures and techniques, and methods of data analysis. Chapter four deals with data analysis and the last chapter contain a conclusion and recommendation.

CHAPTER TWO

2. REVIEW OF RELATED LITERATURE

2.1. Introduction

This chapter gives an overview of literature that is related to the research problem presented in the previous chapter. The overview of the Ethiopian Agricultural Sector, the evolution and establishment of the Ethiopian Commodity Exchange, the concept of vertical integration and Conceptual Framework were introduced in order to give a clear idea about the research area.

2.2. Theoretical Literature

2.2.1. Overview of the Ethiopian Agricultural Sector

Ethiopia holds a distinguished status as the birthplace of Arabica coffee, thriving naturally in its original habitat within the former Kaffa region, now part of the Southern Nations, Nationalities, and Peoples' Region. This crop remains pivotal to Ethiopia's economy, contributing approximately 30% of its export earnings and supporting the livelihoods of approximately 15 million people, encompassing producers, laborers, transporters, and their families (International Coffee Organization, 2023).

Coffee is not merely a commodity but a critical subsector capable of significantly boosting agricultural output, increasing income for small-scale farmers, and enhancing government revenue. However, navigating the contemporary global coffee market, characterized by intricate supply chains and diverse consumer preferences, presents distinct challenges for Ethiopia. Strategic adaptations are essential to sustain competitiveness and maximize the sector's potential.

Ethiopia currently ranks as Africa's largest coffee producer and stands among the top ten producers globally, trailing only behind major producers like Brazil, Vietnam, Colombia, and Indonesia. In the 2022/23 period, Ethiopia produced 7,382,000 bags of coffee, solidifying its position as the sixth-largest producer globally. As an exporter, Ethiopia shipped 250,000 tons of coffee to 60 countries during the 2021/22 season, valued at over 1 billion USD. These figures reflect significant growth in both volume and value compared to previous years, highlighting coffee's crucial role in Ethiopia's economic landscape.

Over 150 Ethiopian coffee exporters actively participate in processing and exporting coffee to various international markets. Leading destinations for Ethiopian coffee include Germany, the United States, Saudi Arabia, Japan, and Italy, underscoring its importance as a vital export commodity that contributes significantly to Ethiopia's economic vitality (Ethiopian Coffee and Tea Authority, 2023).

Despite its prominence, the Ethiopian coffee sector faces multifaceted challenges. Fluctuating global coffee prices, the adverse impacts of climate change, and the imperative for enhanced infrastructure and technological advancements pose ongoing hurdles. In response, the Ethiopian government and stakeholders are prioritizing sustainable practices, improving quality control measures, and expanding market access through strategic trade agreements and promotional initiatives.

Moreover, Ethiopia's rich coffee culture is deeply intertwined with its social fabric, offering unique opportunities for tourism and cultural exchange. The traditional Ethiopian coffee ceremony, celebrated for its hospitality and cultural significance, attracts tourists seeking an immersive experience. As global demand grows for specialty and sustainably sourced coffee, Ethiopia stands ready to leverage its diverse heritage and abundant biodiversity to capture niche markets and promote its coffee as a premium product of distinction.

2.2.2. Evolution and establishment of the Ethiopian Commodity Exchange

The establishment and evolution of the ECX have been driven by a critical need to address market inefficiencies, high transaction costs, and information asymmetry within Ethiopia's agricultural trading system. While the rationale behind its creation shares similarities with other commodity exchanges globally, the ECX's approach and the circumstances that led to its inception distinguish it significantly within Africa.

Since its inception in 2008, the ECX has been instrumental in modernizing Ethiopia's agricultural trade landscape. It operates as a transparent and efficient marketplace for trading agricultural commodities such as coffee, sesame, and pulses, utilizing standardized contracts and an electronic trading platform. Reports indicate that over the past decade, the ECX has achieved a remarkable 30% reduction in transaction costs and a 25% increase in market participation (Gebre-Madhin, 2022).

Central to the ECX's success is its innovative use of technology and commitment to market transparency. The exchange has implemented a robust warehousing system, real-time price dissemination mechanisms, and a secure payment system that ensures prompt and reliable payments to sellers. These advancements have significantly enhanced the overall efficiency and reliability of Ethiopia's agricultural market, benefiting both smallholder farmers and large-scale traders alike (ECX Annual Report, 2023).

One of the standout achievements of the ECX is its empowerment of smallholder farmers. By providing access to timely market information and mitigating the risks associated with selling produce, the ECX has enabled farmers to make informed decisions and secure better prices for their commodities. This empowerment has had a tangible impact on improving income levels and enhancing livelihoods across rural Ethiopia.

Moreover, the ECX has played a pivotal role in standardizing quality and grading systems for agricultural products. This standardization has bolstered the reputation of Ethiopian commodities in international markets, ensuring that products meet stringent quality standards and enhancing their competitiveness and attractiveness to global buyers.

In terms of market integration, the ECX has successfully connected remote producers with larger markets, facilitating the efficient flow of goods and information across different regions of Ethiopia. This integration has contributed to a more cohesive national market system, promoting economic growth and stability in the agricultural sector.

Furthermore, the ECX has been a catalyst for policy reforms aimed at improving Ethiopia's agricultural landscape. Its success has spurred government investments in critical infrastructure such as roads and storage facilities, essential for the smooth functioning of the exchange. These investments have had a multiplier effect, fostering rural development and boosting agricultural productivity across the country.

Despite its considerable achievements, the ECX continues to face challenges. Enhancing its technological infrastructure further and addressing issues related to market access for remote and marginalized farmers are ongoing priorities. Efforts to expand inclusivity and outreach are crucial to ensuring that all stakeholders in Ethiopia's agricultural value chain can benefit equitably from the ECX's services.

2.2.3. The purpose of commodity exchanges

The primary aim of a commodity exchange is to establish an organized marketplace where members can engage in the buying and selling of diverse commodities in which they hold an interest. The exchange operates as a facilitator and does not seek profits directly. Its role involves providing the necessary infrastructure and regulations for members to participate in trading commodity futures and spot contracts. Non-members can also engage in trading by conducting transactions through a member broker and paying brokerage commissions.

The utility of a commodities exchange is shaped by the specific contracts that are traded. Centralizing trade within an exchange contributes to the efficient transfer of ownership, price determination, and market transparency. This centralization reduces transaction costs related to identifying market outlets, inspecting product quality, and finding buyers or sellers. By diminishing these costs and enhancing information flow, an exchange can benefit market participants by improving returns, reducing short-term price fluctuations, and minimizing variations in prices across different locations.

More sophisticated contracts that allow trading in futures provide enhanced risk management capabilities, bolstering market liquidity, profitability, price discovery, and price risk mitigation. While futures contracts mitigate price level risk, they introduce basis risk, which stems from differences between spot and futures market prices. Unanticipated shifts in the basis can result in gains or losses, and the extent of basis risk significantly affects the effectiveness of risk management through the exchange.

Creating and operating a commodity exchange entails considerable expenses. These costs encompass investments in physical infrastructure like warehousing, operational space, and communication systems. Additionally, operational costs arise from participant screening, contract enforcement, and providing clearinghouse services to minimize default risk. These services expose the exchange to both working capital outlays and risk. The success of an exchange hinges on users recognizing the value of its services and being willing to pay fees to cover the associated costs.

However, the formation of futures exchanges can be hindered by market failures such as deficiencies in physical infrastructure, information asymmetry, and inadequacies in supporting legal and financial institutions. Overcoming these challenges is essential for the establishment and effective functioning of a commodities exchange (Rashid et al., 2015).

2.2.4. Functions and benefits of commodity exchanges

A well-organized and effectively managed commodity exchange market offers numerous advantages. It plays a crucial role in reducing transaction costs by facilitating direct communication between buyers and sellers. Additionally, it enables centralized grading of products, ensuring the enforceability of contracts. As highlighted by Gabre-Madhin (2022), a commodity exchange serves as a mechanism for price discovery, simplifying transactions through standardized contracts and disseminating information about volume and prices.

Furthermore, a commodity exchange functions as a pivotal tool for enhancing market liquidity, facilitating the transfer of price risk, and fostering trust, order, profit, and integrity within the market. Its fundamental purpose is to provide services that add value to all participants in the market. This is achieved by addressing two primary types of risk: contract performance risk and the risk of default on physical delivery or payment. Market risk, defined as the potential for adverse and unforeseen price movements or changes in supply and demand in the future, is also mitigated.

A well-organized commodity exchange offers several benefits. It reduces transaction costs by facilitating buyer-seller interaction, centralizes grading, and enforces contracts. Price discovery is simplified through standard contracts, enhancing market liquidity, enabling price risk transfer, and fostering trust and integrity. The exchange addresses contract performance risk and contract default risk, adding value to the market by managing these risks. Additionally, it provides a mechanism for addressing market risks arising from unforeseen price fluctuations and shifts in supply and demand.

In essence, a commodity exchange like ECX serves as a crucial platform that enhances market efficiency, transparency, and risk management, benefiting all stakeholders involved in commodity trading.

2.2.5. Contribution of commodity exchange for agricultural development

Agricultural commodity futures serve as essential tools for managing price risks and promoting efficient agricultural commercialization. These markets play a crucial role in hedging commodity price risks, offering a cost-effective, highly efficient, and transparent platform for discovering future prices. They facilitate the exchange of information on supply and demand dynamics, which enhances price discovery accuracy and promotes efficiency in production, storage, and agro-processing operations, thereby improving overall agricultural marketing performance (UNCTAD, 2021).

The primary function of futures contracts is to provide protection against price fluctuations, ensuring stability for stakeholders involved. Commodity exchanges also empower farmers, buyers, and traders by fostering a more efficient agricultural marketing system. They provide timely and relevant market information and establish transparent and competitive mechanisms for price discovery, benefiting both buyers and sellers alike. Additionally, commodity exchange prices serve as benchmarks for comparing commodity prices across different international markets, aiding in market analysis and decision-making (UNCTAD, 2021).

These roles underscore the critical importance of futures markets and commodity exchanges in modern agricultural economies, supporting risk management, market efficiency, and sustainable agricultural development worldwide.

2.2.6. Coffee in Ethiopia

Ethiopia's advantageous environment for coffee cultivation, characterized by ideal combinations of altitude, temperature, rainfall, soil type, and pH, positions it uniquely as the birthplace of Coffee arabica. This geographical diversity supports a rich genetic pool within Arabica coffee, contributing to notable heterogeneity and distinctive flavor profiles in Ethiopian coffees, which are highly sought after in the specialty coffee market (Alemu. G, 2023).

Unlike many coffee-producing regions, Ethiopia primarily focuses on Arabica coffee due to its adaptation to the country's diverse topography, particularly high-altitude regions. In contrast, the cultivation of Robusta coffee, suited to lower-altitude equatorial climates, remains limited in Ethiopia (Alemu. G, 2023).

Ethiopia's dedication to Arabica coffee production not only reflects its historical role in coffee's global heritage but also aligns with current trends favoring specialty coffees. The country's ability to produce unique and high-quality coffees enhances its competitive edge in the global coffee market, appealing to consumers and coffee enthusiasts who value distinctive flavor profiles and premium attributes.

The primary coffee production zones in Ethiopia are concentrated in the Oromia and Southern Nations, Nationalities, and People Regions (SNNPR) in the southern and western parts of the country. Smallholder farmers play a pivotal role, contributing to 95 percent of Ethiopia's coffee production (Tefera and Tefera, 2013). The coffee is cultivated under various production systems, including forest, semi-forest, garden, and plantation coffee. Forest coffee grows in the wild under natural forest cover, with minimal tree maintenance, while semi-forest coffee involves limited farmer maintenance, typically annual weeding, in forest conditions. Garden coffee refers to trees planted by farmers near their residences, often intercropped with other crops or trees. Plantation coffee, cultivated on large commercial and private farms, utilizes modern production practices like irrigation, input use, mulching, stumping, and pruning.

Although recent statistics are not readily available, estimates suggest that these production systems constitute approximately 10, 35, 50, and 5 percent, respectively, of the total coffee production in the country (Kufa, 2012).

In the past decade, Ethiopia has implemented substantial domestic policy reforms that have reshaped the structure and performance of its coffee export sector. A pivotal reform occurred in December 2008, mandating that private traders conduct all coffee sales through the Ethiopian Commodity Exchange (ECX), a modernized trading platform. The ECX facilitates coffee trading using standardized contracts, incorporating a warehouse receipt system with uniform parameters for coffee grades, transaction sizes, payment terms, and delivery methods. Initial quality control measures are decentralized and conducted at multiple locations throughout the country.

This policy shift aimed to enhance transparency, efficiency, and market access within Ethiopia's coffee industry. By centralizing coffee transactions through the ECX, the government sought to streamline the trading process, reduce transaction costs, and ensure fair pricing mechanisms for both buyers and sellers.

Moreover, standardizing quality parameters at the initial stage of trading promotes consistency in coffee quality and facilitates smoother transactions across domestic and international markets.

The ECX's role extends beyond transaction facilitation; it serves as a catalyst for broader economic development by encouraging investments in infrastructure and supporting the growth of ancillary industries within the coffee sector. These reforms underscore Ethiopia's commitment to modernizing its agricultural trade practices and leveraging its position as the birthplace of Coffee arabica to strengthen its global competitiveness in the specialty coffee market.

2.2.7. Coffee Production Systems in Ethiopia

According to Ministry of Trade, 2012, with an impressive 95% of coffee production in Ethiopia classified as organic, the country organizes its coffee cultivation into four distinct systems: forest coffee, semi-forest coffee, garden coffee, and plantation coffee.

