St. MARRY UNIVERSITY
SCHOOL OF GRADUATE STUDIES
DEPARTMENT OF MARKETING MANAGEMENT

THE ROLE OF ETHIOPIA COMMODITY EXCHANGE (ECX) IN STIMULATING AGRICULTURAL COMMODITIES EXPORT (THE CASE OF EXPORT COFFEE)

A THESIS SUBMITTED TO ST. MARY'S UNIVERSITY IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE DEGREE OF MASTER OF ARTS IN MARKETING MANAGEMENT

BY

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ADDIS ABABA

Declaration

I, Natnael Workineh, hereby declare that the thesis entitled ***—The Role of ECX in Stimulating Agricultural Commodities Export: The case of Export Coffee*** submitted by me for the award of Master‘s Degree in Marketing Management is my original work under the guidance and support of my advisor, Dr. Getachew Mohammed. and it has not been presented for the award of any other Degree, Diploma, Fellowship or any other similar titles of any other university or institutions.

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Approval (Advisor Approval Form)

The Thesis entitled "***The Role of ECX in Stimulating Agricultural Commodities Export: The case of Export Coffee***" is submitted by ***Natnael Workineh*** in partial fulfillment of the requirements for the award of a Master's Degree in Marketing Management at the Institute/Department of Marketing Management, College of Business, and St. Mary's University. 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 university's advisor

DR. GETACHEW MOHAMMED **04/12/2024**

Name of thesis Advisor Signature Date

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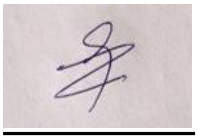
Yibeltal Nigussie (Asst. Prof.)		
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Abstract

Commodity exchanges have crucial roles in the economic development of a nation at large and in the financial and non-financial developments of their market actorsIt is anticipated that agricultural commodity exchanges will assist commodity exporters as market participants.. The purpose of this paper was to examine the role of ECX in stimulating agricultural commodity exports with the case of export coffee. A structured questionnaire was prepared to measure ECX"s role in this regard from its coffee exporting members" perspective. A quantitative research approach was implemented, and the hypotheses were also tested on a sample of 130 coffee exporting members and nonmember direct traders of ECX. Out of the 130 distributed questionnaires, valid response was collected from 118 respondents resulting with a 90.77% percent response rate. The data were analyzed using descriptive statistics, correlation & regression. The findings of descriptive statistics of the independent variables showed that facilitation of physical trade dimension scored the highest rating with a mean value of 3.83 while the storage and grading dimension scored the least mean value of 2.86. The correlation analysis result indicated that facilitation of physical trade had significant correlation with the export performance with 95% confidence interval & at 0.05 p-value, by scoring a Pearson Correlation Coefficient "Rvalue" of 0.665 and the remaining variables" result indicated that they were moderately correlated with export performance. The linear combination of the predictors" (independent variables) explained 54.6% of the variance in export performance. In addition to correlation analysis, further regression analysis was also conducted, and the result indicated that storage and grading, market information provision and market development dimensions of ECX"s roles had a significant positive influence on export performance of coffee exporters. The results are useful to ECX in identifying focus areas of service that help to enhance the performance of coffee exporter members.

Key words: *commodity exchange, price discovery, market development, export performance, facilitation of physical commodity trade, market concentration, market information, Ethiopia.*

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List of Abbreviations

CR	Concentration Ratio
EC	Enabling Competition
ECTDMA	Ethiopian Coffee and Tea Development and Marketing Authority
ECX	Ethiopia Commodity Exchange
EP	Export Performance
FPT	Facilitation of Physical commodity Trade
GDP	Gross Domestic Product
GTP	Growth and Transformation Plan
HHI	Hermanfindal-Hirschman Index
ICO	International Coffee Organization
IFC	International Financial Cooperation
ITC	International Trade Center
MD	Market Development
MI	Market Information
MKTS	Market Share
MoT	The Ministry of Trade of Ethiopia
SG	Storage and Grading
UNCTAD	The United Nations Conference on Trade and Development

CHAPTER ONE: INTRODUCTION

This chapter presents an overview of the study. It includes background of the study, statement of the problem, research questions, research objectives, significance of the study, scope of the study, limitation of the study, definition of terms and organization of the study. Each of these parts is presented below.

1.1 Background of the Study

Agriculture has been the single most important economic sector for a long period in Ethiopia employing more than 66% of the country‘s population. As per the World Bank report (2024), agriculture contributed 35.79% of Ethiopia‘s GDP in 2023.

Prior to ECX's creation, the Ethiopian commodity market was marked by unreasonably high transaction costs, which were demonstrated by the absence of adequate market coordination between buyers and sellers, a lack of market information, a lack of trust among market participants, a lack of contract enforcement, and a lack of grades and standards. These factors suggest that buyers and sellers only operate through a limited number of channels, i.e., those through which they have a small number of reliable trading partners and can obtain information (Gabra-Madhin and Goggin, 2005).

According to Gabre-Madhin and Goggin (2005), the primary market issue facing Ethiopia at the time was the rather universal issue of achieving economic order. They suggested that a commodity exchange could address this pressing need by implementing a system that produces market information on its own, improves the transparency of product grades, qualities, and marketed volumes in addition to the market-clearing price, and encourages self-regulation by creating incentives for maintaining the system's integrity and order. Therefore, the Ethiopia Commodity Exchange Proclamation No. 550/2007 created ECX in 2008 with the primary goal of offering a just and equal marketplace for agricultural goods.

A growing number of nations have started their own exchanges since 2004. Notable examples include Malawi in 2004, Nigeria in 2006, the Ethiopian Commodity Exchange (ECX) in 2008, and the recently launched Zambian exchange, ZAMACE, in 2007. At first, the government-owned ECX concentrated on trading beans, wheat, and maize, but it was unable to draw a sizable volume of these commodities. With the backing of regulations that discouraged coffee exports through other channels, the ECX shifted its concentration to export crops (Rashid, Nelson, and Garcia, 2010).

Since its founding in 2008, ECX has drawn a lot of interest from the global community and media. Visitors from all around the world, including presidents of state and various UN officials, have visited it. Hernandez et al. (2015) found two explanations for the high degree of interest in ECX. The first is that, in Least Developed Countries, ECX is the only active commodity exchange. Another factor is that ECX has done a good job of sharing its early success stories. The media, decision-makers, and development partners were drawn to a number of early ECX success stories, particularly those that focused on connecting smallholders to markets, boosting coffee exports, and achieving zero defaults.

Hernandez et al. (2015) found that the data supporting these success stories has mostly been anecdotal, with less rigorous investigation to ascertain whether the ECX is, in fact, the primary driver of improvements in Ethiopia's agricultural markets.

As to the knowledge of the researcher, despite the researches made on ECX related to its market efficiency by Abdurezack (2010) and its effect on spatial price dispersion Andersson et.al, (2016), there are no researches made on ECX‘s role in stimulating coffee export that is made on coffee exporters perspective. The only paper related to the researcher‘s interest found so far is a study by Worku et.al (2016) on the contribution of ECX in promoting exports of agricultural products. The focus of their study was on the contribution of ECX in providing market information, grade and standard, contract enforcement, storage, ordering the market, and price discovery to the exporters of all commodities being traded at ECX. The researchers concluded that the grading and sampling system of the company has a problem of bias, lack of knowledge and equipment; there is distrust between the seller, buyer and the exchange; there is high penalty cost imposed by ECX for delaying

of withdrawing the commodities on time; problem of intolerable fee for membership seat and also there is a problem of dispute resolution mechanism.

This thesis tried to examine the role of ECX in stimulating coffee export by measuring the level of influence of ECX‘s core functions: price discovery, facilitation of physical trade, storage and grading, market development, enabling competition and market information provision, on coffee exporters‘ export performance. This study focused only on coffee exporters as they have relatively experienced ECX since 2008 and it is the most liquid product traded. The researcher also believes that different commodity traders at ECX may have different feelings to the contribution it has to them. The researcher also thought that there is a time gap in between the research made by Worku et.al (2016) and this study. There were also different reforms and policy changes made in relation to coffee trade that makes it worth studying again since it may have direct impact on ECX and the services it provides to its members.

As in Worku et.al (2016), this study employed a cross sectional survey design but it was explanatory in its nature. Similarly, questionnaires were used to collect the necessary data from the target groups of study.

1.2 Statement of the Problem

The economy uses commodity exchanges for a variety of purposes. Several advantages of commodities exchanges have been enumerated by Gabre-Madhin and Goggin (2005). By facilitating communication between buyers and sellers, allowing for centralized product grading, guaranteeing the enforceability of contracts, offering a mechanism for price discovery, streamlining transactions with standard contracts, and transmitting information about prices and volumes, they stated that an exchange lowers transaction costs. They added that an exchange facilitates the transfer of pricing risk, increases market liquidity, and fosters integrity, order, and trust in the marketplace.

According to Jayne (2014) (quoted by Vasu, 2017), commodity exchanges can lower transaction costs and hazards. They can offer important public data like trading volumes and prices. They have the potential to improve farmers' access to markets, lower marketing margins, boost agricultural

productivity growth, and persuade the financial sector to invest in the development of agricultural value chains in a variety of indirect ways.

According to a study by Easwarana and Ramasundaram, 2008 and Duraipandian, 2014 (cited by Andersson et al, 2016), a well-functioning agricultural exchange platform that disseminates relevant information to all decision makers and provides storage facilities as well as a legal framework for negotiating contracts has the potential to reduce such transaction costs, and thereby to improve resource allocation and to make the price discovery process more efficient.

Commodity exchanges can stimulate export of commodities by providing the aforementioned benefits and services listed by the researchers to the exporters of commodities being traded at the exchanges.

Regarding ECX's contribution to its market players, there are differing views. Hernandez et al. (2015) discovered that the Ethiopian coffee markets are now subject to stringent regulations brought about by ECX. These regulations have eliminated direct trading relationships between exporters and small coffee producers, requiring them to sell their coffee in designated locations with a pool of licensed traders or processors who must first undergo a certification process. They contended that this has obviously led to increased transaction costs, which may negate the advantages of electronic payments, aggregate pricing data, and other advances brought to coffee markets by ECX.