A. Forest Coffee

Predominantly found in the South and South-Western regions of Ethiopia, such as Bale, West Wolega, Metu, Keficho-Shekicho, Bench-Maji, and Jimma, forest coffee originates from the birthplace of Coffee arabica. This system involves the natural, self-sown growth of coffee under the shade of forest trees. Despite not being intentionally cultivated, forest coffee provides a diverse range for selection and breeding, emphasizing traits like disease resistance, high yields, and superior aroma and flavor. Approximately 10% of the national coffee output is produced under this system.

B. Semi-Forest Coffee

Constituting 35% of the national coffee production, the semi-forest system is also prevalent in the Southern and South-Western parts of Ethiopia. Here, trees receive relatively more sunlight compared to the forest coffee system. Farmers engage in thinning and selectively choosing forest trees to allow for sufficient sunlight while maintaining adequate shade. This system combines natural growth with farmer intervention.

C. Garden Coffee

This production system is primarily located in the Southern and Eastern parts of the country, specifically in South and North Omo, Hararghe, Gedeo, Sidamo, Wolega, and Gurage zones. Garden coffee, representing around 50% of the national production, is situated near growers' residences. It is characterized by low planting densities and is typically fertilized with organic materials.

D. Plantation Coffee

Accounting for 5% of the national coffee production, plantation coffee is cultivated on state-owned plantations (some of which are in the process of privatization) and well-managed smallholder farms. This system employs vital agronomic practices, including weeding, proper spacing, fertilizer and herbicide application (for state-owned plantations), manuring, and shade regulation, among other techniques.

Ethiopia, renowned as the birthplace of Coffee arabica, experienced favorable weather conditions during the 2021/22 production year, with minimal pest and disease challenges in coffee-growing regions. Despite delayed rains in the southern regions causing a prolonged harvest, the overall impact remained minor.

According to USDA, over the past decade, Ethiopia's coffee production has steadily increased from 6 million bags to over 8.15 million bags in 2022, solidifying its position as the world's third-largest grower of arabica coffee and the leading producer in Africa. Newly planted coffee seedlings, cultivated between 5-10 years ago, are now contributing to the production volume.

The forecast for the 2022/23 coffee production stands at 8.25 million bags (495,000 MT), a slight increase from the previous year, assuming favorable weather conditions, minimal pest and disease pressure, and adequate rainfall. The upward revision of the 2020/21 coffee production estimate to 8.15 million bags is attributed to higher yields in the southern and western regions, coupled with new trees entering the harvest phase. Coffee experts recommend phytosanitary measures, such as regular field monitoring, to address challenges like Coffee Berry Disease (CBD), emphasizing the need for uprooting and burning infected coffee trees.

Ethiopian coffee processing primarily employs two methods: sun-dried and wet processing. Currently, 70-80% of Ethiopian coffee is unwashed or sun-dried, with the remaining 20-30% being washed. Unwashed coffee, though earning a lower price in some markets like the U.S., aligns with preferences in countries like Japan, where a more natural and richer taste is sought. In addition to its prominence in the coffee sector, Ethiopia is a leading producer of khat in East Africa. Khat, a stimulant, is legal in Ethiopia and neighboring countries but banned in many others.

Some farmers have shifted towards exclusive khat cultivation due to its higher income potential compared to coffee. This transition, while boosting incomes, has raised concerns about declining food security, biodiversity, soil health, and women's empowerment. The Ethiopian government neither promotes nor takes action against khat cultivation, instead deriving significant revenue from its export and local taxation (USDA, 2022).

2.2.8. Coffee Consumption

Ethiopia stands out as one of the leading coffee consumers in Africa, with a consistently growing trend in coffee consumption. The forecast for domestic coffee consumption in the marketing year (MY) 2022/23 is estimated at 3.5 million bags (210,000 MT), reflecting a steady increase. In the preceding MY 2021/22, local consumption was projected to reach 3.45 million bags (207,000 MT).

The coffee consumed in the local market primarily consists of beans that were rejected or failed to meet the export quality standards set by the Ethiopian Commodity Exchange (ECX). Despite this, the local price for coffee arabica tends to be higher than the international price. This trend is partly attributed to the crucial role coffee plays in the cultural and social life of Ethiopians.

Coffee's significance in Ethiopian culture extends beyond its economic value, forming an integral part of social and cultural practices. The local market's preference for higher-quality coffee is reflected in the elevated prices, contributing to the overall importance of coffee in the country.

The local coffee market has experienced a price increase in recent years, driven by improved export prices for coffee arabica. This positive economic trend has likely played a role in shaping the local coffee landscape, influencing both consumption patterns and pricing dynamics within Ethiopia.

2.2.9. Coffee Trade

According to a report from the Ethiopia Coffee and Tea Authority, Ethiopia's coffee export revenue experienced substantial growth, surpassing half a billion U.S. dollars in the first half of the current 2021/22 fiscal year. The six-month export revenue figure increased by $274 million, with Ethiopia now exporting over 1000 tons of coffee daily. Coffee stands out as the top-performing export product for the country.

In the 2021/22 fiscal year, an estimated 42% of the coffee production is allocated to the domestic market, with approximately 5% being smuggled for cross-border trade and the black market. The remaining 58% is directed to the export market, with approximately 80–85% going through the Ethiopian Commodity Exchange (ECX), 5–10% through direct trade by cooperatives, and 5% through commercial farms.

A noteworthy development in January 2022 was Ethiopia's sale of around 11,200 bags (672 MT) of coffee online during the launch of Ethiopian coffee brands on China's largest e-commerce platform, Alibaba (Tmall Global). This initiative was a result of collaborative efforts between the United Nations Economic Commission for Africa (ECA) and the Government of Ethiopia.

The surge in Ethiopia's coffee exports is attributed to adverse weather conditions, particularly recurrent drought and frost in Coffee Arabica-producing areas of South America. These climate-related challenges significantly impacted the volume and quality of Coffee Arabica production in those regions, creating an opportunity for Ethiopia to meet global demand and strengthen its position in the international coffee market.

Vertical integration in the coffee sector has shown mixed results, depending on the context and the specific structures in place. Studies by Etsubdink T., (2018) suggest that vertically integrated coffee producers and cooperatives can secure higher price premiums due to better traceability and quality control. This is particularly relevant in markets where consumers are willing to pay a premium for certified and high-quality coffee.

In Ethiopia, the establishment of the ECX in 2008 marked a significant shift in the coffee trading landscape. The ECX was designed to increase market transparency, reduce transaction costs, and improve the quality of Ethiopian coffee by implementing a standardized grading and auction

system. However, it also restricted the ability of most exporters to sell directly to international buyers, which impacted the traditional vertically integrated structures (AAWE, 2020).

2.2.10. The Ethiopian Commodity Exchange (ECX)

Agriculture is the backbone of Ethiopia's economy. To bring millions of Ethiopians out of poverty requires a fundamental change in the way agriculture is done. Substance agriculture should be replaced with technology-driven and market-oriented production. As Ethiopia is poised to transform its agrarian economy, so too must Ethiopia's marketing system take the country into the new millennium. It is time to enter the modern age of globally connected trading systems, relying on technology and knowhow, while tailored to Ethiopia's realities and conditions. It is time to forge a new partnership between the private and the public in the new arena created by market liberalization.

Ethiopia's current marketing system is traditional and outdated, leading to high transaction costs and risks, isolating the country from the global market. The Ethiopia Commodity Exchange (ECX) has a vision to transform Ethiopian agriculture by establishing a dynamic, efficient, and organized marketing system accessible to all. ECX introduces standardized commodity contracts that outline grade, delivery location, lot size, and other terms, available for immediate delivery or future dates.

The introduction of ECX aims to modernize Ethiopia's agricultural trading landscape, enhance market efficiency, and provide greater accessibility to market information for participants throughout the country. By establishing standardized contracts and utilizing technology, ECX seeks to overcome the challenges posed by the traditional marketing system and promote a more inclusive and efficient agricultural marketplace.

The Ethiopian Commodity Exchange (ECX) represents a modern trading system that utilizes standardized crop contracts to establish uniform parameters for commodity grades, transaction sizes, payments, deliveries, and trading order matching. This approach contrasts with the previous auction-based trading system, which existed before ECX was established. The current trading system within ECX has replaced the older one.

Quality control measures are conducted through liquoring and inspection units situated in major crop-producing areas. Following this, crops are weighed and inventoried within ECX-operated warehouses. Transactions are based on electronic warehouse receipts issued to depositors, reducing the risks associated with paper-based records.

ECX's quality certification involves a modified version of the existing grading system, incorporating a new classification system based on classes, types, and grades of commodities. The exchange has established over 20 warehouse branches across various regions, such as Hawassa, Dilla, Wolyita Sodo, Gimbi, and others. These warehouses play crucial roles in tasks such as arrival processing, sampling, coding and decoding, grading, weighing, depositing, reconciliation, and reporting.

To facilitate transactions on the exchange, primary depositors must bring their commodities to the nearest branch. Samples are taken, grading and weighing occur, and trade prices are determined based on information related to the grade, weight, and inventory location. ECX's modernized approach aims to enhance transparency, efficiency, and standardization within Ethiopia's commodity trading system.

2.2.11. Interacting activity systems: Farmers, Suppliers, Exporters, Warehouse and ECX operation

Indeed, the functioning of a commodity exchange involves a complex network of interconnected stakeholders, each with its own role and activities. Analyzing the entire interactive activity system is crucial for understanding how the exchange operates and how various actors contribute to the overall process. Let's break down the key market actors and their activity systems within the context of the Ethiopian Commodity Exchange (ECX):

1. **Farmers**: Farmers are at the beginning of the coffee production process. Their activity system includes cultivating, harvesting, and processing coffee beans. Their goal is to produce high-quality coffee that meets market demands. Their output feeds into the supply chain and eventually reaches the exchange.

2. **Suppliers**: Suppliers play a critical role in connecting farmers' produce with the exchange. They facilitate the transportation, logistics, and storage of coffee beans.

Their activity system involves collecting, transporting, and preparing coffee for sale at the exchange. They ensure that the coffee beans maintain their quality during transit.

3. **Exporters**: Exporters are key players in connecting the domestic coffee market to the global market. Their activity system includes purchasing coffee from the exchange, packaging, and exporting it to international buyers. They ensure that the coffee meets international standards and regulations for quality and packaging.

4. **ECX Personnel**: The Ethiopian Commodity Exchange serves as the central hub where coffee is traded. ECX personnel manage the trading floor, maintain the electronic trading platform, and ensure transparent and efficient trading. Their activity system involves setting up trading sessions, matching bids and offers, and disseminating market information.

5. **Service Providers**: As you mentioned, the ECX system relies on various service providers such as internet, power, and road infrastructures. These providers enable seamless communication, data exchange, and transportation, which are essential for the functioning of the exchange and the entire supply chain.

All these activity systems are interconnected and interdependent. The goal of selling coffee or exporting it to the world market is achieved through the collective efforts of farmers, suppliers, exporters, and ECX personnel. Each stakeholder's input contributes to the smooth flow of coffee from production to consumption, and ultimately to international trade. The success of the entire chain relies on effective collaboration and coordination among these actors.

Considering the overall activity as an interacting system is indeed a plausible approach, as it acknowledges the interdependencies and relationships among the various stakeholders involved in the commodity exchange process. This perspective allows for a comprehensive understanding of how the entire system operates and how different factors can influence its performance and outcomes.

Farmers' activity system

Coffee farming activity has two sources of production the first one is planting and growing of coffee seedlings. Usually, near to the backyard of the farmer and the second source of coffee production is from forests by collecting the beans that are ready to harvest. Although, the majority of coffee produce still comes from planted seedlings. The instruments used for coffee growing and later harvesting tasks are farming and agricultural tools such as shovels, machete, fork hoes, pickaxes, basket, sacks and the likes. The instruments can be categorized as a light hand tools and instruments without any sophisticated machines. It also remains the same for big and middle level coffee farms. They hire laborers aplenty to collect the harvest using these instruments. Another important instrument of farmers is the information acquisitions instruments and these includes mobile phones SMS, toll-free number, media (radio, TV and newspapers), price displaying tickers and ECX Interactive Voice Response (IVR). Subject of the activity system is the coffee farmer. It then follows the object, which are cultivating the coffee, collecting the harvest and selling coffee at primary market etc... The rules of the activity at this level comes from the regional government's primary market rules and regulations and ECX rules that gives clear direction how suppliers should be acted. As for community of the activity system: family members, suppliers, regional government agricultural desk workers, coffee farmers‟ work unions, coffee washing stations workers and warehouses personnel etc. Division of labor of the farmers depends on family work divisions for the tasks of collecting the harvest as well as selling beans.

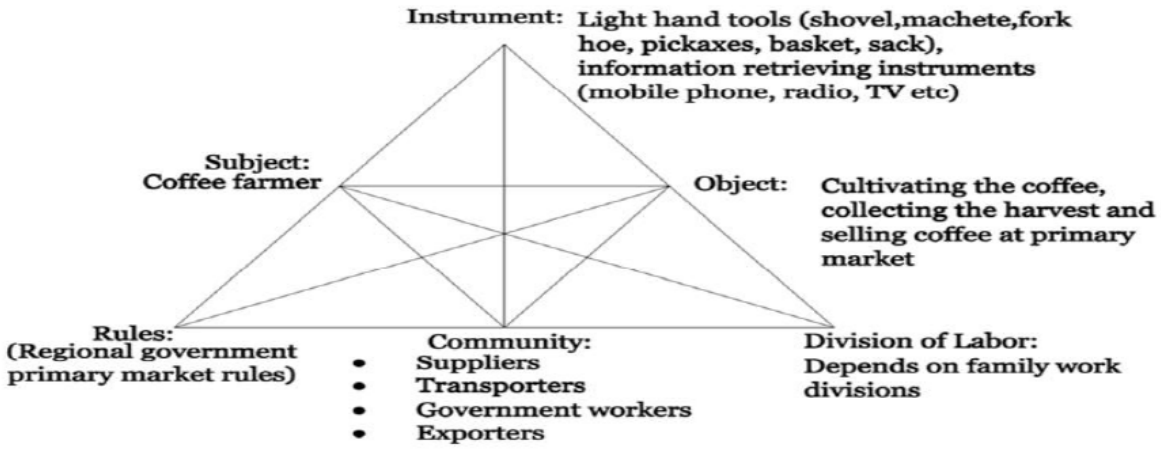


Figure 1:- Farmers' activity system: Etsubdink T., 2018

The farmers‟ activity system dynamics has changed from being scarcely informed about the market price to the extent of engaging in well-informed setting. Farmers‟ activity system seems to get better and make advancements in the future as well. There is a growing tensions emerging in demanding the concerned government bodies to work hand in hand to address the limited capacity obstacles of ECX system, combat corruption and to help them to minimize the risks of world market price fluctuations and so on.

Suppliers' activity system

The role of suppliers extends from remotest primary market till capital city commodity exchange trading floor. Suppliers need to be members or client represented by members as a prerequisite to be an active supplier. Trading license and deposited financial capital for exchange purposes in one of the eleven ECX partner banks are compulsory requirements. These components constitute the instrument of the suppliers‟ activity system. Then, the subject is the supplier himself. The object of supplier is targeting to buy as much as possible quality unwashed coffee. It then followed by transport the produce and sells it in trading floor deals for exporters/buyers after it has been washed in coffee washing stations. The governing rules and regulations of the activity are ECX warehouse operation manual, ECX rules and regulations, directives, signed agreements between the ECX and suppliers etc.

The community mainly includes the coffee producing farmers, the warehouse and washing station personnel, transporters and laborers, and the coffee receiving exporters and/or buyers. The division of labor of suppliers basically stretched from personnel who assigned to finalize the process of buying and collecting of coffee beans from primary markets. In addition, getting the beans properly washed with the desire level of moisture percentage. Thus, it involves agents who enter to transact in ECX trading floor, accountants and cashiers, managers etc. Interestingly, suppliers‟ object is quite expanded from rural towns till urban exchange facilities. That makes them to be in a position to face setbacks such as capacity related limitations, corruption issues, ECX‟s insensitivity to their feedbacks and arbitration and punishment approaches. These are seemingly few developmental contradictions aggravating in suppliers‟ activity system.

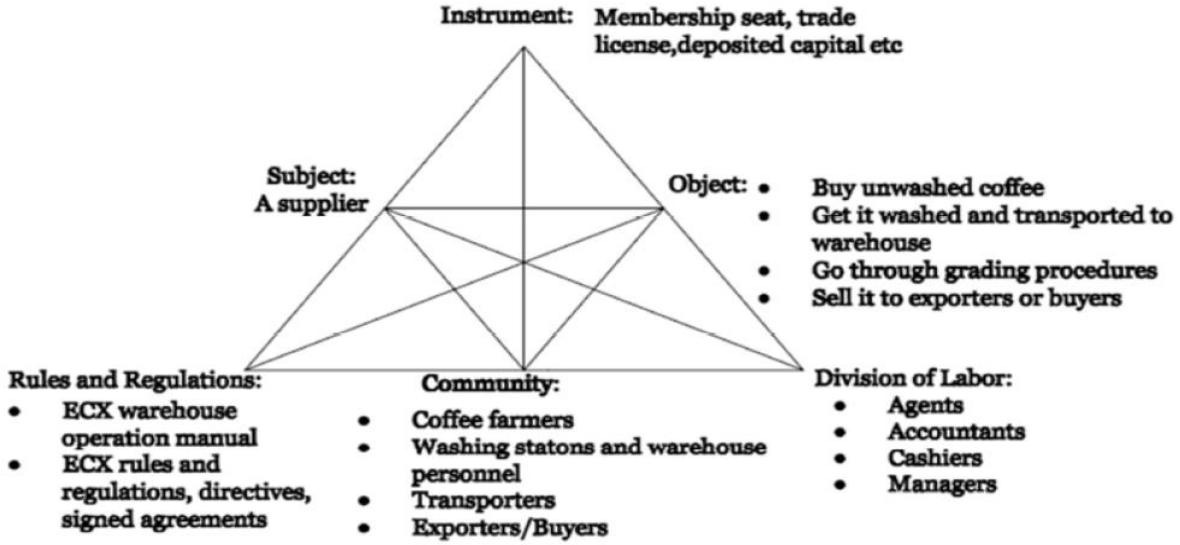


Figure 2:- Supplier's activity system: Etsubdink T., 2018

Exporters' activity system

In the flow of coffee, the last stakeholders are exporters by whom the foreign market accessed. The country earns foreign currency and the resource trickle down all the way to the bottom line farmer. Exporters are one of the key stakeholders of ECX, their activity system depicted and clarified below: Exporters‟ instrument likewise suppliers, they need to be registered members, get compulsory exporting license and sufficient amount of capital deposited in the bank. Exporter would be the subject in this activity system.

As we move on to the object, exporters' in this point targets to buy quality coffee from suppliers in trading floor transaction that meet their export demands and selling coffee for the world market based on international market price. In working towards these ends, the activity abides by rules and regulations of ECX and ECXA, binding signed agreements with ECX, ECX warehouse operation manual and other directives. For exporters the community deems to be the coffee supplying body, warehouse personnel, transporters and laborers, coffee receiving partners abroad. The organizational structure of exporters comprises of transit personnel, accountants, managers, exchange agents and commission agents etc.

The world market coffee price is becoming increasing hard to predict. Exporters are in disadvantage in some cases. Due to the fact of lower export prices they tend to engage in domestic market, domestic market is barely gets depressed as Ethiopian market are the major consumer of coffee. It leaves exporters to be in conflict with government's pressure to increase export volumes. In addition, corruptions in some areas like warehouses add extra weight for their business.

Warehouse (grading and liquoring) activity systems

Warehouses are the most important objects in pursuing of agricultural market modernizing endeavors. Warehouses expected to give similar and consistent grading of commodities across the nation that would be ready for exchange. It is also a safest possible storage facility the produce can possibly get which prevents the produce from any quality deteriorations. This helps the commodity to be exported or ownership transferred from supplier to the buyer in the best way possible. In warehouse activity system, we would get instruments such as standardized and well-equipped laboratory, warehouse storage, work manuals and forms to serve customers of the warehouse. After all the instruments are being in place, the coffee will be graded and stored until the process of exchanging completed. The subject in warehouse activity system is the warehouse personnel.

The warehouse personnel comprise diverse staff members. It Include individuals whose role are to load and unload the produce from and to the trucks. In addition, other warehouse staffs with supervising role such as warehouse supervisor, LIC (i.e. leading inventory controller) and to some extent Inventory Control (IC).

The staffs working in tasting and grading of coffee as well as others contributes significantly for grading and liquoring centers activity success. As a result, the subject in warehouse appear to be diverse than for instance the likes of supplier or exporter. Subsequently, object of the activity system are receiving of washed coffee that needs to be given standard/grade, weighed and stocked in good condition. In order to enforce exchange based on quality and item grades as well as to avoid any harm of produce's quality deteriorations by stocking it in warehouses temporarily. It gives key services like grading, GRN issuing for the owner of the coffee and dispatching the coffee by GIN. Rules of the warehouses embrace ECXA rules and regulations, ECX warehouse operation manual and other directives.

The warehouse community represents different collection of market actors such as suppliers, farmers‟ work unions, exporters and /or buyers. Finally, the warehouse division of labor includes major activities such as laboratory unit, receiving commodity, delivering commodity, inventory management and reporting etc. In these activities there are divisions like Leading Inventory Control (LIC), Inventory Control (IC), warehouse supervisors, warehouse cleaners, security marshal and warehouse guards etc… The warehouses are criticized by suppliers and exporters for lack of consistent grading, some cases of corrupt personnel and limited capacity are few of the shortfalls. There are some efforts taking place to reduce service inconsistencies of warehouses by improving warehouses‟ personnel capacity building. The mounting tension on warehouses‟ struggle to maintain consistent and reliable services pushing ECX to try develop the warehouses‟ work setting again.

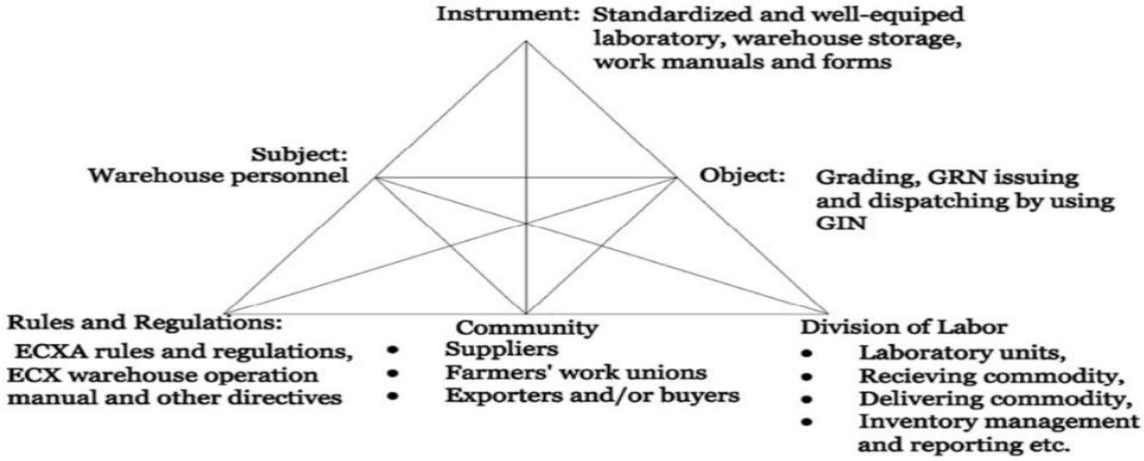


Figure 3:- Warehouse activity system, Etsubdink T., 2018

2.2.12. Concept of Vertical integration

Vertical integration refers to the consolidation of two or more stages of production or distribution under a single ownership. Recent literature continues to explore this concept in various industries, highlighting both its strategic benefits and potential drawbacks.

For example, a study on the pharmaceutical market found that vertical integration between pharmacy benefit managers (PBMs) and health insurers led to significant market changes. Specifically, the integration increased market share for vertically integrated insurers in Medicare Part D from 30% to 80% between 2010 and 2018.

However, this also resulted in increased premiums for insurers who purchased PBM services from rivals, indicating potential anti-competitive effects due to input foreclosure (Alpert, Gray, & Sood, 2023).

Similarly, a review of vertical mergers in various industries suggests that while vertical integration can enhance efficiency by streamlining production processes and improving coordination, it may also reduce competition and lead to higher prices for consumers. This dual impact underscores the need for careful consideration of vertical integration's effects on both market efficiency and competitive dynamics (Luco & Marshall, 2020).

Furthermore, the transaction cost economics (TCE) approach remains relevant in analyzing vertical integration decisions. It posits that firms choose to integrate vertically when internal management costs are lower than the transaction costs associated with market exchanges. This theory helps explain why firms might prefer vertical integration in environments characterized by high asset specificity and uncertainty, as it facilitates better control over the production process and mitigates risks associated with opportunistic behavior (Williamson, 1985; Coase, 1937).

Overall, the strategic use of vertical integration continues to be a critical topic in both academic research and industry practice. The ongoing debate highlights the balance between achieving operational efficiencies and maintaining competitive market structures, making it a complex but essential consideration for firms aiming to optimize their production and distribution strategies.

2.2.13. Vertical Integration Theory

The Vertical Integration Theory encompasses various perspectives on the integration of firms along the supply chain, with different assumptions guiding each theory. For instance, in a vertical market system, a monopoly in successive stages can drive upstream or downstream firms to vertically integrate (VI), resulting in limited quantities at different levels that reduce individual monopolists' profits. Competitive behavior among firms diminishes the profit incentive for integration, unless downstream firms can easily substitute inputs, prompting a profit-driven VI.

The concept of vertical integration is grounded in transaction cost economics, which posits that firms integrate vertically to minimize the costs associated with market transactions, such as negotiating and enforcing contracts, and to mitigate risks associated with opportunistic behavior by other market participants. Vertical integration can lead to greater control over the supply chain, ensuring consistent quality and supply of inputs, and can enhance coordination between different stages of production and marketing (Kharchenko, 2019).

According to the Schmalenbach Business Review (2022), the integration of the transaction cost economics (TCE) framework and the resource-based view (RBV) provides robust explanations for vertical integration decisions. TCE emphasizes the comparison between the costs of market transactions and internalization, while RBV focuses on how a firm's unique resources and capabilities influence its competitive advantage across different stages of the value chain. The theories within this integrated framework are categorized into four main groups: those involving a single agent with dominant pricing power in an external market, those assuming that external market exchanges occur through negotiation, those addressing dynamic aspects of vertical integration such as its role in deterring competition and adapting during industry life cycles, and those focusing on the costs associated with vertical integration, including financing and internal coordination expenses. These categorizations help in understanding the various dimensions and implications of vertical integration strategies

2.2.14. Advantages and disadvantages of vertical integration

According to Kharchenko, (2019), vertical integration has advantages and disadvantages. The advantages are: higher quality standards, supply assurance of critical materials, better coordination between different stages of production, lower lead times; higher delivery performance, higher customer satisfaction, create credibility for new products, protection of proprietary products or process technology, create and exploit market power and lower transaction costs. On the other hand, higher production, agency and coordination costs, higher capital requirements, higher fixed costs, risk of concentrating on additional non-core operations, reduced flexibility and market exit barriers, disadvantages of vertical integration.