A study by Rashid (2015) also indicated that commodity exchanges can contribute to market development by reducing transactions costs, improving price discovery, and reducing price risks. Coordinating through a centralized exchange reduces the costs associated with identifying market outlets, physically inspecting product quality, and finding buyers or sellers. On his study he concluded that the ECX‘s claims about linking smallholders to markets or improving farm gate prices are not supported by this set of data.

In order to measure the contribution of ECX to the traders, it is important to study and analyze from traders own perspective as empirical studies conducted by Anderson et al, 2016; Hernandez et al, 2015 and Abdurazack, 2010, have not addressed the feeling of traders on ECX‘s performance and contribution to the economy in general and to the coffee sector in particular. Their studies were

merely based on statistical data. Therefore, the aim of this study was to fill this knowledge gap and validate the findings of previous researches by assessing the role of ECX in stimulating agricultural commodities export focusing on coffee exporters‘ view and perception.

1.3 Research Questions

a. Main Research Question

The main research question that this thesis tried to answer was:

What is the role of ECX in stimulating coffee export?

b. Specific Research Questions

The study tried to answer the following research questions:

- How ECX influenced coffee exporters‘ export performance through its price discovery function?
- To what extent has ECX influenced coffee export performance through facilitating physical trade?
- What is the relationship between the storage and grading role of ECX with coffee exporters‘ performance?
- What is the effect of ECX‘s market development role on coffee exporters‘ export performance?
- How competitive is ECX‘s coffee market?
- What is the relationship between ECX‘s market information provision role and coffee exporters‘ performance?

1.4 Research Objectives

a. Main Objective

The main objective of this thesis was to measure the role of ECX in stimulating coffee export.

b. Specific Objectives

The following were the specific objectives of this thesis:

- To identify the influence of ECX‘s price discovery role on coffee export performance.
- To investigate the influence of ECX‘s physical trade on coffee export performance.
- To assess the effect of market development function of ECX on coffee export performance.
- To know the relationship between storage and grading role of ECX on coffee export performance.
- To identify the degree of competitiveness of ECX‘s coffee market.
- To investigate the relationship between market information provision role of ECX and export performance of coffee exporters.

1.5 Significance of the Study

As this study evaluated the role of ECX in stimulating coffee export, the result will benefit the concerned policy makers in the coffee industry as a reference and input for decision making.With the help of this study, ECX will be able to assess the advantages and disadvantages of its services from the viewpoint of coffee exporters and make strategic plans to enhance its service portfolio. This study will also make a substantial contribution to academics, particularly in the fields of agricultural economics and commodity marketing, as well as to future studies in the coffee export industry and ECX.

1.6 Scope of the Study

The research was done in Addis Ababa where the members and non-member direct traders of ECX who have coffee export license were the respondents in this research. The regional trade center of Hawassa was not covered in the research since the trading participants there were mostly suppliers. The research was delimited to the role of ECX on stimulating coffee export and was analyzed from coffee exporters‘ perspective.

There were exporters of sesame, pea beans and green mungbean who trade at ECX in addition to coffee. However, exporters of other commodities other than coffee were not the focus of this study.

The study was confined to studying only the issues that are within the scope of ECX. Other factors like transport, telecommunications, government policies, and other factors that may be promoting or challenging coffee exporters were not the concern of this study. Methodologically, the research used the quantitative approach and cross-sectional survey design.

1.7 Limitation of the Study

Constraint of time, lack of relevant data and related researches pertinent to the topic were the main limitation of the study. The survey being undertaken only in Addis Ababa and being confined to ECX members' only was one limitation of the study. There were clients of ECX who export coffee whose perception was not entertained in this study. In addition, the research employed a cross sectional survey design. The primary limitation of cross sectional study design is that because the exposure and outcome are simultaneously assessed, there is generally no evidence of a temporal relationship between exposure and outcome (Solem, 2015).

1.8 Definition of Terms

- **Bonded Yard**: means secured yard constructed for parking commodity trucks until the consignment is sold on truck and picked up by the buyer with in the maximum pick up period or deposited to warehouse (Rules of ECX, revised 2017).
- **Commodity Exchange (Exchange):** is simply a central place where sellers and buyers meet to transact in an organized fashion, with certain clearly specified and transparent ―rules of the game.‖ (Gabre-Madhin, Z., Eleni and I. Goggin, 2005).
- **Export Performance:** is defined as the result of a firm's actions in export markets (Soham, 1996; cited in Fanteye, 2018).
- **Member:** Any person recognized as an Exchange Actor by the Ethiopian Commodity Exchange Authority that fulfills the requirements of the Exchange. (Rule of ECX, revised 2017)
- **Non-member direct trader:** any person recognized by the Authority as a trader that fulfills the requirements of the Exchange to trade at the Exchange for himself without being a

member or a client of an Intermediary Member of the Exchange (Rule of ECX, revised 2017).

- **Small holder Farmer:** a person who is engaged in harvesting on own farm on a livelihood (non-commercial) basis (Rule of ECX, revised 2017).

1.9 Organization of the Study

The final study paper contains five main chapters. Chapter one provides the general back ground of the study; chapter two summarizes the related literature review; chapter three presents the methodology of the study; chapter four presents the analysis and interpretation of the study; and the last chapter provides summary of findings, conclusion and recommendations.

CHAPTER TWO: REVIEW OF LITERATURE

This chapter, review of literature, has three major parts: theoretical literature review and the empirical review. The theoretical review has an introduction followed by the discussion of definition of commodity exchanges, why commodity exchanges and global and domestic coffee market review. The second part of the chapter is the empirical literature review which discusses the benefits of commodity exchanges and review the previous studies conducted on ECX. The conceptual framework and hypotheses are also discussed in the third part of the review of literature.

2.1 Theoretical Literature Review

2.1.1 Introduction

According to the African Development Bank Report (2022) agriculture accounts for about 15 percent of Africa‘s GDP, with a wide variation in the share of GDP among countries. The agriculture sector is also the main source of income for about 90 percent of Africa‘s rural population; it accounts for approximately 20 percent of the total export value and provides employment for an estimated 57 percent of the labor force. Africa is a net importer of agricultural products, with patterns of agricultural exports largely characterized by a small number of primary commodities and dependency on preferential access to a few markets in developed countries. Only about 20-25 percent of local agricultural production is marketed and intra-African agricultural exports account for barely 19 percent of total intra-African exports.

Similarly, Agriculture is still one of the most important economic sectors in Ethiopia. It employs more than 70% of the country‘s population. As per the World Bank report (2023), agriculture

contributed 34.12% of Ethiopia‘s GDP following the industry sector which shared 36.92% to the country‘s GDP in 2022.

In Ethiopia, the export sector is the main source of foreign currency, with which Ethiopia buys essential foreign products. Export, thus, plays a pivotal role not only in advancing the domestic economy, but also in enabling the country to import. As per the Ministry of Trade public report, Ethiopia has obtained 1.35 billion USD in the first half of the 2022/23 fiscal year, surpassing the figure of the same period previous year by 114.28 million USD although the plan was to secure 2.2 billion USD in the reported period.

It was reported that agriculture has contributed over 75 percent of the total revenue generating over 1.4 billion USD from agricultural commodities, followed by manufacturing and mining. The ministry indicated that in the reported period coffee generated over 381 million USD making it the leader revenue generator from the agricultural export products. Coffee is one of the commodities being traded at the Ethiopia Commodity Exchange (ECX); and it is claimed to be the most liquid commodity since ECX started trading coffee in 2008.

Commodity Exchanges are believed to have existed since the 17th century, such as in Amsterdam in 1695 and the Dojima rice market of Osaka in 1730, but it was only in the 19th century that successful commodity exchanges began to emerge. The first five successful commodity exchanges in the world traded in cotton futures contracts and were connected by cable; this was in New York, Liverpool, Alexandria, La Havre and New Orleans (Baffes, 2011 cited in Kawuma, 2015).

With regards to history, Rashid (2015) argued that commodity exchanges are confined to industrialized countries until the onset of structural adjustment programs in the 1980s and 1990s; the exceptions to this were Brazil and Argentina, which established organized commodity exchanges long before their economies began growing and Malaysia, whose exchange was established for the sole purpose of trading crude palm oil.

Rashid (2015) mentioned that commodity exchanges operate under a wide range of ownership, political economy conditions, and farming systems. Brazilian exchanges were government owned until the mid-1960s and became for-profit only in 2007. Similarly, China‘s Dalian Commodity Exchange (DCE) operates under government control, primarily serving domestic markets. Ethiopia,

Malaysia, Thailand, and Brazil now have exchanges operating under the public-private partnership model. Similarly, there are exchanges in both open and restrictive political and economic systems, smallholder dominated agriculture (e.g. Ethiopia and China), a mixture of large and smallholders (e.g., South Africa and Thailand), and large-scale farming (North America and Europe).

2.1.2 Defining Commodity Exchanges

Commodity exchange has been defined by different authors and scholars. Gabre- Madhin (2006) defines commodity exchange as a way of organizing trade between buyers and sellers on the basis of formalized rules and procedures known and agreed upon by all market participants and selfenforced by the members of the exchange themselves who defend the integrity of the market.

Another definition by Ngmenipuo and Issah (2015) states that a commodity exchange is an organized marketplace where buyers and sellers come together to trade commodity related contracts following rules set by the exchange.

In its wider sense, a commodity exchange is an organized market place where trade, with or without the physical commodities, is funneled through a single mechanism, allowing for maximum effective competition among buyers and among sellers. The fact of having a single market mechanism to bring together the myriad buyers and sellers at any point in time effectively results in the greatest concentration of trading for a given good. This market mechanism, such as a price bidding system or an auction system, results in what is known as ―price discovery, that is, the emergence of the true market-clearing price for a good at a particular point in time due to the highest possible concentration and competition among buyers and among sellers (Ngabirano, undated)

According to Jerry, 1991 (cited by Worku et al, 2016) commodity exchanges are private institutions that facilitate trade by creating and enforcing property rights and governing contractual relationships between commodity buyers and sellers which makes the exchange very successful. Rashid (2015) also defines commodity exchange as a centralized location where buyers and sellers carry out transactions, with or without physical commodities, under a set of clearly defined rules and regulations.