The literature reviewed thus far encapsulates the factors influencing the extent of vertical integration, leading to a spectrum of advantages and disadvantages. Notably, what may be advantageous in vertical integration could translate to drawbacks in vertical disintegration (or outsourcing), and vice versa. These considerations encompass operational, intangible, and financial dimensions (Saroj et al. 2023). It is worth noting that operational performance and intangible assets, as influential factors, impact financial performance directly and indirectly.

Vertical Integration (VI) is a slowly changing structural element in industries, though individual firms can experience rapid shifts, deviating from the industry norm. The degree of VI is influenced by the acceptance of external exchange methods such as spot markets or contracts.

If external exchange is effective, firms can employ managerial expertise and capital to expand horizontally or conglomerate. In the agricultural and food marketing sector, overall VI is predicted to rise over the next decade, with the exception of a slight decline in backward integration by retailers. Retailers will expand horizontally if favorable regulatory conditions for horizontal mergers persist. Key influencers of VI in the vertical system encompass heightened concentration, capital intensity, and economies of flow, inputs and outputs per firm, economies of scope, firm size, and future demand. To summarize, VI serves as an alternative framework for structuring vertical markets, its extent determined by a firm's capacity to enhance value post-integration compared to its pre-integration state. Efficiency gains from internalizing production units hinge on the potential reduction in costs versus the expense of managing the unit internally. While most VI research focuses on incentives spurred by external market failings, further exploration is needed into the costs of managing previously independent production units. Notably, the wholesale sector is highly amenable to VI, constituting a level where both internal and external exchanges are evenly balanced, unlike other predominantly externally exchanged vertical levels that will continue to rely on the external market's significance.

According to Jones and Aruoma (2021), the vertical integration of agricultural product supply chains, aiming to offer insights and recommendations for enhancing the agricultural product circulation system and addressing circulation-related issues. By comparing an agricultural product circulation model lacking vertical integration with a model incorporating vertical integration, it is observed that vertical integration leads to a reduction in the final retail price of agricultural products within the supply chain.

Additionally, the level of commitment exhibited by the circulation entities involved in the agricultural product supply chain to ensure product safety is higher than that observed in the context of vertical integration for ensuring agricultural product safety.

Vertical integration refers to enterprises encompassing multiple successive stages in production, circulation, and product delivery. Scholars like Mighell Ronald LJ, Lawrence A, Jones and Aruoma view coordination among agricultural product links such as production, processing, storage, transportation, and sales as vertical coordination within the agricultural supply chain. Various researchers have investigated the impact of longitudinal integration within the agricultural industry, often with a focus on specific commodities.

2.3. Empirical Review

Studies in various regions have explored how vertical integration impacts commodity exchange performance. Tadelis and Williamson (2022) affirm that vertical integration offers significant advantages by reducing transaction costs and enhancing efficiency in commodity exchanges globally. This perspective lays a foundation for understanding how vertical integration could influence commodity trading businesses.

Effective management of supplier relationships is crucial for commodity exchange performance. Wang et al. (2021) found that strong supplier relationships enhance reliability and expand the variety of commodities traded. For the Ethiopian Commodity Exchange (ECX), the quality of its relationships with suppliers may play a pivotal role in determining its overall performance.

Operating as a centralized marketplace, the ECX plays a pivotal role in facilitating transparent and efficient trading of agricultural commodities through its spot market model. According to Gebre and Tadesse (2020), the adoption of electronic trading platforms within the ECX introduces nuanced considerations into the impact of vertical integration on market accessibility and price stability. These insights highlight the intricate relationship between technological advancements, market operations, and the strategic integration of supply chain components within commodity exchanges.

Research by Mehta and Chander (2023) emphasizes the critical role of transportation assets in optimizing commodity logistics within exchange frameworks. Ownership of transportation infrastructure not only enhances the speed and reliability of commodity movements but also contributes to cost efficiencies that can bolster overall exchange performance. The strategic deployment and management of transport assets thus emerge as key considerations for commodity exchanges aiming to streamline operations and mitigate logistical challenges.

Previous studies on vertical integration and commodity exchange performance reveal a diverse array of methodologies and findings. Lemma and Tadesse (2011), for instance, utilized comprehensive performance metrics such as transaction costs, market liquidity, and operational efficiency to assess the impact of vertical integration in different market contexts. This methodological diversity underscores the necessity for tailored approaches when evaluating the specific implications of vertical integration strategies within the operational framework of the ECX.

Warehouse ownership has been identified as another critical factor influencing the operational efficiency of commodity exchanges. Fernandez (2014) suggests that direct ownership or control over warehouses correlates with improved performance metrics, including reduced storage costs and enhanced commodity quality. Similarly, Kumar and Kumar (2023) corroborate these findings, emphasizing the pivotal role of warehouse management in optimizing commodity storage and delivery processes within exchange operations.

Furthermore, studies examining distribution control mechanisms within commodity exchanges underscore the importance of direct oversight in enhancing overall operational efficiency. Johnson and Smith (2021) demonstrate that effective distribution control mechanisms can significantly reduce delivery times and enhance reliability across modern exchange platforms. Analyzing the integration of distribution control strategies provides valuable insights into how commodity exchanges can optimize logistical operations and maintain competitive advantages in dynamic market environments.

Anne Wairimu M. and Stanley K. (2016) provide empirical evidence supporting the positive correlation between vertical integration attributes such as warehouse ownership, transportation assets, supplier relationship management, and distribution control and organizational performance.

These findings underscore the strategic importance of integrating vertical elements into commodity exchange frameworks to enhance operational efficiencies and sustain competitive advantages in global markets.

Despite these advancements, challenges persist within Ethiopia's export sector that hinder competitiveness and resilience. Tekle and Hailu (2023) identify critical issues including slow population growth in industrial countries, limited demand elasticity for primary exports, the impact of synthetic products, restrictive trade policies, and market concentration risks, natural adversities like droughts, diseases, and inadequate domestic policies. Addressing these multifaceted challenges is imperative for enhancing Ethiopia's export sector resilience and global competitiveness.

While existing literature offers valuable insights into the broader impacts of vertical integration on commodity exchange performance, the specific implications for the ECX remain underexplored. The scarcity of context-specific studies limits the applicability of global findings to the unique operational challenges and opportunities encountered by the ECX. As the ECX continues to evolve and expand its role in Ethiopia's agricultural economy, further research is essential to comprehensively assess the tailored effects of vertical integration strategies on its operational efficiency and market performance.

Summary of the Empirical Literature

The empirical literature reviewed above examines the impact of vertical integration on commodity exchange performance, with a focus on the Ethiopian Commodity Exchange (ECX). Various studies highlight the positive effects of vertical integration on operational efficiency, reduced transaction costs, and improved supplier relationships within commodity exchanges.

Table 1: **Summary of the Empirical Literature**

Authors	Key Findings
Tadelis and Williamson (2022)	Vertically integrated exchanges experience improved operational efficiency and reduced transaction costs.
Wang et al. (2021)	Exchanges with robust supplier relationships exhibit increased reliability in commodity availability and variety.

Authors	Key Findings
Gebre and Tadesse (2020)	Emphasizes the importance of understanding the unique operational dynamics of the ECX due to its electronic trading platform.
Mehta and Chander (2023)	Owning transport assets contributes to faster, more reliable, and cost-effective commodity transportation within exchanges.
Kumar and Kumar (2023)	Exchanges with direct ownership or control over warehouses tend to exhibit improved performance metrics, including reduced storage costs and enhanced commodity quality.
Johnson and Smith (2021)	Direct control over distribution processes positively influences overall operational efficiency in commodity exchanges.
Zhang and Li (2022)	Ownership of warehouses, possession of transportation assets, effective supplier relationship management, and distribution control demonstrate strong positive correlations with organizational performance.
Tekle and Hailu (2023)	Identified challenges in the Ethiopian export sector and emphasized the need to address these for competitiveness and resilience.
Mesfin and Bekele (2023)	Highlighted the necessity for tailored empirical studies to better understand the effects of vertical integration on the ECX's performance.
Tadelis and Williamson (2022)	Vertically integrated exchanges experience improved operational efficiency and reduced transaction costs.
Wang et al. (2021)	Exchanges with robust supplier relationships exhibit increased reliability in commodity availability and variety.

2.4. Identified Gap

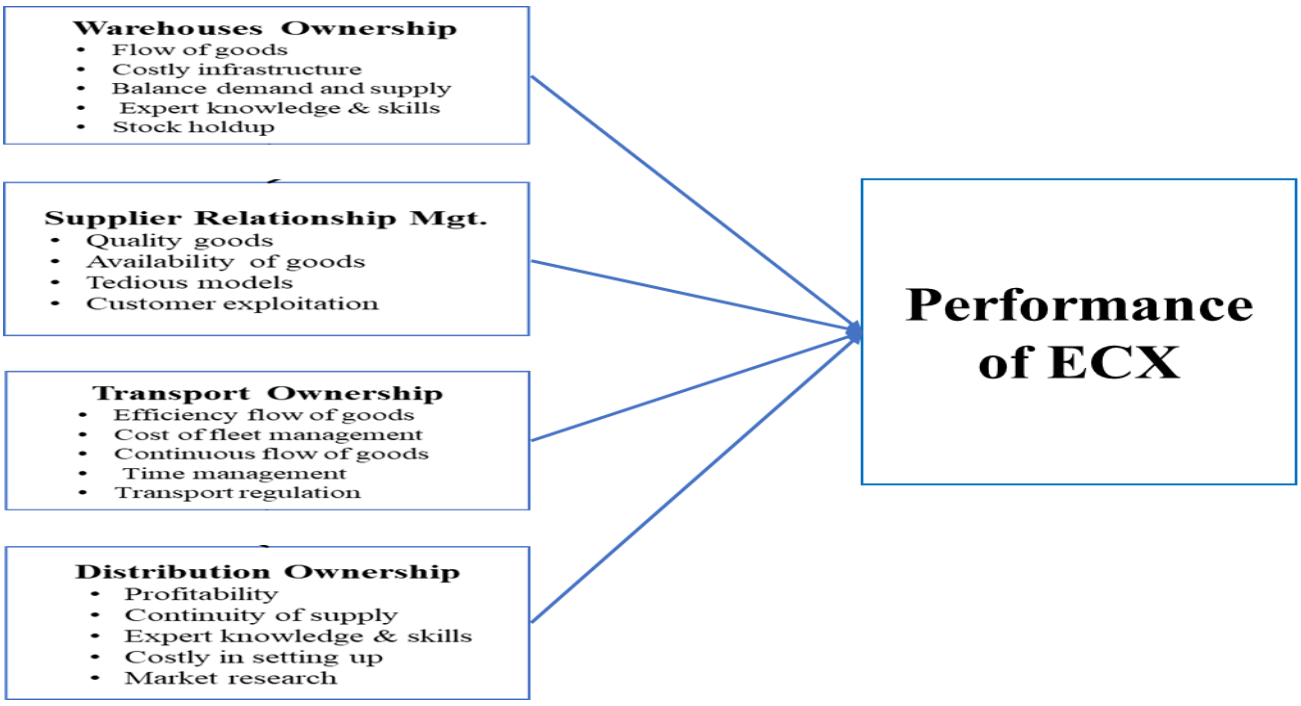
Despite the wealth of existing literature, a notable gap is identified regarding specific empirical studies on the ECX. The lack of context-specific research limits the applicability of global findings to the unique dynamics of the ECX. Given the distinct operational dynamics of the ECX, including its electronic trading platform and role in connecting buyers and sellers, there is a need for tailored empirical studies to better understand the effects of vertical integration on its performance. Addressing this gap in the literature is essential for providing insights into the challenges and opportunities faced by the ECX and enhancing its competitiveness and resilience within the

Ethiopian export sector. Mesfin and Bekele (2023) underscore the necessity for tailored empirical studies to better understand the effects of vertical integration on the ECX's performance.

2.5. Conceptual Framework of the study

A conceptual framework serves as a roadmap for understanding the relationships between key variables in a study. For the investigation into the impact of vertical integration on the performance of coffee trading within the Ethiopian Commodity Exchange (ECX), the conceptual framework can be structured as follows:

Figure 4: Conceptual Framework



Source: (Maina A. and Stanley K, 2016)

CHAPTER THREE

3. RESEARCH METHODOLOGY

This chapter deals with the research methodology part. The chapter is divided into sub-sections. The first section discusses research design and approach. The second section discusses the target population, the sampling technique, and the sample size determined for the research. The third section contains the data source and type and method of data collection. And, the remaining sections contain the procedure of data collection and the description of the data analysis method.

3.1. Research Design

The study used the most suitable research design i.e. descriptive and explanatory research design. The causal research design was used to test the cause-and-effect relationship between the proposed factors (vertical integration factors) and the performance of the coffee trading business within the Ethiopian Commodity Exchange. This design is well-suited for systematically investigating whether changes in specific factors are directly linked to variations in the performance of the coffee trading business. By utilizing a causal research approach, the researcher aims to establish a comprehensive understanding of how identified variables impact the outcomes within the Ethiopian Commodity Exchange's coffee trading sector. This method allows for a structured analysis to uncover and validate causal relationships, providing valuable insights into the factors influencing the success or challenges faced by the coffee trading business in this specific context. Descriptive research method was chosen to obtain relevant and precise information status of phenomena and draw conclusions from the facts discovered. Thus, the selected method was appropriate for this study.

This study used a mixed-methods research approach, incorporating both quantitative and qualitative approaches. The quantitative phase involves the analysis of historical data and statistical trends, while the qualitative phase involves questionnaires, in-depth interviews and content analysis.

3.2. Data Source and Collection Method

The study used both quantitative and qualitative data. The qualitative data was collected from secondary sources while the quantitative data from primary one. The qualitative data was mainly be used for identifying the variables.

In addition to this, five enumerators were trained to help the researcher in collecting the relevant data from target respondents. A training manual was prepared to train enumerators. The enumerators have one-day training on the on how to approach a respondent and record the responses.

The data source was from both primary and secondary. Primary data was collected from the sample of target population through semi-structured questionnaire adopted from Maina A. and Stanley K, (2016) with adjustments and in-depth interviews designed by the researcher. The questionnaire's validation and reliability was assessed through a pilot study, with feedback from the ECX management team guiding adjustments to ensure the instrument's effectiveness and accuracy in measuring the intended variables. The secondary data was gathered from different sources including regulators' assessment report.

The study used both quantitative and qualitative data. The qualitative data was collected from secondary sources while the quantitative data from primary one. The qualitative data was mainly be used for identifying the variables.

In addition to this, five enumerators were trained to help the researcher in collecting the relevant data from target respondents. A training manual was prepared to train enumerators. The enumerators have one-day training on the on how to approach a respondent and record the responses.

3.3. Population

The study focused on all staff members of the ECX head office, excluding supporting divisions. Additionally, it will encompass key stakeholders in the ECX coffee sector, namely sellers and buyers, or members of ECX that are 400 in number as of April 2024. Currently, the total number of employees in the ECX head office is 230. Out of 230, 58 are supporting divisions.

The total population of the study will be 630, incorporating all staff members of ECX and the total number of relevant stakeholders in the ECX coffee sector.

3.4. Sample Size Determination

The formula shown below was uses to determine the sample size for the study which is believed to be appropriate for finite population (less than 10,000). The population of this study is finite and the proportion of mutually exclusive cases is known with 95% confidence and the margin of error 0.05.

$$n = \frac{N}{1 + Ne^2} = \frac{630}{1 + 630\ (0.05)^2} = 245$$

Where

n = Desired sample size

N= Total population

e = Level of statistical significance (margin of error)

By computing the sample size of the population using the above formula, the sample sizes for who receives questionnaires will be 245.

3.5. Sampling Technique

The study used simple random and purposive sampling technique while choosing respondents. To perform a simple random sampling technique, the researcher initially compiled a thorough roster of all payroll employees. Subsequently, a sample was chosen through a lottery method, ensuring each employee had an equal opportunity to be selected for participation in the study. Additionally, the researcher employed purposive sampling technique to select senior officers for interview purposes. This approach aims to enable the chosen respondents to provide relevant insights based on their pertinent experiences when responding to the survey questionnaire.

3.6. Methods of Data Analysis

To analyse the data collected from respondents through semi-structured questionnaire adopted from Maina A. and Stanley K, (2016) with adjustments, advanced statistical techniques, including exploratory factor analysis and Multiple Regression Analysis, was employed.

The software packages IBM SPSS (Statistical Package for the Social Sciences) 21.0 and MS Excel was utilized for data analysis, with SPSS 21 chosen for its prompt and effective data management, offering better outcomes and a broad range of choices for researchers in analysing quantitative data. The software aids in calculations, saving time, and preventing certain mistakes that may occur during the analysis process (Hair et al., 2006).

Model assumptions for both exploratory factor and Multiple Regression analysis was tested as part of the analysis process to ensure the validity and reliability of the results. Multiple Regression analysis was chosen to examine the cause-and-effect relationship between proposed vertical integration factors and the performance of coffee trading at the Ethiopian Commodity Exchange, with assumption tests including linearity, independence, homoscedasticity, normality, and the absence of multicollinearity. exploratory factor analysis, aligned with the mixed-methods approach, aims to identify latent variables from observed variables, and its assumption tests encompass Sampling Adequacy (e.g., Kaiser-Meyer-Olkin), Factorability, Commonalities, and examination of the Rotated Factor Matrix, contributing to the validity and reliability of the findings by providing insights into the underlying structure of the data.

The regression equation for Multiple Regression Analysis can be represented as follows:

$$\mathbf{Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + ... + \beta n Xn + \epsilon}$$

Where:

- Y represents the dependent variable, which in this case could be the performance of coffee trading at the Ethiopian Commodity Exchange.
- X1, X2, ..., Xn represent the independent variables, which are the proposed vertical integration factors.
- β_0 represents the intercept, which is the value of Y when all independent variables are zero.
- $\beta 1, \beta 2, ..., \beta n$ represent the regression coefficients, indicating the change in Y for a one-unit change in each independent variable.
- ϵ represents the error term, capturing the difference between the observed and predicted values of Y.

Thus, the regression equation allows for the examination of how changes in the independent variables (vertical integration factors) affect the dependent variable (coffee trading performance) at the Ethiopian Commodity Exchange.

3.7. Pilot Study

To check the reliability and content validity of the instrument, the questionnaires was distributed to respondents which is 10% of the total sample size. This pilot questionnaires were distributed to ECX management team to check its validity. According to Isaac and Michael (2012), the pilot study sample should be 10 to 30 respondents for pilots in survey research.

In this research, the pilot study sample was taken to be 20 respondents. The pilot test is distributed to selected 20 respondents which are from ECX different from the selected branches and the questionnaires were given to the respondent.

3.8. Reliability and Validity Testing

3.8.1. Test of Reliability

Cronbach's alpha is a reliability measure designed by Lee Cronbach in 1951. Cronbach's alpha is a coefficient of reliability. It is commonly used as a measure of the internal consistency or reliability of a psychometric test score for a sample of examinees. For testing the reliability of the data instrument, Cronbach's Alpha was calculated to test the reliability of the research instrument. According to Hair, et al., (2016), if Cronbach's Alpha (α) is greater than 0.7, it means that it has high reliability and if α is smaller than 0.3, then it implies that there is low reliability. So if the score is high its reliability is more and if the score is less than lower the reliability.

To assess the reliability, one primary sample consisting of 20 questionnaires was pre-tested and then using data obtained from the questionnaire, the reliability coefficient was calculated by Cronbach's alpha. Alpha Cronbach of variables shown on the table below:

Table 2: Reliability Test

No	Pilot Test Construct	Number of Items	Type of the Variable	Cronbach's Alpha
1	Performance of Ethiopian Commodity Exchange	5	Dependent	0.865
2	Warehouse Ownership	5	Independent	0.986
3	Transport Ownership	5	Independent	0.885
4	Supplier Relationship Management	4	Independent	0.756
5	Distribution Ownership	5	Independent	0.787

Source: Own survey, 2024

The above table showed that the Cronbach's Alpha values of all individual variables are greater than 0.7. Therefore, we can conclude that the instrument is reliable.

3.8.2. Test of Validity

Content validity refers to the degree to which a test measures an intended area and in accordance with the researched theme. As to the content validity, the quantity and quality of questions were studied by experts. For this purpose, questionnaires were provided to university lecturers and proposed modifications were made. This was done in pre-testing of the questionnaire in which few comments against the unnecessary lengths of the sentences of some questions were forwarded.

3.9. Ethical consideration

The study has no any experiments on human subjects. However, permission from the organizations administrative was obtained through formal letters which were taken from Addis Ababa University College. Informed consent was obtained from individual respondents. All the questionnaires were made with strict privacy after getting informed consent from the respondents and assuring the confidential nature of the responses. The right of the respondents to refuse, answer for few or all of the questions were respected. For this purpose, the introduction part of each questionnaire stating the general purpose of the study and issues of confidentiality was discussed by data collectors before proceeding with the questions.

CHAPTER FOUR

4. DATA ANALYSIS, PRESENTATION AND DISCUSSION

This chapter consists of four sections. The first section summarized the respondents' rates. The second section presents the demographic distribution of the respondents. The last three sections present the descriptive statistical analysis, correlation, and regression analysis of the variables.

4.1. Data Presentation

Sorting the questionnaires was carried out after retrieval, a total of thirty four (34) out of two hundred forty-five (245) questionnaires retrieved were not usable, and these constitute only 14% of the total questionnaires. Some of the questionnaires retrieved were partially usable as few respondents did not completely fill up the questionnaire. Some questionnaires mostly were left blank without ticking any option.

4.2. Respondents' Profile

The following comprises a brief overview of the demographic data which was collected based on results provided by respondents related to the variables. Details of this are shown in the table below.

Table 3: Demographic profile of the respondents

Demographic Type	Description	Frequency	Percent (%)	Valid Percent (%)	Cumulative Percent (%)
Age	18-24	8	3.8	3.8	3.8
	25-30	52	24.6	24.6	28.4
	30-50	129	61.1	61.1	89.6
	Above 50	22	10.4	10.4	100.0
	Total	**211**	**100**	**100**	
Gender	Male	166	78.7	78.7	78.7
	Female	45	21.3	21.3	100.0
	Total	**211**	**100**	**100**	
Educational Qualification	Secondary School	1	0.5	0.5	0.5
	Bachelor Degree	102	48.3	48.3	48.8
	Master's Degree	103	48.8	48.8	97.6
	Doctoral Degree	5	2.4	2.4	100.0
	Other	0	0.0	0.0	100.0
	Total	**211**	**100**	**100**	
Work Experience	Below 3 years	25	11.8	11.8	11.8
	3-5 years	34	16.1	16.1	28.0
	6-10 years	114	54.0	54.0	82.0
	Above 10 years	38	18.0	18.0	100.0
	Total	**211**	**100**	**100**	

Source: Own survey, 2024

A. Gender

Table 3 shows that, of the total respondent, 78.7% of the respondents were male and the remaining 21.3% were female. The gender imbalance suggests that the insights may be more reflective of male perspectives. Depending on the study's objective, this could be a limitation if gender diversity in opinions is critical. However, if males dominate the sector under study, this distribution may still offer dependable insights.

B. The age group of the Respondents

Of the total valid response, 3.8%, 24.6%, 61.1%, and 10.4% of the respondents were aged between 18-24 years old, between the ages of 25-30 years, between the ages of 30-50 years, and above 50 years, respectively. This age distribution indicates that most respondents are in their prime working years, likely to have substantial experience and familiarity with the services and technologies being studied. This can contribute to more reliable and relevant responses in achieving the study's objectives.

C. Education Level of the Respondents

Regarding the educational composition of the respondent, about 48.8% and 48.3% of the respondents were Master's degree and BA/BSC degree holds, respectively. The remaining 2.9% were secondary school and PhD. The high educational qualifications of respondents suggest they possess the necessary knowledge and skills to provide informed and dependable responses, which is beneficial for achieving the study's objectives.

D. Work Experience of the Respondents

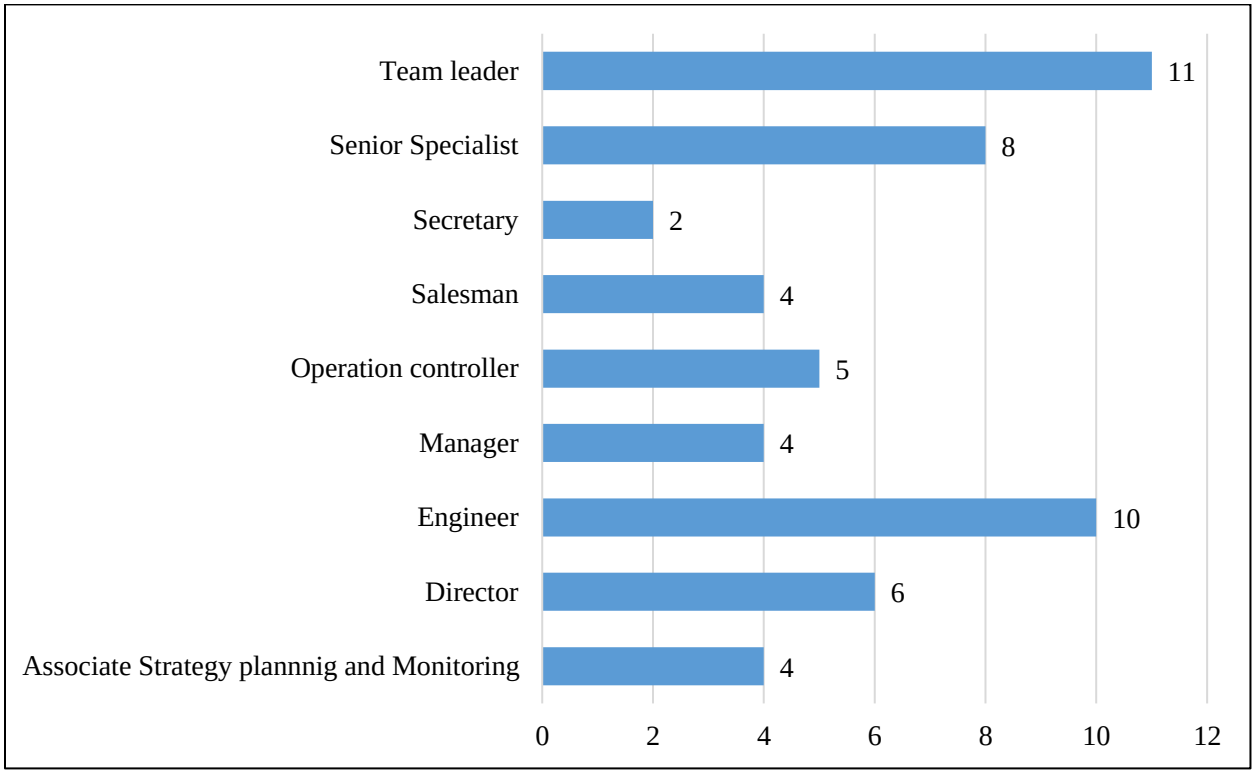
The sample of 211 respondents or 54.0% of the total respondents were working experience 6-10 years, 18.0% of the total respondents are working experience above 10 years. On the contrary, the remaining respondents have a working experience below 5 years. This implies that the majority of respondents had worked for a personable period of time since most of them had working experience between 5-10 years hence they are in a position to understand the working condition and environment of the ECX.