A commodity exchange is an institutional response, at a basic level, to the fundamental problem of achieving self-coordinating market order in the trade of agricultural products, which by their nature, are risky. One of the world‘s largest and oldest commodity exchanges, the Chicago Board of Trade, was established in 1848 by 82 grain traders in what was then a small Midwestern town, in conditions not too different from that of Ethiopian agriculture today, in response to a bumper harvest when farmers who went to Chicago and could not find buyers had to dump their unsold cereal in Lake Michigan. This strikes a hauntingly familiar chord for those who recall that Ethiopian farmers left grain to rot in the fields in 2002 as prices collapsed. The challenges that US markets faced 150 years ago were not much different from what they face today, or what Ethiopian markets face today: to coordinate the exchange of grains and livestock produced across dispersed locations and dispersed producers to major markets hundreds of miles away (Tafara, 2005 cited in Gabre-Madhin and Goggin, 2005).

According to Ngmenipuo and Issah (2015) the world‘s largest commodity exchanges are futures markets, trading futures and option contracts that are meant as risk management tools rather than tools to buy or sell the underlying commodities. In emerging markets, however, commodity exchanges can play a useful role for physical trade, including in the financing of commodity inventories. By providing a transparent, disciplined marketplace they can reduce the discovery costs of physical trade and the counterparty risks in commodity transactions.

2.1.3 Why Commodity Exchanges?

Vibrant agricultural commodity exchanges will greatly enhance the performance of Africa‘s agricultural sectors and contribute to overall economic development (Jayne et al, 2014).

Commodity exchanges can reduce the costs and risks of transacting. They can provide valuable public information such as prices and volumes of trade. In many indirect ways, they can encourage the financial sector to invest in agricultural value chain development, improve farmers‘ access to markets, reduce marketing margins, and encourage agricultural productivity growth (Jayne et al, 2014).

There is consensus that the most important marketing-related constraints facing Africa‘s farmers revolve around the following five points: (1) high production and marketing costs, leading to low profitability and a disincentive to produce for the market; (2) constrained access to credit, especially for small-scale farmers; (3) limited availability of profitable new farm technologies to adopt and use sustainably; (4) price volatility; and (5) poor market access and competitiveness conditions (Jayne et al, 2014).

The core objective of a commodity exchange is to create a fair, orderly and efficient system for matching supply and demand in order to enable what is called ―price discovery‖ or the true market price based on the alignment of supply and demand. To achieve this alignment, a commodity exchange can and must regulate market conduct through certain risk management instruments designed to ensure that market conduct follows the principles of a fair, orderly, and efficient marketing system. These instruments involve setting limits on trading positions, adjusting margin and other deposit requirements, and setting price circuit filters to limit price movements, among others (Gabre-Madhin and Goggin, 2005).

According to Gabre-Madhin and Goggin (2008), coming to the case of Ethiopia, the decision taken several years ago to start a national commodity exchange had absolutely nothing to do with the current price inflation. Rather, the overriding objective then and now is to ensure a fair, orderly, and efficient marketing system, to encourage smallholder farmers to produce more for the market, to benefit domestic agro-industry through a more efficient and reliable supply chain, and to enhance Ethiopia‘s export competitiveness through getting the domestic market in order.

Ahmed (2017) identified three categories of problems facing the commodity market. The first category is the absence of integrated commodity marketing policy that addresses all the processes that involve transport, grading, storage and information facilities for the producer as well as for consumer (Meijerink, 2010, cited in Ahmed, 2017). The second category is the absence of wellequipped institutional establishment which can provide all marketing services to all market actors. The third category is the absence of private and public partnership in the commodity market (UNCTAD, 2006, cited in Ahmed, 2017). Commodity exchanges are established mainly as a response to the above problems. Thus, commodity exchanges are established among other reasons, mainly to respond to the above and related challenges.

The primary objectives of any futures exchange are authentic price discovery and an efficient price risk management. The beneficiaries include those who trade in the commodities being offered in the exchange as well as those who have nothing to do with futures trading. It is because of price discovery and risk management through the existence of futures exchanges that a lot of businesses and services are able to function smoothly (Mukesh. H.V, 2014).

Worku (2014) also indicated that the purpose of a commodity exchange is to provide an organized marketplace in which members can freely buy and sell various commodities in which they have an interest/sake. The exchange itself does not operate for profit. It is just provides the facilities and ground rules for its members to trade in commodity futures and spots and for non-members also to trade by dealing through a member broker and paying a brokerage commission.

The purposes served by a commodities exchange depend in part on the nature of the specific contracts that are traded (UNCTAD, 2009; Worku, 2014). Just by centralizing trade in a commodity an exchange can facilitate title transfer, price discovery and market transparency. Transaction costs are decreased because coordination through a centralized exchange can decrease costs associated with identifying the market outlets, physically inspecting of the product quality, and finding purchaser or sellers. By decreasing transactions costs and enhancing information flows an exchange can improve returns to market agents while reducing short term price variability and spatial price dispersion. Such contracts command little capacity to address inter annual price uncertainty. More sophisticated contracts allowing exchange in futures can enable further risk management, but such contracts require a well-developed exchange and cannot address maintain spot prices in bounds that might be desired (Worku, 2014).

Developing commodity exchanges will help to address the core institutions that the free market could not address (Ngabirano, undated). These include among others a market information system; a system of product grading and certification; a regulatory framework and appropriate legislation; an arbitration mechanism; and, producer and trade associations. In addition, a warehouse receipts system is a very important related institution in this endeavor. A commodity exchange_s success depends on the functioning of allied sectors like banking, insurance, transport, information technology services, and even inspection services. Thus, while these sectors are not strictly part of

an integrated institutional development plan, they must be nonetheless engaged and involved and brought along as the exchange development proceeds.

2.1.4 Global and Domestic Coffee Market

2.1.4.1 Global Coffee Production, Export and Demand

World coffee production for 2023/24 is forecast 11.4 million bags higher than the previous year at a record 186.2 million primarily due to Brazil‘s record output. With global consumption forecast at a record 163.2 million bags, exports are expected up in response to strong demand. Ending stocks are forecast to rebound following 3 years of decline (Foreign Agricultural Service/USDA, 2022).

As it can be seen in table 1 below, over 159 million bags of coffee were produced in the world in 2022/23 and this number is expected to rise to over 171 million bags[1] in 2023/24. Brazil took over 32% of this production. Ethiopia was the sixth largest producer with a share of 4.82% in the world coffee production in 2022/23.

Table 1 World Coffee Production (in thousands of 60 kg bag)

Crop year	**2018/19**	**2019/20**	**2020/21**	**2021/22**	**2022/23**
Brazil	54,698	52,299	52,426	56,764	51,000
Vietnam	27,610	26,500	28,737	25,540	29,500
Colombia	12,163	13,339	14,009	14,634	14,000
Indonesia	12,818	10,862	12,535	11,491	10,902
Honduras	4,583	5,268	5,786	7,457	8,349
Ethiopia	6,427	6,575	6,714	7,297	7,650
India	5,075	5,450	5,800	5,200	5,840
Uganda	3,633	3,744	3,650	4,962	5,100
Peru	4,106	2,883	3,304	4,223	4,280
Mexico	3,916	3,591	2,903	3,781	4,000
Others	19,035	18,046	17,698	17,698	17,939
Total	**154,066**	**148,559**	**153,561**	**159,047**	**158,560**

Source: ICO (2023) and own tabulations and calculations

[1] A bag in this case stands to a standardized coffee bag with a capacity of 60 kgs.

When we see the global coffee production trend in the last five years, it shows a straight downfall in the period 2018-2023 and an upward reverse in the following two years reaching to over 158 million bags at the end of 2022.

In terms of coffee export, Brazil is still the biggest exporter of coffee followed by Vietnam and Colombia. Ethiopia was the 9th largest exporter of coffee in 2021/22 although it was the 6th producer of coffee in the world. The gap may be due to the large amount of domestic consumption.

Table 2 World Coffee Export of coffee of all forms in thousand 60 kg bags

Calendar years	**2018**	**2019**	**2020**	**2021**	**2022**
Brazil	31,662	36,429	37,018	34,267	30,638
Vietnam	19,718	26,097	20,655	27,568	23,209
Colombia	9,670	10,954	12,716	12,831	12,985
Indonesia	9,255	6,175	8,379	6,545	8,198
Honduras	4,185	4,252	5,030	5,306	7,341
India	5,033	5,131	5,262	6,086	6,542
Uganda	3,672	3,442	3,596	3,543	4,774
Peru	3,736	2,720	2,790	3,960	3,946
Ethiopia	2,870	3,117	2,985	3,001	3,773
Guatemala	3,575	3,043	2,961	2,991	3,383
Others	15,272	13,187	13,150	13,221	12,712
Total	**108,647**	**114,547**	**114,541**	**119,320**	**117,499**

Source: ICO (2023) and own tabulations and calculations

In terms of coffee global demand, it is being argued as at that this time more of the world turns to coffee, demand for the beverage will increase by nearly 25% over the coming five years, according to the International Coffee Organization (ICO, 2023).

Currently, consumer intake of coffee stands at 141.6 million bags of beans; but by 2020, coffee demand is slated to rise to 175.8 million bags (each weighs approximately 132 lb.) based on ICO estimates.

According to the ICO, there was a negative supply/demand balance in the years 2019/20 and 2020/21. That means demand was greater than supply of coffee globally. There were 2.5 and 3.8 million 60 kg bags of coffee in 2019/20 and 2020/21.

These indicate that the demand for coffee will grow tremendously which calls for the need to greater production and new entrants in to the coffee business.

2.1.4.2 Coffee Market in Ethiopia

a. Coffee Production in Ethiopian

Ethiopia, besides being coffee‘s birthplace, it is the single largest African producer of high quality Arabica coffee with about half of its production going for export. Furthermore, about 15% of its total population is deriving their livelihoods from coffee (Abu, 2015; cited in Ameyu, 2017).

With approximately 95% of coffee production in Ethiopia been considered organic, coffee production in the country is categorized into four (4) systems namely forest coffee, semi-forest coffee, garden coffee and plantation coffee (Ministry of Trade 2012, Cited in Boansi and Crentsil (2013).

Value chain development in forest, semi-forest and garden coffee is very important in Ethiopia. Because most of the Ethiopian agriculture exports share depends on the outcome of forest, semi forest, garden and plantation coffee produces (Amamo, 2014). Coffee farming alone provides a livelihood income for around 15 million Ethiopians (16% of the population), based on four million smallholder farms.

According to the ICO (2023) report, Ethiopia continues to be the leading producer of coffee in Africa and ranks sixth globally, behind Brazil, Vietnam, Colombia, Indonesia, and Honduras, accounting for around 4.81 percent of global coffee production. Coffee Arabica originated in Ethiopia and is primarily grown there. Coffee is important to the nation's economy, environment, and society.

According to the MoT 2017 data, coffee remains Ethiopia‘s leading foreign currency earning commodity by generating over 882.4 million USD during 2021/22 fiscal year followed by oil seeds and cereal with 345.2 and 280.2 USD respectively.

The government intends to more than quadruple current coffee output to achieve approximately 1.0 million metric tons by 2022–2023, as per the second Growth and Transformation Plan (GTP II). The Ministry of Agriculture's recently reestablished Ethiopia Coffee and Tea Development and

Marketing Authority (ECTDMA) is tasked with implementing development initiatives to help the nation achieve its objective of increasing coffee output.

we can see that Ethiopia consumes slightly more than half of its production domestically.

Ethiopia is the 6th top coffee producer country in the world with a market share of 4.81% in 2017/18.

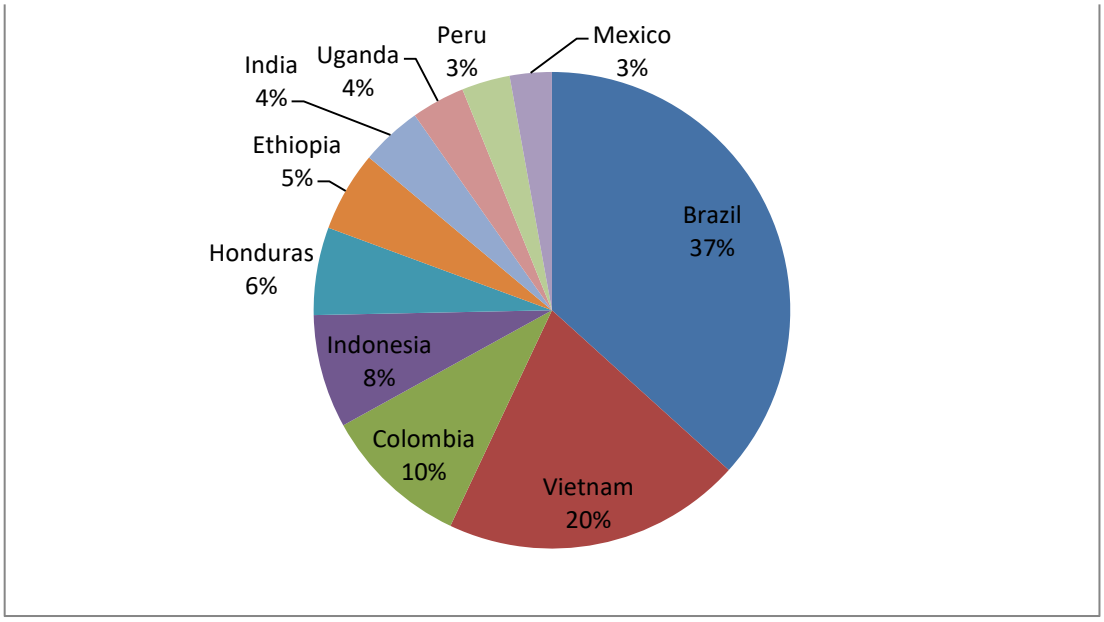

Figure 1 Top Ten Coffee Producers-2022/23

(Source: International Coffee Organization, 2023 and own computation)

b. **Ethiopian Coffee Export**

Ethiopian coffee is being exported to almost all regions of the world. It has got preference for its organic nature and wide variety of tastes based on the geographic areas it grows.

Raw coffee bean importers, distributors and roasters of Europe, USA, Middle East and Asia are the potential target buyers of our product.

The best potential markets are Germany, Japan, Saudi Arabai, USA and Belgium based on analysis of trade statistics for over the last 3 years, these countries were the largest and fastest growing

export destinations for the Ethiopian Coffee and the fastest growing importers of coffee in general. In terms of export value of green coffee, Ethiopia has earned over 989 million USD in 2022.

Table 3 List of top importing markets of Green Coffee from Ethiopia from 2018- 2022 (value in thousand USD)

Importers	**Exported value in 2018**	**Exported value in 2019**	**Exported value in 2020**	**Exported value in 20121**	**Exported value in 2022**
World Total	606,189	784,030	774,916	724,824	936,893
Germany	129,976	165,278	145,674	124,698	154,519
Saudi Arabia	101,946	122,027	128,797	115,634	139,387
USA	68,226	89,085	120,621	91,359	133,538
Belgium	46,558	52,990	49,768	58,764	89,813
Japan	64,497	90,483	60,055	60,085	87,359
Korea, Republic of	17,182	26,784	30,062	44,780	52,399
Italy	29,510	40,246	33,154	37,791	45,027
United Kingdom	18,667	21,561	25,134	27,744	30,320
France	24,822	43,546	29,266	33,708	30,150
Sudan	22,555	22,724	28,102	16,701	25,789
Australia	12,001	18,497	19,623	17,259	22,059
Jordan	6,118	11,433	10,719	6,424	13,501
Spain	5,770	7,380	13,248	10,289	13,210
Taipei, Chinese	2,242	3,808	5,759	9,921	12,248
Russian Federation	5,096	7,327	6,001	7,227	11,162
Sweden	13,013	15,840	14,533	10,351	8,751
Netherlands	3,334	4,310	7,276	5,657	8,214
China	1,713	2,910	4,163	6,192	8,195
Canada	6,693	7,683	6,072	7,258	7,167
Finland	2,394	3,169	4,305	4,048	5,234
Israel	2,746	2,813	2,924	2,355	5,116

Source: ITC, 2018 and own computations

Looking specifically at the export data of 2017, Ethiopia‘s largest destination market for coffee was Germany with a percentage share of 16% followed Saudi Arabai and the US with a share of 15% and 14% respectively.

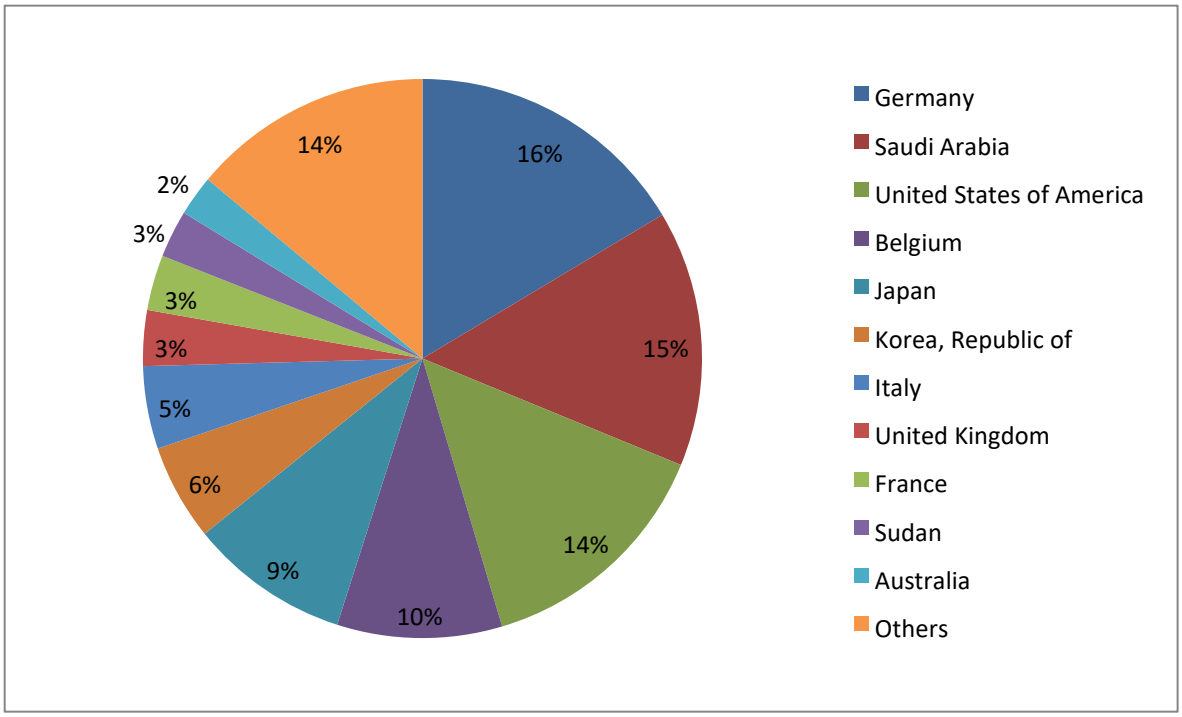

Figure 2 Share of destination markets for Ethiopian coffee export in 2022.

c. Policy Reforms Relevant to Coffee Trade in Ethiopia

Ethiopia has implemented policy changes that have an impact on the value chain and market structure of Ethiopia's coffee industry. The first significant shift occurred, particularly with the Exchange's founding in December 2008. Coffee has since been required to go via the Exchange ECX. Due to its opposition to the free market system and propensity to create ECX monopoly, this government intervention has drawn a lot of criticism (Tesfaye, 2017).

defined coffee contracts with defined specifications for coffee grades, transaction size, payment, and delivery are traded by ECX. These contracts are based on a warehouse receipt system. Nine liquoring and inspection units in key production locations carry out the decentralized first stage of quality control. The structure of the coffee value chain has undergone significant modifications as a result of the creation of the ECX (Gabre-Madhin, 2012, quoted in Minten et al, 2014).

The government's multiple interventions in the coffee market to curb exporters' hoarding constituted the second reform. Due to their alleged excessive hoarding, six major traders were prohibited from exporting coffee in April 2009. Their licenses were canceled, their warehouses

were shut down, their coffee supplies were confiscated, and they were sold on their behalf by the government (Alemu, 2009, Minten 2014) In May 2011, an additional regulation was put into place that restricted the quantity of coffee that exporters could keep in storage. An exporter, for example, selling and buying coffee on the ECX will have his or her right to trade on the commodity exchange revoked if found to be storing more than 500 metric tons of coffee without a shipment contract with an importer (Tefera and Tefera, 2013 cited in Minten et al, 2014).Thirdly, there have been a number of changes regarding export taxes on coffee over time. Core changes include the removal of entry barriers (Proclamation No. 70/1993); the consolidation of all taxes and duties levied on coffee export into a single tax family (Proclamation No. 99/1998), which consolidated all taxes on coffee export to 6.5 percent; and, following the 2002 international coffee crisis, the waiving of all export taxes on coffee exports (Minten et al, 2014). Fourthly, an Ethiopian Fine Coffee Trademark Licensing Institute was set up in February 2005 with the purpose of setting up a system to secure legal ownership in international markets of specialty coffee names (especially Sidamo, Harar, and Yirgacheffe) (Agrer, 2004 cited in Minten 2014).