The substantial work experience among respondents indicates they are likely well-acquainted with industry practices and challenges. This enhances the dependability of their responses and supports the achievement of the study's objectives.

E. Job Position of the Respondents

The respondents were asked about their current job position in their organization as shown in the figure below, majority of the respondents were team leaders and engineers which is 38.9% of 54 respondents followed by directors, operation controllers and senior specialists which is 35.2% of 54 respondents. The remaining respondent's position was Associate Strategy planning and Monitoring, managers, sales man and secretary. The prominence of respondents in leadership and technical roles indicates that the responses are likely to be reliable and relevant to achieving the research objectives. The diversity of job positions among respondents ensures a comprehensive understanding of the organizational dynamics, thereby providing dependable insights into the study.

Figure 5: Bar graph showing the respondents' response on the job position



4.3. Descriptive Statistics Analysis

A. Warehouse Ownership

According to Best M. (2015), a score from 1-1.80 is lowest, from 1.81-2.61 is lower, from 2.62-3.41 is average/moderate, from 3.42-4.21 is good/high, and 4.22-5 is considered very good.

Table 4: Mean, standard deviation, and variance for warehouse ownership

	N	Mean	Std. Deviation	Variance
The warehousing ownership facilitate the efficient flow of coffee from the ECX to end consumers or processing facilities.	211	3.796	.7935	.630
The infrastructure and maintenance of the coffee-specific warehouses in the context of coffee storage and distribution is costly	211	2.787	1.2675	1.607
The warehouse ownership helped ECX in balancing the demand and supply of coffee	211	3.924	1.0019	1.004
Our organization is well-equipped with expert knowledge and skills related to coffee warehousing ownership	211	3.777	.7762	.603
The warehouse effectively reduced stock holdup and facilitate the continuous flow of coffee within the ECX	211	3.938	.6554	.430
Warehouse Ownership	**211**	**3.681**	**0.463**	**0.214**

Source: Field data calculated in SPSS version 21

As per the data shown in Table 4, the warehouse effectively reduced stock holdup and facilitate the continuous flow of coffee within the ECX with a mean of 3.94 with a standard deviation of 0.6554, followed by the warehouse ownership helped ECX in balancing the demand and supply of coffee (mean = 3.92) with a standard deviation of 1.0019; the warehousing ownership facilitate the efficient flow of coffee from the ECX to end consumers or processing facilities (mean = 3.80) with a standard deviation of 0.7935; our organization is well-equipped with expert knowledge and skills related to coffee warehousing ownership (mean = 3.78) with a standard deviation of 0.7762; the infrastructure and maintenance of the coffee-specific warehouses in the context of coffee storage and distribution is costly (Mean = 2.79) with a standard deviation of 1.2675.

The overall mean for warehouse ownership is 3.68, which falls between the "good/high" category. Previous studies support this finding, suggesting that warehouse ownership enhances control over inventory management and reduces dependency on third-party providers (Smith, 2018). The implications of this result could be significant for strategic decision-making; organizations should consider investing in warehouse infrastructure to improve operational efficiency and responsiveness. The strong positive response might be due to the direct control and flexibility that warehouse ownership provides, allowing for better handling of inventory fluctuations and customer demands.

B. Transport Ownership

Table 5: Mean, standard deviation, and variance for transport ownership

	N	Mean	Std. Deviation	Variance
Transport ownership contributed to the efficient flow of coffee from the ECX to its destinations	211	3.649	1.1298	1.276
The management of our organization's fleet of vehicles for transporting coffee from the ECX is cost-effective	211	3.318	1.1705	1.370
The transport ownership ensures the continuous flow of coffee, meeting market demand and avoiding disruptions.	211	4.118	.7685	.591
The transport ownership manages coffee delivery times effectively, ensuring timely delivery of coffee.	211	4.137	.7959	.633
Our organization adhere to coffee transport regulations and standards in the context of coffee transportation from the ECX	211	3.815	1.0415	1.085
Transport Ownership	**211**	**3.808**	**0.464**	**0.215**

Source: Field data calculated in SPSS version 21

As shown in Table 5, the transport ownership manages coffee delivery times effectively, ensuring timely delivery of coffee with a mean of 4.14 with a standard deviation of 0.7959, followed by the transport ownership ensures the continuous flow of coffee, meeting market demand and avoiding disruptions (mean = 4.12) with a standard deviation of 0.7685; Our organization adhere to coffee transport regulations and standards in the context of coffee transportation from the ECX (mean = 3.82) with a standard deviation of 1.0415; transport ownership contributed to the efficient flow of coffee from the ECX to its destinations (mean = 3.65) with a standard deviation of 1.1298; The management of our organization's fleet of vehicles for transporting coffee from the ECX is cost-effective (mean = 3.32) with a standard deviation of 1.1705.

Transport ownership has an overall mean of 3.81, which falls between the "good/high" category, indicating general agreement on its positive impact. This finding aligns with Johnson and Lee (2020), who found that owning a transport fleet can lead to cost savings and increased reliability in delivery schedules. For decision-makers, this suggests that investing in transport infrastructure can enhance performance by ensuring timely and efficient delivery of goods. The agreement among respondents likely stems from the advantages of reduced transportation costs and increased control over logistics operations, which can lead to better customer satisfaction and competitive advantage.

C. Supplier Relationship Management

Table 6: Mean, standard deviation, and variance for supplier relationship management

	N	Mean	Std. Deviation	Variance
ECX maintain quality standards in its supplier relationships, not ensure that goods meet the expected quality levels	211	4.047	.7854	.617
The availability of goods is not consistent from suppliers, such as smallholder farmers	211	3.066	1.2092	1.462
Supplier relationship models employed by the ECX considered simple by suppliers.	211	3.720	.9964	.993
ECX not meet the expectations of suppliers, aligning with their requirements and preferences well	211	3.408	1.0396	1.081
Supplier Relationship Management	**211**	**3.560**	**0.577**	**0.333**

Source: Field data calculated in SPSS version 21

As shown in Table 6, ECX maintain quality standards in its supplier relationships, ensuring that goods meet the expected quality levels with a mean of 4.05 with a standard deviation of 0.7854, followed by Supplier relationship models employed by the ECX considered tedious or complex by suppliers (mean = 3.72) with a standard deviation of 0.9964; ECX meet the expectations of suppliers, aligning with their requirements and preferences well (mean = 3.41) with a standard deviation of 1.0396; The availability of goods is consistent from suppliers, such as smallholder farmers (mean = 3.07) with a standard deviation of 1.2092.

The overall mean for supplier relationship management is 3.56, which falls between the "good/high" category. This suggests that the ECX generally maintains effective supplier relationships, although some areas, such as the consistency of goods from suppliers.

This result is consistent with Brown (2019), who noted that while strong supplier relationships are crucial, they can be challenging to maintain consistently due to varying supplier capabilities and market conditions. The implications for organizations might include the need to develop targeted strategies for supplier management to maximize its benefits. The moderate agreement may reflect the complexity of managing supplier relationships, which involves balancing cost, quality, and reliability while dealing with diverse suppliers.

D. Distribution Ownership

Table 7: Mean, standard deviation, and variance for distribution ownership

	N	Mean	Std. Deviation	Variance
The distribution ownership contributes to the profitability of commodity distribution from the ECX	211	3.559	1.1381	1.295
Distribution ownership ensure the continuity of commodity supply, meeting market demand without disruptions?	211	3.706	1.2493	1.561
Our organization is well-equipped with expert knowledge and skills in the context of distribution ownership	210	4.043	.7597	.577
The setup and management of distribution networks in the context of commodity distribution from the ECX is costly	210	3.624	.9666	.934
Our organization conduct market research to align distribution strategies with market demands and preferences in a regular basis	211	3.455	1.2234	1.497
Distribution Ownership	**211**	**3.676**	**0.635**	**0.403**

Source: Field data calculated in SPSS version 21

As shown in Table 7, indicates that most of the respondents agreed our organization is well-equipped with expert knowledge and skills in the context of distribution ownership with mean of 4.04 with a standard deviation of 0.7597, followed by distribution ownership ensure the continuity of commodity supply, meeting market demand without disruptions (mean = 3.71) with a standard deviation of 1.2493; The setup and management of distribution networks in the context of commodity distribution from the ECX is costly (mean = 3.6) with a standard deviation of 0.9666; the distribution ownership contributes to the profitability of commodity distribution from the ECX (mean = 3.6) with a standard deviation of 1.1381; Our organization conduct market research to align distribution strategies with market demands and preferences in a regular basis (mean = 3.45) with a standard deviation of 1.2234.

Distribution ownership has an overall mean of 3.67, which falls between the "good/high" category. This suggests that respondents see some value in owning distribution channels, but it is not as strongly perceived as other factors. This finding may be influenced by external factors such as market conditions or regulatory challenges that impact the effectiveness of distribution ownership. The lower agreement level implies that while distribution ownership can contribute to performance, it may not be as critical or universally beneficial as warehouse or transport ownership. Organizations may need to consider external factors and possibly combine distribution ownership with other strategies to achieve desired outcomes.

E. Performance of Ethiopian Commodity Exchange

Table 8: Mean, standard deviation, and variance for the performance of Ethiopian Commodity Exchange

	N	Mean	Std. Deviation	Variance
Profits are achievable with effort and strategic management.	211	4.071	.6898	.476
The business can attain sustainability through dedicated efforts.	211	3.943	.7281	.530
Flexibility in operations and activities is achievable with effective planning.	211	3.929	.7102	.504
Prudent investment decisions can be made to avoid unnecessary expenses	211	4.024	.6506	.423
Setting up can be a valuable and thorough process that contributes to long-term success.	211	4.057	.5989	.359
Performance of Ethiopian Commodity Exchange	**211**	**4.005**	**0.372**	**0.138**

Source: Field data calculated in SPSS version 21

As shown in Table 8, indicates that most of the respondents agreed and highly agreed that the profits are achievable with effort and strategic management with mean of 4.07 with a standard deviation of 0.6898, followed by setting up can be a valuable and thorough process that contributes to long-term success (mean = 4.06) with a standard deviation of 0.5989; prudent investment decisions can be made to avoid unnecessary expenses (mean = 4.02) with a standard deviation of 0.6506; the business can attain sustainability through dedicated efforts (mean = 3.94) with a standard deviation of 0.7281; flexibility in operations and activities is achievable with effective planning (mean = 3.93) with a standard deviation of 0.7102.

The overall mean for the performance of the ECX is 4.00, which falls between the "good/high" category. This result is supported by previous studies that have highlighted the ECX's role in enhancing market transparency, price discovery, and trading efficiency (Gabre-Madhin, 2022). The implications for stakeholders and policymakers could be continued support and development of the ECX are crucial for maintaining and improving its performance. The general agreement reflects the perceived benefits of the ECX in modernizing agricultural trade and providing a reliable platform for commodity trading. Challenges such as market structure, regulatory environment, and technological advancements may influence these perceptions, suggesting areas for ongoing improvement and adaptation.

4.4. Diagnostic Test

To get reliable results from the research, the model was tested for multiple linear regression model assumptions. Among them, the major ones are tests for heteroscedasticity, multi-collinearity, normality, and constant variable. The results are mentioned as follows:

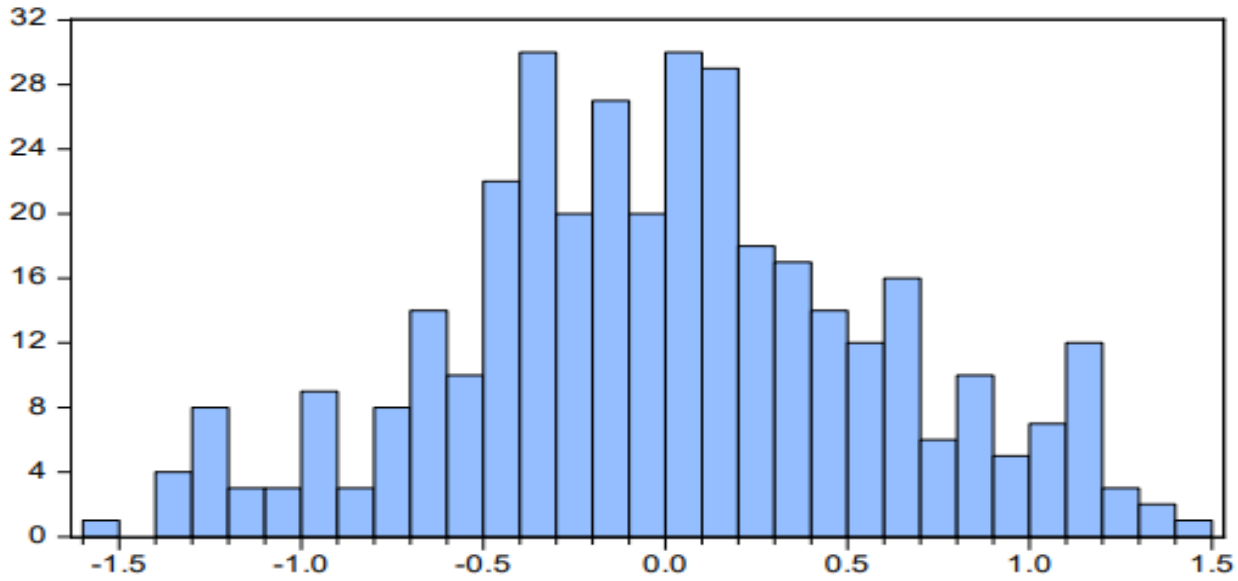
A. Constant variable Test

According to Sekeran, U. (2013), if the regression equation contains a constant term, this pre assumption will never be breached. Therefore, in this research the regression result table the constant term (i.e. β_0) was included in the regression equation; the assumption the average value of the errors should be zero holds good for the model.