Ultimately, the government implemented significant economic reforms in 2017, one of which was to enhance the procedures for trading and marketing coffee. The coffee value chain has changed as a result of this reform. The Parliament passed two proclamations on July 7, 2022, with the goal of reforming the whole value chain of the coffee sector.The two proclamations are the Ethiopian Commodity Exchange (ECX) Establishment Proclamation and Coffee Quality Control & Marketing. The goal of both revised proclamations is to enhance the coffee market from growers to export markets (Tadesse, 2017). The coffee growers are now able to sell their coffee before it reaches the ECX floor thanks to this reform. Coffee purchases and sales outside of ECX or a transaction center set up by the Ministry of Trade (MoT) or the relevant regional organization were forbidden under the prior proclamation.

The updated proclamation has also resulted in changes to the Rule of the Exchange. Smallholder farmers now have the ability to trade and sell their goods directly on the Exchange's trading platform without the necessity for an intermediary member thanks to the amended rule. Non-Member Direct Traders (NMDTs) are a new membership category that the exchange has added.

2.2 Empirical Literature Review

2.2.1 Benefits of Commodity Exchanges

According to UNCTAD (2009), the usefulness of a commodity exchange lies in its institutional capacity to remove or reduce the high transaction costs often faced by entities along commodity supply chains in developing countries. A commodity exchange reduces transaction costs by offering services at lower cost than that which participants in the commodity sectors would incur if they were acting outside an institutional framework. These can include – but are not limited to – the costs associated with finding a suitable buyer or seller, negotiating the terms and conditions of a contract, securing finance to fund the transaction, managing credit, cash and product transfers, and arbitrating disputes between contractual counterparties. Therefore, by reducing the costs incurred by the parties to a potential transaction, a commodity exchange can stimulate trade. For exchanges that offer spot trade or supporting activities, the institutional function is to facilitate trade – bringing together buyers and sellers of commodities, and then imposing a framework of rules that provides the confidence to transact.

According to Paul I, 2011 (cited in Worku, 2014) Commodity Exchange is fundamentally designed to provide service and add value to all market players. It adds value to the market by addressing two types of risk namely contract performance risk and the risk of contract default on physical delivery or payment. Market risk is the risk of adverse unforeseen price movements or changes in supply and demand in the future.

Gabra-Mahdhin (2001) suggested that establishing market institutions such as grain exchanges reduces transaction costs (costs related to market search time, search labor and cost of holding working capital during market search).

Commodity derivatives have a crucial role to play in managing price risk especially in agriculture dominated economies (Sahadevan, 2002). Properly functioning commodity exchanges can promote more efficient production, storage, marketing and agro-processing operations, and improved

overall agriculture sector performance. It is precisely because of these benefits that transition and developing economies with large agricultural sectors have embraced commodity exchanges in recent years (Seeger, 2004; cited in Worku, 2014).

UNCTAD (2009) in its case study conducted on Brazil, China, India, Malaysia and South Africa has identified different impacts of commodity exchanges on farmers and other entities that are categorized under the below main impacts:

1. Price discovery: Three impacts under these functions are discussed: price dissemination, reduced information asymmetries and improved farmer returns; improved farmer returns and reduced cash market volatility, and more efficient price formation and effective signaling for production, purchasing and investment decisions. It is
2. Price-risk management: The increased certainty allows market participants to better manage, budget and plan investments in their businesses. Exchange-traded price-risk management instruments may be used by a farmer or other commodity sector participant directly – either through direct membership of an exchange, or more likely through an exchange-accredited broker.
3. Venue for investment: Improved investment environment brings a liquid environment to effectively hedge and speculation may lift price and farmer return.
4. Facilitation of physical commodity trade: a commodity exchange generates accurate & transparent spot reference price; reinforces cash market transactions, enhances storage and logistics infrastructure, and upgrades quality standards.
5. Facilitation of financing to the agricultural sector: enables bank lending and other methods.
6. Market development: through education and capacity-building, international trade facilitation, information and communications technology (ICT), industry growth and new product and service development.

UNCTAD (2009) however, mainly focuses on the future markets and the case study was conducted in emerging economies. The discussed impacts may not be the case in developing countries like Ethiopia.

IFC‘s (2017) report summarized the functions of commodity exchanges to emerging markets based on the UNCTAD (2009) study summarized into seven: price discovery, facilitate physical commodity trade, channeling finance to agro sector, market development, market efficiency, price risk management, and venue for investment.

Mukesh (2014) has also discussed the following benefits of commodity future markets from Indian context: price Discovery, price Risk Management, import-Export competitiveness, and predictable pricing.

Eleje et al (2008-09) also identified the following roles of commodity exchange markets to the economic development of a nation from Nigerian context: Price discovery, risk management, transactional efficiency, allocation of capital and accumulation of capital.

Similarly, the benefits discussed by Eleje et al are for commodity future markets. In general, the roles and impacts of commodity exchanges in a country‘s economic development are different based on the nature of the Exchange and the area they operate. ―Specifically, a commodity exchange can perform one or more of a range of potential functions – exactly which functions will depend on the nature of the exchange and the local context in which it operates. For exchanges that offer spot trade or supporting activities, the institutional function is to facilitate trade – bringing together buyers and sellers of commodities, and then imposing a framework of rules that provides the confidence to transact‖ (UNCTAD, 2009, pp:17).

A study conducted on Zambian Agricultural Commodity Exchange (ZAMACE) by Sitko and Jayne (2012) drawing on interviews and group discussions with the primary participants on ZAMACE, five main factors that impede volumes traded on the ZAMACE exchange are identified and analyzed: (1) the limited success in attracting financial institutions‘ commitment to commodity exchanges; (2) the anonymous nature of trading on a commodity exchange exacerbates the risks associated with contract non-compliance and opportunistic behavior; (3) the potential for conflict of interest among brokers; (4) the potential for market manipulation in a thinly traded market; and (5) the high fixed costs that are imposed on actors trading in a thin market.

2.2.2 Studies on Ethiopia Commodity Exchange (ECX)

The coffee export sector in Ethiopia has been hindered by different problems. Boansi and Crentsil (2013) in their quantitative research based on secondary data on green coffee production and export of Ethiopia, concluded that the growth in the country‘s export performance has been hindered by challenges in management of price risk, problems with quality control, high transaction cost due to the extensive supply-chain and the numerous actors and processes therein, smuggling and unhealthy competition in both primary and auction markets, and by low productivity of growers‘ fields. As a solution they recommended that to enhance its competitiveness in the coffee market amidst the anticipated increase in supply-side competition in the near future, measures should be put in place to address current inefficiencies in the supply chain most importantly with management of price risk, quality control, smuggling, and transaction costs. This could be achieved to a greater extent by reducing the gap between time of purchase of the berries/beans from buyers and the time they are auctioned, setting high quality standards for the beans taken to the auction markets and placing keen watch on those that are exported without going to the auction, ensuring payment of fairer prices to growers and appropriate transmission in times of increment, and by putting in place measures to reduce the number of intermediaries in the supply chain to help minimize unnecessary competition. In addition, appropriate investment should be made in yieldenhancing innovations.

The Ethiopian commodity exchange assures all commodity market players the security they need in the market through providing a secure and reliable end-to-end system for handling, grading, and storing commodities, matching offers and bids for commodity transactions, and a risk-free payment and goods delivery system to settle transactions, while serving all fairly and efficiently (Ahmed, 2017).

Gashaw and Kibret (2018) indicated that before the establishment of ECX, agricultural markets in Ethiopia had been characterized by high costs and high risks of transaction forcing much of Ethiopia in to global isolation. With only one third of output reaching the market, only buyers and sellers tended to trade only with those they knew, to avoid the risk of being cheated. They mentioned that ECX developed a new method of exchange; a marketing system that coordinates better, links faster, and protects of both side of the trade. In a data collected mainly through

interview and personal observations to assess the impact of ECX in the coffee and sesame value chains, the study found out that ECX have positive impact on the existing marketing system and for the development of agricultural value chains in Ethiopia, through creating a more reliable way to connect buyers and sellers in an efficient way to discover market prices, a way to level the playing platform by providing market information to all. However, the study found out that there are still problems which are faced by all actors in value chain as infrastructural problems, legality problem, and exploitation of farmers at the farm gate, marketing imperfections, systematic rigidity and traceability issue.

Rashid (2015), based on case studies and reviewing literatures, examined the validity of the popular claims about ECX that improving price discovery, linking smallholders to markets, reducing transactions costs, and increasing agricultural export earnings are some of the benefits of ECX. The study find out that while ECX has contributed to improving some aspects of the markets (e.g., t+1 payments, development of grades and standard for selected commodities, and warehouse receipt systems) for exportable commodities, it found no evidence to support the popular claims about linking smallholders to markets, increasing export earnings, and other developmental impacts.

However, Ahmed (2017) in his study on the ECX to identify and analyze the challenges and growth prospects associated with ECX and its contribution for the economic development of the country found out that ECX failed to provide accurate and reliable market/marketing information at the right time and place to the traders. Lack of experienced expertise in the area is one of the main problems of traders to trade their commodities by having the deep analysis with respect to changes on the market structure, foreign exchange rates, demand, supply, competition, and so on. The study revealed that higher transaction cost, price fluctuation, difficulty of network access, lack of adequate warehouses, poor recording and management system of the warehouses, expensive membership seat fee and, non-transparent quality grading and sampling system, bias, and corruption were amongst the forefront bottlenecks/constraints to the development and success of ECX. The data were collected using survey questionnaires and interview from members of the commodity exchange.

A similar study conducted by Worku et al (2016) on the contribution of ECX to exporters of agricultural commodities indicated that the grading and sampling system of the company has a

problem of bias, lack of knowledge and equipment; there is distrust between the seller, buyer and the exchange; there is high penalty cost imposed by ECX for delaying of withdrawing the commodities on time; problem of intolerable fee for membership seat and also there is a problem of dispute resolution mechanism. The study has also indicated other infrastructural challenges including transportation, warehouses, electricity and telecommunications. The study also found out that warehouse quality problem occurs as a result of inefficient infrastructure and inadequate physical infrastructure caused higher transaction costs which directly affect the profitability of exporters. The research also related lack of having well-constructed infrastructure to delivery risk.