B. Normality Test

According to Brooks (2018), the normality assumption of the regression model can be tested with the Jarque-Bera measure. If the probability of Jarque-Bera value is greater than 0.05, it’s an indicator for the presence of normality. The result showed that for 211 observations the Skewness is 0.013200, the Kurtosis is 2.62858, and Jarque-Bera 0.6121. From this, we can conclude that the data were consistent with a normal distribution.

Figure 6: Normality test



C. Multicollinearity Test

According to Churchill and Iacobucci (2015), multi-collinearity is concerned with the relationship which exists between independent variables. Multicollinearity problem exists when the correlation coefficient among variables is greater than 0.75. In our case, the correlation matrix for three of the independent variables shows that the highest correlation of 0.585 is between distribution ownership and supplier relationship management. Since there is no correlation above 0.75, we can conclude that there is no problem with multicollinearity.

Table 9: Correlation matrix between independent variables Multicollinearity

	Warehouse Ownership	Transport Ownership	Supplier Relationship Management	Distribution Ownership	Performance of Ethiopian Commodity Exchange
Warehouse Ownership	1				
Transport Ownership	0.231**	1			
Supplier Relationship Management	0.388**	0.262**	1		
Distribution Ownership	0.188**	0.382**	0.585**	1	
Performance of Ethiopian Commodity Exchange	0.340**	0.212**	0.456**	0.103	1

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

D. Homoscedasticity Test

According to Churchill and Iacobucci (2015), if the p-value is very small or less than 0.05, it indicates that there is heteroscedasticity. This study shows that three different types of tests for heteroscedasticity and p-values of all the three tests are considerably more than 0.05 it's a clear indicator that there is no heteroscedasticity.

Table 10: Mean Table: Heteroscedasticity Test: white test

F-statistic	0.684230	Prob. F	0.425481
Obs*R-squared	6.526103	Prob. Chi-Square	0.651575
Scaled explained SS	4.698454	Prob. Chi-Square	0.468255

4.5. Pearson Correlation Analysis

The study was used to establish the relationship between the employee performance and the independent variables which are found using the SPSS 21.

According to Churchill and Iacobucci (2015), the correlation coefficient is a commonly used measure of the size of an effect: Values of ± 0.1 represent a small effect, ± 0.3 is a medium effect and ± 0.5 is a large effect. In addition, the sign of a correlation describes the type of relationship between the variables being correlated. A positive correlation coefficient indicates that there is a positive linear relationship between the variables. A negative value indicates a negative linear relationship between variables.

Table 11: Pearson Correlation between performance of Ethiopian commodity exchange distribution ownership, warehouse ownership, transport ownership, and supplier relationship management (N=211)

		Warehouse Ownership	Transport Ownership	Supplier Relationship Management	Distribution Ownership	Performance of Ethiopian Commodity Exchange
Warehouse Ownership	Pearson Correlation	1	.231**	.388**	.188**	.340**
	Sig. (2-tailed)		.001	.000	.006	.000
Transport Ownership	Pearson Correlation	.231**	1	.262**	.382**	.212**
	Sig. (2-tailed)	.001		.000	.000	.002
Supplier Relationship Management	Pearson Correlation	.388**	.262**	1	.585**	.456**
	Sig. (2-tailed)	.000	.000		.000	.034
Distribution Ownership	Pearson Correlation	.188**	.382**	.585**	1	.103
	Sig. (2-tailed)	.006	.000	.000		.134
Performance of Ethiopian Commodity Exchange	Pearson Correlation	.340**	.212**	.456**	.103	1
	Sig. (2-tailed)	.000	.002	.034	.134	

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

Source: Field data calculated in SPSS version 21

From the correlation Table 11, there is a positive correlation between the performance of Ethiopian commodity exchange and the independent variables. This means the values of the relationship between dependent and independent variables are less than 0.70 indicating that correlations between each of the independent variables and dependent variable are not too high. But the relationship is found to be positive. There is a direct relationship between the performance of Ethiopian commodity exchange and distribution ownership, warehouse ownership, transport ownership, and supplier relationship management. This means that the results of this study are very important for improving the performance of ECX.

- The dimension of warehouse ownership showed a significant and positive correlation with the performance of Ethiopian commodity exchange as provided by respective correlation coefficients of $r = 0.340$, $sig < 0.01$.

- The dimension of Transport Ownership showed a significant and positive correlation with the performance of Ethiopian commodity exchange as provided by respective correlation coefficients of r = 0.212, sig < 0.01
- The dimension of Supplier Relationship Management showed a significant and positive correlation coefficient regarding the performance of Ethiopian commodity exchange as provided by respective correlation coefficients of r = 0.456, sig < 0.05.
- The dimension of Distribution Ownership showed insignificant and positive correlation with the performance of Ethiopian commodity exchange as provided by respective correlation coefficients of r = 0.103, sig > 0.05

4.5. Statistics Analysis

To establish the type relationship between the effects of vertical integration on the performance of Ethiopia commodity exchange in the case of coffee trading, a simple linear regression was used. Regression analyses are used to examine the effect of different (independent) variables on a single outcome (dependent) variable.

Table 12: Summary of ANOVA

ANOVA [a]						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	5.454	4	1.364	11.932	0.000[b]
	Residual	23.541	206	0.114		
	Total	28.995	210			
a. Dependent Variable: Performance of Ethiopian Commodity Exchange						
b. Predictors: (Constant), Distribution Ownership, Warehouse Ownership, Transport Ownership, Supplier Relationship Management						

Source: Field data calculated in SPSS version 21

Table 12 shows that the proportion of variance explained is significant or the coefficient of determination is significant. It also tells whether the overall effect of the four independent variables on the performance of Ethiopian commodity exchange is significant.

The sig. (or p-value) is 0.000 which is below the 0.05 level; hence, it can be concluded that the overall model is statistically significant, or that the variables have a significant combined effect on the dependent variable or the coefficient of determination is significant. The F-ratio 11.932 shows that the model is significantly better at predicting the outcome and is very unlikely to happen by chance and the model significantly improves the ability to predict the outcome variable.

The unstandardized coefficients indicate how much the dependent variable varies with an independent variable when all other independent variables are held constant. The beta coefficients indicate that how and to what extent independent variables influence dependent variables.

Table 13: Predicting the Effect of independent variables Coefficients

Coefficients [a]						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	2.768	0.248		11.150	0.000
	Warehouse Ownership	0.319	0.056	0.397	5.737	0.000
	Transport Ownership	0.113	0.055	0.141	2.050	0.042
	Supplier Relationship Management	0.165	0.052	0.204	2.683	0.000
	Distribution Ownership	0.090	0.048	0.153	1.881	0.061
a. Dependent Variable: Performance of Ethiopian Commodity Exchange						

Source: Field data calculated in SPSS version 21

As indicated in Table 13, a *t*-statistic can be derived and tests whether the ***B***-value is significantly different from 0 or not to measure whether the predictor is making a significant contribution to the model. Therefore, if the *t*-test associates with *b*-value and if the value in the column labelled *Sig.* is less than 0.05, then the predictor is making a significant contribution to the model. As indicated in the table below, the variables' (warehouse ownership, transport ownership, and supplier relationship management) significance levels (p-values) are less than 0.05, reflecting that they have a genuine effect on the performance of Ethiopian commodity exchange.

4.6. Discussion

This section discusses the implications of the findings from the study on the performance of the Ethiopian Commodity Exchange. It identifies possible reasons for the results observed and suggests areas for further research and strategic interventions.

4.6.1. Relationship between Warehouse Ownership and the performance of Ethiopian Commodity Exchange.

H_1: Warehouse Ownership has positive relationship towards the Performance of Ethiopian Commodity Exchange.

According to the Table 14, the significant level of warehouse ownership is at 0.000 which lower than alpha value 0.05. This shows the relationship between warehouse ownership and performance of Ethiopian Commodity Exchange is significant. Besides, b-value is 0.319 which express that the relationship between warehouse ownership and performance of Ethiopian Commodity Exchange. This indicates that increased ownership of warehouses by the exchange can enhance its performance. Improved warehouse facilities likely lead to better storage conditions, reducing post-harvest losses and ensuring the quality of commodities.

This, in turn, attracts more traders and buyers to the exchange, boosting trading volumes and market efficiency. Possible reasons for this include enhanced storage conditions that reduce losses and maintain commodity quality, and increased trust from traders and buyers in the reliability of the exchange. The implications are that policymakers should consider encouraging or mandating the development of warehouse infrastructure and prioritize investment in warehouse technology and management practices to maintain and enhance commodity quality. The result of warehouse ownership is supported by studies done by researchers Chiorazzi, J., & Popp, A. (2019). They found that warehouse ownership has a positive impact on performance of Ethiopian Commodity Exchange.

The finding was also proven to be true by other studies. According to the study conducted by Fang, Chen & Wang warehouse ownership has a positive impact on the performance of firms participating in commodity exchange.

Firms that owned their own warehouses demonstrated better operational metrics, such as reduced delivery times, lower storage costs, and improved inventory management, compared to firms that relied on third-party warehouse services. Regarding to the financial performance the study identified business that owned warehouses will have higher profit margins, return on assets, and overall profitability.

4.6.2. Relationship between on the Transport Ownership and Performance of Ethiopian Commodity Exchange

H_2: Transport ownership has positive relationship towards the Performance of Ethiopian Commodity Exchange.

According to the Table 14, the significant level of transport ownership is at 0.042 which lower than alpha value 0.05. This shows the relationship between transport ownership and performance of Ethiopian Commodity Exchange is significant. Besides, b-value is 0.113 which express that the relationship of transport ownership with the performance of Ethiopian Commodity Exchange is positive.

Efficient transport systems reduce delays and costs associated with moving commodities from farms to markets, improving the overall efficiency of the supply chain. Possible reasons for this include better control over transportation, reducing delays and spoilage, and direct transport ownership streamlining logistics and reducing costs. The implications are that investment in transport infrastructure is crucial for improving market access and reducing costs, and policies that facilitate better transport management practices can enhance overall market efficiency.

The finding was also proven to be true by other studies. According to the study conducted by Jian Zhang, having direct ownership and control over transportation assets such as warehouses, logistics networks, and delivery mechanisms enables commodity exchanges to better facilitate physical commodity trade and mitigate supply chain frictions. This transport ownership advantage translates into stronger overall exchange performance.

4.6.3. Relationship between off the Supplier Relationship Management and the Performance of Ethiopian Commodity Exchange.

H_3: Supplier relationship management has positive relationship towards the Performance of Ethiopian Commodity Exchange.

According to the table 14, the significant level of supplier relationship management is at 0.000 which lower than alpha value 0.05. This shows the relationship between supplier relationship management and performance of Ethiopian Commodity Exchange is significant. Besides, b-value is 0.165 which express that the relationship of supplier relationship management with performance of Ethiopian Commodity Exchange is positive.

These findings underscore the pivotal role of effective supplier relationship management in bolstering the performance of the Ethiopian Commodity Exchange. Rather than a counterintuitive negative relationship, these results highlight the potential for optimized supplier relationships to contribute positively to exchange performance. This encouraging outcome emphasizes the importance of nurturing robust supplier relationships within the Ethiopian Commodity Exchange framework. By enhancing communication, fostering consistency in quality standards, and aligning incentives between suppliers and the exchange, opportunities arise to fortify the supply chain and amplify overall performance.

The finding was also proven to be true by other studies. According to the study conducted by Samantha identified exchanges that report higher levels of supplier trust, communication, collaboration, and joint problem solving tend to exhibit greater trading liquidity, price discovery efficiency, and overall market competitiveness. The results of the study suggested that proactive suppler relationship management enables commodity exchanges to better secure reliable physical commodity supplies management price volatility, and provide more attractive trading services to participants.

4.6.4. Relationship between Distribution Ownership and the Performance of Ethiopian Commodity Exchange.

H_4: Distribution ownership has positive relationship towards the Performance of Ethiopian Commodity Exchange.