Tamirat (2013) in his quantitative and qualitative study found out that to make the coffee market works for all, the ECX and policy makers work on the practicality of introducing future commodity market as the existing spot trading without the possibility to enable market risk management through offering futures contracts has limited chances of sustainability and development impacts.

2.3 Conceptual Framework and Hypotheses

The conceptual framework for this thesis was based on UNCTAD (2009) and Tamirat (2013) work. The impact assessment approach was applied in this thesis in a way that first the basic functions of commodity exchanges stated in literatures were identified and then based on the expected benefits arising from each of these functions; the potential impacts or influences were argumented.

From the literatures reviewed the researcher has identified six core functions that commodity exchanges are intended to perform: price discovery, price-risk management (hedging), venue for investment (speculation), facilitation of the physical (or cash) commodity trade, facilitation of financing to market actors, and a role in market development. The researcher presumes that ECX is currently not performing the price risk management (hedging), facilitation of financing and venue for investment (speculation) functions to the coffee exporters out of the six functions. Hedging and speculation functions are not available in a spot market like ECX since they are features of mainly future markets.

Therefore, in the Ethiopian context, in which trade and storage (grading) functions are being served by the commodity exchange, the researcher identified and added the storage and grading, enabling competition and market information provision as core functions of ECX in addition to the price

discovery, facilitation of physical trade and the market development roles shared by other commodity exchanges discussed in the literatures.

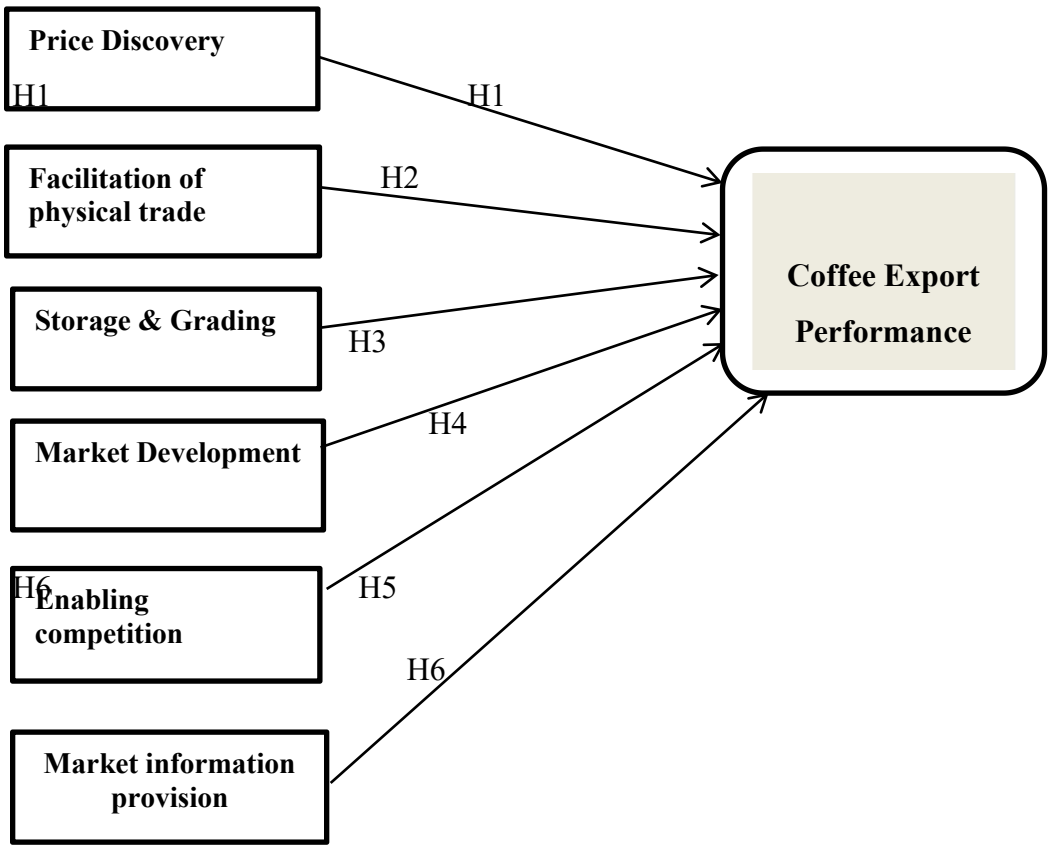

Figure 6 Conceptual Framework the Roles of ECX

Price discovery (PD): refers to the mechanism through which prices come to reflect known information about the market (UNCTAD, 2009). The price level established on the open market can therefore represent an accurate depiction of the prevailing supply and demand situation in the underlying commodity markets. This in return provides important indications that market participants can use to make informed production, purchasing and investment decisions. By performing this function, it is hypothesized that ***ECX's price discovery function has a significant positive influence on coffee exporters' export performance (H1*)**. A series of six questions were asked in the questionnaire to measure the impact of price discovery on coffee export performance.

Facilitation of Physical Trade (FPT): usually is performed providing cash market transactions, reducing default risk and easy access to remote markets. Thus, it is hypothesized that ***by facilitating***

the physical trade, ECX brings a significant positive influence on coffee exporters' export performance (H2).

Storage and Grading (SG): This role is performed by providing warehouse storage service and grading and standardization service by the Exchange itself. It is hypothesized ***that ECX has a significant positive influence on coffee export performance by providing storage and grading service*** (H3).

Market Development (MD): is also one of the functions identified in literatures that commodity exchanges will perform. This was measured using capacity building and training, international trade facilitation, improving information and communication technology level and introducing new products and services to meet evolving needs. Export will be enhanced as commodity exchanges will increase the capacity of traders and facilitate international trade to the traders. Based on the above arguments, ***it is hypothesized that ECX's market development function has a significant positive influence on coffee exporters' export performance (H4)***.

Enabling Competition (EC): Since commodity exchanges bring multiple buyers and sellers in one location, the market will be competitive and with low concentration. ***It is hypothesized that ECX has a significant positive influence on coffee exporters' performance by creating a competitive market (H5).*** This construct was measured through different questions using the questionnaire. In addition, secondary data was used to measure concentration ratio and competitiveness of the ECX coffee market.

Market Information (MI): Providing transparent and reliable market information to its actors is one core function of ECX**.** ***It is hypothesized that ECX has a significant positive influence on coffee export performance by providing reliable and timely market information. (H6).***

Export Performance (EP): Export performance is defined as the result of a firm's actions in export markets. This variable can be considered as an important road map for any company who wishes to review its level of success in terms of export market. However, evaluating the export performance is not as such easy task and the importance of the concept highly depends on how good or bad measure is used and on the way the measures are adopted (Soham, 1996; cited in Fantaye, 2018).

Export performance measures can be classified into objective and subjective measures. Objective measures are mainly based on the absolute values, while subjective measures are based on perceptual or attitudinal performance. Since it is difficult to clearly segregate export results from corporate results, it has been deemed advisable to use subjective measures (Leonidou et al., 2002).

In this study, export performance was measured by using both objective and subjective measures (self-evaluation by respondents). Subjective export performance indicators to be measured by the respondents‘ opinion were based on export sales volume. In addition to the subjective measure (export volume), concentration of the market and competitiveness of the market (using CR& HHI Index) were measured objectively through secondary data sources

CHAPTER THREE: METHODOLOGY

The description of the study area, research approach, research design, population and sample, data collection procedure used, ethical considerations and the data analysis part are included in this chapter.

3.1 Description of the Study Area

This study was carried out in Addis Ababa, Ethiopia. Ethiopia is the famous and largest producers of coffee in Africa. All the information was collected in Addis Ababa and it is geographically found at a latitude of 8°58'N and longitude of 38°47'E.

Addis Ababa is an important administrative center not only for Ethiopia but also for the whole of Africa. The headquarters of the African Union and the United Nations Economic Commission for Africa are both found in the city.

3.2 Research Approach

Quantitative research approach was used in this study. Quantitative methods involve the process of collecting, analyzing, interpreting, and writing the results of a study (Creswell, 2009). It employs strategies of inquiry such as experiments and surveys, and collects data on predetermined instruments that yield statistical data.

A survey design and questionnaire were used to measure the role of ECX in stimulating coffee export from coffee exporters‘ perspective and opinion quantitatively. Survey research provides a quantitative or numeric description of trends, attitudes, or opinions of a population by studying a sample of that population (Babbie, 1990, cited in Creswell, 2009). A structured self- completed questionnaire was prepared and distributed to the respondents for the following reasons (Phellas et al, 2011): they are cheap to administer; they allow for a greater geographical coverage than face-toface interviews without incurring the additional costs of time and travel; using self-completion

questionnaires reduces biasing error caused by the characteristics of the interviewer and the variability in interviewers‘ skills; and the absence of an interviewer provides greater anonymity for the respondent.

In addition, secondary quantitative data was used to measure some constructs to substantiate findings of the survey result of some variables.

3.3 Research Design

―A research design is the arrangement of conditions for collection and analysis of data in a manner that aims to combine relevance to the research purpose with economy in procedure‖ (Kothari, 2004). Regarding the time dimension, the study had employed cross sectional survey design where information was obtained from a single group of respondents at a single point in time and is explanatory in nature. According to Zikmund (2000), a cross sectional survey design is the type of survey design in which necessary data is collected at one time from particular set of population. This survey design was employed since it is the simplest and least costly alternative as mentioned by Neuman (2007).

3.4 Population and Sample

All coffee exporters who are directly trading at ECX as members and non-member direct traders were the target population of the study. A representative sample was taken using a proportionate stratified sampling technique to make a rationale sample size. As per the data collected from its Membership Division in July 2024, ECX had 347 members and 121 non-member direct traders who were trading in its platform. Among the 347 members, 121 were exporters of coffee and 75 out of the 121 non-member direct traders were coffee exporters. Therefore, the target population of this study was 196. Stratified sampling technique was used to draw two strata: full member coffee exporters (121) and non-member direct traders who export coffee (75). This sampling technique enables the researcher to maintain the balance between the number of samples to be selected and size of each member‘s category (Worku, 2014). Samples were drawn randomly based on the respondents‘ availability and interest to participate in the research.

The sample size determination was made using a ―sample size calculator‖ developed by public service of creative research system survey software found in the internet (https://www.surveysystem.com/sscalc.htm, retrieved, 16-08-2024).

Assumptions made to determine a rational sample size were:

- Population size is known
- Confidence level used at 95% is acceptable
- Confidence interval (margin of error) at 5% is acceptable

Based on the above assumptions and using the sample size calculator, the proposed sample size for a population of 196 was 130. The proportion of the two strata was determined using the formula: (nxpi/N)

Where, n= required sample size of the coffee exporters (buyers at ECX).
Pi= proportion in each stratum
N= total population of the actor

Proportion of members: 121/196=62%
Proportion of non-member direct traders: 75/196= 38%

- Members sample size: 130x62%= 80
- Non-member direct traders sample size= 130x38%= 50

Therefore, the proposed sample size (n) was 130 which was the sum of members‘ sample size (80) and non -member direct traders‘ sample size (50).

3.5 Data Collection Procedure

The data was collected from both primary and secondary sources. Primary data was collected through questionnaires. The questionnaire was prepared in the way that is relevant to the situation so as to decrease invalid responses. The questions were prepared based on the benefits of commodity exchanges discussed in the background and respondents were asked to rate their agreement on the statements.

The five point Likert scale were used for the statements of the questionnaire ranging from 1 for "strongly disagree", 2 for "disagree", 3 for "no opinion", 4 for "agree", and 5 for "strongly agree".

Secondary data was collected from ECX regarding its operation and performance. Additionally, a one year trade data of coffee at ECX was used to measure competitiveness and concentration of the market to validate with the findings of the questionnaire.

3.6 Data Analysis

The data collected using structured questionnaire was edited, coded and analyzed with great care. The coding of the possible alternatives in the questionnaire was made in advance of administering the questionnaire to the respondents. That means, the possible responses were pre-coded in a five point scale (1=strongly disagree, 2=disagree, 3=indifferent, 4=agree, 5=strongly agree) to facilitate quick answering of the questions and to simplify data entry into computer software for analysis.

All the data collected using the questionnaires were coded and entered in to Statistical Package for Social Sciences (SPSS). There after descriptive analysis (percentages and mean) was carried out by using SPSS and was presented in tables. Since five point Liker scale was used, mean score of 3.0 was considered as mid-point (indifferent), while mean scores of greater than 3.0 and less than 3.0 were assumed as agreement and disagreement. Correlation and regression analyses were also made.

In order to evaluate the roles/impacts of the functions, a series of questions were distributed to the respondents through the questionnaire. Expected impacts under each function of commodity exchanges were rated by the respondents, coffee exporters, in this case. An average rate of above 3 points indicated that there is a strong/significant positive impact on coffee exporters by the roles of ECX and a an average rate of less than 3 points indicated weak impact on coffee exporters export performance. Average rate of 3 means medium impact or influence.

In addition to the primary data collected from the questionnaire, in order to test the argument that ECX encouraged competition and kept the market concentration low, concentration index of the market was measured as suggested by (Church and Ware, 2000).

The market share of coffee buyers/traders was calculated as:

$$MKTS_i = Vi/TC$$

Where, *MKTSi= market share of coffee Trader i,*
Vi= amount of coffee handled by Trader i and TC=the total coffee traded/sold in the area.

Concentration Ratio of m coffee buyers: combined market share of the m largest coffee buyers in the market is calculated as: m

$$CRm = \sum_{i=1} MKTS_i$$

One critique of the concentration ratio is that it does not take into account the distribution of market share across all firms in an industry (Boetel and Liu, 2010; Church and Ware, 2000; cited in Tamirat, 2013). Concentration index that does not share this weakness is the Herfindahl-Hirschman Index (HHI). The Herfindahl index is the sum of the squares for each market shares from major coffee traders in the sector. This index provides an indicator range from 0 to 1, with higher numbers generally indicating a decrease in competition and an increase in market share for the largest traders in the market.

$$HHI = \sum_{i=1}^{m} (MKTSi)^2$$

3.7 Validity and Reliability Test

3.7.1 Validity Test

According to Cook and Campbell (1979), validity is defined as the best available approximation to the truth or falsity of a given inference, proposition or conclusion. Sounders et al. (2003) also defined validity as the extent to which data collection method or methods accurately measure what they were intended to measure. If the measurement items in the survey ―adequately cover the content domains or aspects of the concept being measured, an instrument has content validity (Ahire et al, 1996).

John et al. (2007) categorized validity in to three categories; namely content validity, criterion validity and construct validity. Content validity measures the extent of the instrument to provide adequate coverage of the topic being studied. This measurement could be judgmentally considered to be good if the number of population is highly representative of the universe. Criterion validity refers to the extent to which an instrument is fully, relevant, unbiased, reliable and available to the topic of the study.

On the other hand, construct validity refers to the degree to which a measure actually assesses the theoretical construct it is meant to assess (Fornell et al., 1981). In the assessment of construct validity, the establishment of discriminant and convergent validation is important (Campbell and Fiske 1959).‘

In this research, as criterion and content validity are not assessed numerically, but can only be subjectively judged by the researcher (Wong and Aspinwall, 2005), the following activities were performed:

- The questionnaire was subjected to peer review from colleagues and the supervisor. This was aimed to red flag any potential errors in the research instruments thus ensuring the result‘s validity.
- Data was collected from the reliable sources and
- Survey questions were prepared based on pervious empirical review and literature review to ensure result validity.

To ensure construct validity, only discriminant validation was made statistically using the exploratory factor analysis although some may use additional validations.

3.7.2 Reliability Test

Reliability measures the internal consistency of the items in a scale to check the measuring tool employed on the study was free from error so that the measurement instrument yields a reliable outcome. It also indicates that the extent to which the items in a questionnaire are related to each

other and whether a scale is one- dimensional or multidimensional. One of the most commonly used is called Cronbach‘s alpha. The normal range of Cronbach‘s alpha coefficient value ranges between 0- 1 and the higher values reflects a higher degree of internal consistency. Different authors accept different values of this test in order to achieve internal reliability, but the most commonly accepted value is equal or greater than 0.70 to reach internal reliability (Hair et al., 2003). Hinton et al., (2014) have also suggested four different points of reliability: excellent reliability ranges (0.90 and above), high reliability (0.70- 0.90), high moderate reliability (0.50- 0.70) and low reliability (0.50 and below).

The Cronbach‘s alpha coefficient values for all constructs in the study were greater than the 0.70 so that it can be concluded that the measurements can be applied for further analysis with acceptable reliability test result.

3.8 Ethical Considerations

Maximum care was taken in order to make sure that:

- All research participants are given adequate explanation about the research and its purpose;
- The privacy of the respondents have been respected;
- Confidentiality of the information provided by the respondents has been respected;
- The works of other scholars, related to the area and being used in the study has been properly acknowledged.

CHAPTER FOUR: DATA PRESENTATION, ANALYSIS AND INTERPRETATION

The chapter is divided into six (6) sections with the first section covering findings from the survey. Correlation and regression analysis are discussed in the second and third section followed by hypothesis testing which is discussed at section four. The remaining two sections contain the secondary data analysis and discussion of the results.

4.1 Findings from the Survey

This section presented the data screening and validation, sample and response rate, general profile of the respondents and descriptive analysis of the variables.

4.1.1 Sample and Response Rate

A total of 130 questionnaires were distributed for the respondents (80 for members and 50 for nonmember direct traders). Excluding eight (8) questionnaires that were not completely filled out by the respondents, 118 questionnaires (84 from members and 34 from non-member direct traders) were fully answered and returned which is 90.77% of the total distributed questionnaires.

4.1.2 Data Screening and Validation

a. Data Screening

Data screening is important because it ensures the validity of research findings. It is also important to check for any errors that occurred during data collection and data entry before further analysis. In this study, IBM SPSS 20 was used to process data and frequency distributions were used to check the accuracy of data entry, examine missing data and to check outliers. Normality test was carried out; and construct validity and reliability were also tested.

b. Data Accuracy

This first step in the data screen was conducted by comparing each response in the questionnaire with what were entered in the SPSS. This process of proof-reading enabled the researcher to identify some errors and immediately correct them. Also, the descriptive statistics was conducted to enable further data accuracy assessment and no problem was found. The proof-reading helped in screening some of errors which could bring problem in data analysis in later stages as it indicates that all measures were in a possible range of 1 to 5 and there were data entry errors found like 55 to mean 5.

c. Missing Data Assessment

As indicated by Hair et al (2010), data set may have missing values due to different reasons, including failure of some respondent to answer some questions, errors during data entry or some respondent refuse to fill in sensitive data. Some missing data were identified in eight (8) questionnaires. So, these questionnaires were excluded from the analysis.

d. Assessment of Outliers

All cases with extreme values on a single construct or combination of constructs are regarded as outliers. These values appear outside the normal distribution during data analysis due to its higher values as compared to other values in the data set (Tabachnick and Fidell 2007).

The SPSS 20 was used to compute outliers for every measures as shown in the below table. Values for only five cases with a value of 4.50 were identified by the SPSS as outlier cases. However, as deletion of few outliers like what are identified here may distort multivariate analysis (Hair et al. 2010); they were retained for further analysis.

Table 4 Outlier Assessment

Extreme Values					
			Case Number	ID	Value
Export Performance	Highest	1	3	3	4.50
		2	30	30	4.50
		3	57	57	4.50
		4	84	84	4.50
		5	104	104	4.50
	Lowest	1	8	8	1.00
		2	102	102	2.00
		3	82	82	2.00
		4	55	55	2.00
		5	1	1	2.00

Source: SPSS output based on the survey result, 2024

e. Assessment of Normality

Normality is a measure of data correspondence with normal distribution curve (Pallant, 2016). Skewness and kurtosis can be used to assess the normality of data. While skewness measure the

degree of symmetry about the mean, kurtosis measure the distribution of data about the peak of the distribution. Likewise, when large scores fall under left side it indicates positive skewness but negative skewness shows that large scores lie on the right tail as compared to left tail. While, on the other hand, positive kurtosis means the normal distribution is too peak and negative kurtosis indicated by flat distribution. In addition, for perfect normal distribution both skewness and kurtosis have zero value, apart from that it shows departing from normality (Kline, 2011).