According to the table 14, the significant level of distribution ownership is at 0.061 which higher than alpha value 0.05. This shows the relationship between distribution ownership and performance of Ethiopian Commodity Exchange is insignificant. Besides, b-value is 0.090 which express that the relationship of distribution ownership with performance of Ethiopian Commodity Exchange is positive. Possible reasons for this include that distribution ownership may contribute to better control and efficiency in getting commodities to market, but external factors such as market conditions or regulatory constraints might be affecting the observed relationship. The implications are that further research is needed to explore the potential benefits of distribution ownership, and qualitative studies could provide deeper insights into the dynamics at play and help identify strategic opportunities. As it can be seen on the findings about Warehouse, Transport, and relationship distribution channels are certainly important element of the broader commodity trading ecosystem. Owning the above all facilitate ownership of distribution and its facilitation.

CHAPTER FIVE

5. SUMMARY OF MAJOR FINDINGS, CONCLUSIONS, AND RECOMMENDATION

This chapter deals with the summary of major findings, conclusions, and recommendations based on the findings. The researcher provides a discussion on the findings of the research as compared to the findings in the literature review, the summary of the study, and recommendations for further improvement. The research is concluded based on the conclusions drawn from the research questions.

5.1. Summary of Major Findings

The respondents were asked their opinions on different aspects of demographic, independent variables, and Performance of Ethiopian Commodity Exchange. The findings from their response indicated that: -

- 78.7% of participants were male, indicating a significant gender imbalance within the sample.
- A substantial majority (85.5%) were under the age of 50, with the largest portion (61.1%) falling between 30-50 years old.
- An overwhelming majority (97.1%) held at least a bachelor's degree, with nearly half (48.8%) possessing master's degrees.
- Over half (72%) of respondents had 6-10 years of work experience, showcasing a mature and experienced workforce.
- The diverse range of job positions held by respondents, including team leaders, engineers, directors, and operation controllers, implies a broad spectrum of roles and responsibilities contributing to the study's depth and comprehensiveness.
- Positive correlations between ECX performance and distribution, warehouse, and transport ownership. Reflecting greater control over distribution, warehouse, and transport boosts ECX performance.

- Warehouse and transport ownership significantly positively correlated with ECX performance, while supplier relationship management had a significant negative correlation. This indicates direct ownership of warehouses and transport facilities enhances ECX's efficiency.
- The dimension of warehouse ownership showed a significant and positive correlation with the performance of Ethiopian commodity exchange as provided by respective correlation coefficients of $r = 0.340$, $sig < 0.01$.
- The dimension of Transport Ownership showed a significant and positive correlation with the performance of Ethiopian commodity exchange as provided by respective correlation coefficients of $r = 0.212$, $sig < 0.01$
- The dimension of Supplier Relationship Management showed a significant and positive correlation coefficient regarding the performance of Ethiopian commodity exchange as provided by respective correlation coefficients of $r = 0.456$, $sig < 0.05$.
- The dimension of Distribution Ownership showed insignificant and positive correlation with the performance of Ethiopian commodity exchange as provided by respective correlation coefficients of $r = 0.103$, $sig > 0.05$
- The regression model explained 18.8% of the variance in ECX performance;
- Unstandardized coefficients showed the extent of influence of independent variables on ECX performance;
- The significance levels of warehouse ownership, transport ownership, and supplier relationship management were less than 0.05, indicating their significant impact on ECX performance;
- The study also determined that together the three independent variables have nearly the same significant influence on Performance of Ethiopian Commodity Exchange when considered together.

Multiple linear regression was used to establish the type relationship between Performance of Ethiopian Commodity Exchange, warehouse ownership, transport ownership, and supplier relationship management. The finding showed that the dependent variable is significantly affected by the three independent variables.

5.2. Conclusions

Vertical integration factors such as warehouse ownership, transport ownership, supplier relationships, and distribution ownership play a pivotal role in enhancing the performance of organizations like the ECX. These factors serve as the backbone of operational efficiency and contribute significantly to the overall success of the organization.

Ownership of warehouses facilitates seamless management of inventory, bridging the gap between demand and supply. However, it also entails costs and necessitates specialized knowledge and skills to optimize its utilization. Continuous investment in training is imperative for organizations to leverage their infrastructure effectively and drive efficiency in their operations.

Warehouse ownership has emerged as a pivotal factor in optimizing the flow of coffee within the Ethiopian Commodity Exchange (ECX). By strategically placing coffee in warehouse stations closer to their final destinations, transit times have been significantly reduced, ensuring that consumers receive fresher products. However, this efficiency comes at a cost. Maintaining coffee-specific infrastructure entails significant expenses, including facility upkeep, temperature control, and compliance with stringent quality standards.

Despite these challenges, the advantages of warehouse ownership are further complemented by transport ownership, which grants greater control over logistics, resulting in faster delivery times and cost savings through optimized routes and scheduling. Proactive maintenance schedules and real-time tracking systems are employed to minimize disruptions and ensure consistent delivery to meet market demand. Moreover, the ECX upholds stringent quality control measures, including sampling, grading, and adherence to international standards, ensuring the consistent quality of coffee products.

Distribution ownership further enhances profitability by optimizing delivery routes, reducing overhead costs, and maintaining control over product quality. However, achieving success in coffee distribution within the ECX requires expertise in logistics management, supply chain optimization, quality control, and market analysis.

By leveraging market analysis tools, customer feedback mechanisms, and industry trends, organizations can align their distribution strategies with market demands and preferences, ultimately ensuring the continued success and sustainability of coffee distribution within the ECX.

Moreover, organizations embarking on vertical integration endeavours must identify core capabilities that align with their profitability and wealth generation objectives. This involves robust market forecasting to anticipate demand trends accurately. Additionally, investment in cutting-edge technology is essential to streamline processes and maintain competitiveness in the dynamic industry landscape.

By strategically aligning their vertical integration efforts with key capabilities and leveraging technological advancements, organizations can position themselves for long-term success and sustainable growth in the market.

5.3. Recommendation

The researcher having all the findings as to the base for recommendations. The following recommendation was suggested:-

- ECX should align their vertical integration efforts with specific capabilities that directly contribute to their profitability and wealth generation goals. This entails a thorough assessment of internal strengths, market opportunities, and competitive positioning to identify key areas for integration.
- By focusing on experiences that provide a unique competitive advantage, ECX can differentiate themselves in the market, attract customers, and sustain long-term growth. This strategic alignment ensures that investments in vertical integration yield maximum returns and contribute significantly to overall business performance.
- In addition to current capabilities, businesses should anticipate future market trends and evolving consumer preferences. This proactive approach enables organizations to adapt their integrated operations swiftly, capitalize on emerging opportunities, and stay ahead of competitors in dynamic market environments.
- Continuous training programs should be tailored to enhance the knowledge and skills of employees involved in various aspects of vertical integration, including warehouse management, supplier relationship management, and distribution logistics.

- Training initiatives should foster cross-functional collaboration and communication among different departments and stakeholders involved in integrated operations. This ensures a holistic understanding of organizational objectives, streamlined processes, and effective coordination across the supply chain.
- ECX should leverage advanced analytics, predictive modeling, and market intelligence tools to forecast demand, anticipate consumer preferences, and identify emerging market trends accurately.
- Market forecasts serve as a foundation for agile supply chain management, enabling ECX to align production, inventory, and distribution strategies with changing market dynamics in real-time. This agility enhances responsiveness to customer needs, minimizes inventory costs, and maximizes profitability.

5.3.1. Suggestion for further study

The study was focused on few points due to time, resources, and methodological constraints. This study centred on examining how vertical integration affects the operational performance of agricultural commodity businesses within ECX. Nonetheless, there is still a pressing need for further research in several key areas. Firstly, there is a necessity to explore the strategic significance of vertical integration across various industries and its implications for organizational performance. Additionally, it is crucial to investigate the impact of emerging supply chain trends on organizational performance, especially in response to shifting market dynamics. Lastly, understanding the factors that contribute to the success of supply chain management within organizations is essential for uncovering key drivers of operational effectiveness and efficiency.

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Annex I

QUESTIONNAIRE[1]

Addis Ababa University

College of College of Business and Economics

A questionnaire prepared on the title: Assessment on the Effect of Vertical Integration In The Case Of Coffee Trading: The Case of Ethiopian Commodity Exchange

My name is TIGIST GETACHEW. I am a student of Addis Ababa University; I am conducting a study on the effect of vertical integration on performance of coffee trading within Ethiopian Commodity Exchange. The questionnaire shall take only 10-15 minutes of your precious time. Any information you provide will be solely used for academic purposes and the confidentiality of the same will be maintained at all times. I thank you for your time and co-operation.

Direction I: **Please tick (√) the appropriate option**.

	1. Background Information
1-1	**Gender** Male ❍ Female ❍
1-2	**Age** ❍ Below 18 ❍ Between 18 & 24 ❍Between 25 & 29 ❍Between 30 & 49 ❍ Above 50
1-3	**Qualification** ❍ Secondary ❍ Bachelor degree ❍Master degree ❍Doctoral degree ❍ other:_____
1-4	**Work experience** ❍ Below 3 years ❍ Between 3 &5 ❍ Between 6&10 ❍ Above 10 years
1-5	**Job Position** _____

[1] The semi-structured questionnaire adopted from Maina A. and Stanley K, (2016) with adjustments

Direction II: Please, put a "√" mark in the column under the indicator that best expresses the extent to which you agree or disagree with the statements provided in the table below. Use the following scale to guide your decision;

1= Strongly Disagree **2**= Disagree **3**= Neutral **4**= Agree **5**= Strongly Agree

S.N	Particulars	← Strongly Disagree		↔ Neutral	→ Strongly Agree	
	1. Warehouse Ownership					
1.1	The warehousing ownership facilitate the efficient flow of coffee from the ECX to end consumers or processing facilities.	1	2	3	4	5
1.2	The infrastructure and maintenance of the coffee-specific warehouses in the context of coffee storage and distribution is costly	1	2	3	4	5
1.3	The warehouse ownership helped ECX in balancing the demand and supply of coffee	1	2	3	4	5
1.4	Our organization is well-equipped with expert knowledge and skills related to coffee warehousing ownership	1	2	3	4	5
1.5	The warehouse effectively reduced stock holdup and facilitate the continuous flow of coffee within the ECX	1	2	3	4	5
	2. Transport Ownership					
2.1	Transport ownership contributed to the efficient flow of coffee from the ECX to its destinations	1	2	3	4	5
2.2	The management of our organization's fleet of vehicles for transporting coffee from the ECX is cost-effective	1	2	3	4	5
2.3	The transport ownership ensures the continuous flow of coffee, meeting market demand and avoiding disruptions.	1	2	3	4	5
2.4	The transport ownership manages coffee delivery times effectively, ensuring timely delivery of coffee.	1	2	3	4	5
2.5	Our organization adhere to coffee transport regulations and standards in the context of coffee transportation from the ECX	1	2	3	4	5
	3. Supplier Relationship Management					
3.1	ECX maintain quality standards in its supplier relationships, not ensure that goods meet the expected quality levels	1	2	3	4	5
3.2	The availability of goods is not consistent from suppliers, such as smallholder farmers	1	2	3	4	5
3.3	Supplier relationship models employed by the ECX considered simple by suppliers.	1	2	3	4	5
3.4	ECX not meet the expectations of suppliers, aligning with their requirements and preferences well	1	2	3	4	5

	4. Distribution Ownership					
4.1	The distribution ownership contribute to the profitability of commodity distribution from the ECX	1	2	3	4	5
4.2	Distribution ownership ensure the continuity of commodity supply, meeting market demand without disruptions?	1	2	3	4	5
4.3	Our organization is well-equipped with expert knowledge and skills in the context of distribution ownership	1	2	3	4	5
4.4	The setup and management of distribution networks in the context of commodity distribution from the ECX is costly	1	2	3	4	5
4.5	Our organization conduct market research to align distribution strategies with market demands and preferences in a regular bases	1	2	3	4	5
	5. Performance of Ethiopian Commodity Exchange					
5.1	Profits are achievable with effort and strategic management.	1	2	3	4	5
5.2	The business can attain sustainability through dedicated efforts.	1	2	3	4	5
5.3	Flexibility in operations and activities is achievable with effective planning.	1	2	3	4	5
5.4	Prudent investment decisions can be made to avoid unnecessary expenses	1	2	3	4	5
5.5	Setting up can be a valuable and thorough process that contributes to long-term success.	1	2	3	4	5

Is there anything else you would like to share about your experiences with Vertical Integration?

_____

_____

_____

Thank you!

Annex II

INTERVIEW QUESTIONS

Addis Ababa University

College of College of Business and Economics

A semi-structured interview prepared on the title: Assessment on the Effect of Vertical Integration In The Case Of Coffee Trading: The Case of Ethiopian Commodity Exchange

This semi-structured interview was developed to get in-depth information on the Effect of Vertical Integration on Performance of Ethiopian Commodity Exchange.

1. How has warehouse ownership within the coffee industry influenced the flow of coffee from the ECX to end consumers or processing facilities?
2. Can you describe any significant challenges or costs associated with maintaining coffee-specific infrastructure and warehouses for coffee storage and distribution?
3. How does transport ownership impact the efficiency of coffee flow from the ECX to its destinations, especially in terms of time and cost savings?
4. How does your organization ensure the continuous flow of coffee, meeting market demand and minimizing disruptions through transport ownership?
5. In terms of coffee delivery times, how does your organization manage and ensure timely deliveries of coffee from the ECX?
6. How does the ECX maintain quality standards in its supplier relationships, ensuring that coffee goods meet the expected quality levels?
7. How does your organization's distribution ownership contribute to the profitability of coffee distribution from the ECX?
8. What are the key aspects of expert knowledge and skills that are crucial in the context of coffee distribution ownership within the ECX?
9. How does your organization conduct market research to align distribution strategies with coffee market demands and preferences?

Thank you!