Although there is no clear definition about what is regarded to be a best measure of departure from normality, rule of thumb have been suggested by different researchers. Hair et al. (2010) for example suggested that, kurtosis values should not exceed ±3 and skewness values should fall within the range of ±1. On the other hand, George & Mallery (2010) suggested that for normality of distribution to exist, the results of Skewness and Kurtosis must found between ±2. So, based on the suggestions of the aforementioned authors, all variables were retained for further analysis since they don‘t violate the normality criteria as shown in the table below.

Table 5 Normality measures of Skewness and Kurtosis

Variables	Skewness		Kurtosis	
	Statistic	Std. Error	Statistic	Std. Error
Price Discovery	.000	.223	-.796	.442
Facilitation of Physical Commodity Trade	-1.158	.223	2.841	.442
Storage and Grading	-.387	.222	-.520	.442
Market Development	.139	.223	-.371	.442
Enabling Competition	-.566	.223	1.388	.442
Market Information Provision	-.362	.223	-.744	.442
Export Performance	-.566	.223	1.388	.442

Source: Survey result, 2024

f. Reliability Test

Reliability measures the internal consistency of the items in a scale to check the measuring tool employed on the study was free from error so that the measurement instrument yields a reliable

outcome. It also indicates that the extent to which the items in a questionnaire are related to each other and whether a scale is one- dimensional or multidimensional. One of the most commonly used is called Cronbach‘s alpha.Higher numbers indicate a higher level of internal consistency. The standard range of the Cronbach's alpha coefficient value is 0–1. To ensure internal reliability, different authors accept different values for this test; nonetheless, the most often recognized value is equal to or greater than 0.70 (Hair et al., 2003). Four distinct reliability points have also been proposed by Hinton et al. (2014): poor reliability (0.50 and below), good reliability (0.70-0.90), high intermediate reliability (0.50-0.70), and excellent reliability ranges (0.90 and above).

All of the study's constructs had Cronbach's alpha coefficient values more than 0.70, indicating that the measurements can be used for additional analysis with satisfactory reliability test results, as indicated in table 4.3 below.

Table 6 Measurement of Reliability

Variables	Sample size	Number of items	Cronbach's Alpha	Level of Reliability
Price Discovery	118	4	.787	High reliability
Facilitation of Physical Commodity Trade	118	3	.820	High reliability
Storage and Grading	118	4	.766	High reliability
Market Development	118	4	.779	High reliability
Enabling Competition	118	2	.814	High reliability
Market Information Provision	118	3	.779	High reliability
Export Performance	118	6	.760	High reliability

Source: Survey result, 2024

All of the variables have Cronbach's alpha coefficients larger than.70, as table 4.3 demonstrates. Because of their good reliability test findings, the variables were retained for additional investigation. Simply put, a low Alpha coefficient of less than.70 means that the factor is less likely to manifest itself if the study is conducted again under different application conditions.

g. Validity Test

Since criterion and content validity in this study cannot be evaluated quantitatively but rather only subjectively by the researcher (Wong and Aspinwall, 2005), the following procedures were carried out to guarantee validity:

- Peer review of the questionnaire was conducted by the supervisor and colleagues. This was done in order to ensure the validity of the results by flagging any possible mistakes in the study instruments.
- Data was collected from the reliable sources and
- To guarantee the validity of the results, survey questions were created using previous empirical and academic reviews as a guide.

To ensure construct validity, only discriminant validation was made statistically using the exploratory factor analysis although some may use additional validations.

Discriminant Validity Test

According to Campbell and Fiske (1959), discriminant validity ensures that measures of construct are not related to each other. To test for discriminant validity, factor analysis was conducted.

As advised by Hair et al. (2010), the Measure of Sampling Adequacy for both the overall test and each individual variable should be more than.05. The suitability of Factor Analysis was assessed using the Kaiser-Meyer Olkin (KMO) and Bartlett's Test measures of sample adequacy. At a significance level of 0.05, the approximate Chi-square was 2890.896 with 325 degrees of freedom at $p = 0.000$. Additionally large (more than 0.50) was the KMO statistic of 0.537. Factor analysis is therefore seen as a suitable method for additional data analysis.

Table 7 KMO and Bartlett's Test of Sampling Adequacy

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.537
Bartlett's Test of Sphericity	Approx. Chi-Square	2890.896
	Df	325
	Sig.	.000

Source: Survey result, 2024

Factor analysis was performed because the items satisfy the standards of the KMO and the Barlett's Test of Sphericity. To validate the items measuring each of the influences, factor loadings of 0.5 and above are taken into consideration (Haier et al, 2010). Principal Component Analysis (PCA) using the varimax rotation approach was used to assess discriminant validity. As shown in the table below, the Average Variance Extracted (AVE) for each of the constructs employed in the study was determined to be over the minimal acceptable threshold.

Table 8 Test of Discriminant Validity using Exploratory Factor Analysis (n = 118)

Rotated Component Matrix[a]							
	Component						
Items	Price Discovery	Facilitation of physical Trade	Storage & Grading	Market Development	Enabling competition	Market Information provision	Export Performance
Price Disc1	.828						
Price Disc2	.866						
Price Disc3	.629						
Price Disc4	.583						
Facil.PhyTrd5		.714					
Facil.PhyTrd6		.681					
Facil.PhyTrd7		.517					
Stor.grad8			.511				
Stor.grad9			.552				

Stor.grad10			.699				
Stor.grad11			.702				
MktDevt12				.592			
MktDevt13				.639			
MktDevt14				.830			
MktDevt15				.821			
Enabl.Compet. 16					.544		
Enabl.Compet. 17					.684		
MktData18						.749	
MktData19						.542	
MktData20						.549	
Export Perf.21							.743
Export Perf.22							.865
Export Perf.23							.848
Export Perf.24							.783
Export Perf.25							.894
Export Perf.26							.581
Extraction Method: Principal Component Analysis. Rotation Method: Varimax with Kaiser Normalization.							
a. Rotation converged in 14 iterations.							

Source: Survey result, 2024

4.1.3 Basic Profile of the Respondents

Among the general information questions in the questionnaire were membership type at ECX, length of time working with ECX, and experience exporting coffee. In terms of their membership type at ECX, 34 respondents (28.8%) were non-member direct traders, while 84 (71.2%) of the 118 respondents were members.

Table 9 Membership Types of the Respondents

Membership Type					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Member	84	71.2	71.2	71.2
	Non-member direct trader	34	28.8	28.8	100.0
	Total	118	100.0	100.0	

Source: Survey result, 2024

The majority of responders (63.6%) have worked for ECX for more than five years, according to their membership year. Merely 17.8% of them have experience working as direct traders with ECX, either as members or as non-members.

Table 10 Membership Year at ECX

Membership year at ECX					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Below 2 years	21	17.8	17.8	17.8
	From 2-5 years	22	18.6	18.6	36.4
	Above 5 years	75	63.6	63.6	100.0
	Total	118	100.0	100.0	

Source: Survey result, 2024

According to table 4.8 below, the majority of respondents (59.3%) had been involved in the coffee export industry for more than 10 years, while the smallest percentage of respondents (14 respondents, or 11.9% of the total) had less than five years of experience.

Table 11 Coffee Export Experiences of the Respondents

Coffee Export Experience					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Below 5 years	14	11.9	11.9	11.9
	From 5-10 years	34	28.8	28.8	40.7
	Above 10 years	70	59.3	59.3	100.0
	Total	118	100.0	100.0	

Source: Survey result, 2024

4.1.4 Descriptive Analysis of Variables

Descriptive statistics was employed to examine the percentage, mean & standard deviation of the responses of respondents with regards to the roles of ECX (through its price discovery, facilitation of physical commodity trade, storage and grading, market development, enabling competition, and market information provision functions) on coffee export performance. Descriptive Statistics was used to present quantitative descriptions in a manageable form; each descriptive statistic reduces lots of data into a simpler summary (Gelman, 2006). The respondents were asked to rate their perception on a five-point Likert type scale ranging from 1 being strongly disagree to 5 strongly agree. For simplicity of analysis rates of ―strongly disagree (1)‖ and ―disagree (2)‖ were categorized as ―disagree‖ and ratings of ―strongly agree(5)‖ and ―agree (4)‖ were categorized as ―agree‖. The mean scores have been computed for all the variables by equally weighting the mean scores of all the items under each dimension. The mean value provides the idea about the central tendency of the values of a variable. Standard deviation is to give the idea about the dispersion of the values of a variable from its mean value. The results of the descriptive analysis are shown in the table below.

Table 12 Descriptive statistics of variables

Descriptive Statistics			
Dimensions	N	Mean	Std. Deviation
Facilitation of Physical Commodity Trade	118	3.83	0.700
Market Information Provision	118	3.52	0.660
Export Performance	118	3.37	0.594
Enabling Competition	118	3.37	0.594
Market Development	118	3.24	0.550
Price Discovery	118	2.89	0.674
Storage and Grading	118	2.86	0.652
Valid N (listwise)	118		

Source: Survey result, 2024

The role dimensions were considered independent variables that were thought to be influencing the export performance of ECX members, as shown in table 4.9 above. The mean score values of ECX‘s roles/functions were between 3.83 (mean score value of facilitation of physical commodity exchange) with standard deviation of 0.700 and 2.86 (mean score value of storage and grading

with standard deviation of 0.652). These scores also served as the ECX's role dimensions' lowest and maximum mean score values.

A mean score of three or more indicated agreement with the related concerns, while a score of less than three indicated dissent. Therefore, taking into account table 4.9 above, the average score for the price discovery and storage & grading dimensions (mean=2.89 and 2.86, respectively) was less than 3.00. This suggests that members did not find the ECX's storage and grading and price discovery capabilities satisfying. The ease of physical commodity trade, on the other hand, seems to rank first in terms of respondents' perceptions of the role of ECX in export performance, with a mean score of above average (mean = 3.83 and standard deviation = 0.700).

Members' ratings of the market information providing dimension also seemed to be above average (mean = 3.52 and standard deviation = 0.660), ranking second in terms of respondents' perceptions of its influence on export performance. The sample respondents gave the enabling competition dimension an average score of 3.7 (std. dev. =.594), which is comparable to the average overall influence on export performance rate. With a mean score of 3.24 (std. dev. =0.550), the market development component came in somewhat lower than the overall rating for export performance. However, the price discovery (mean = 2.89, standard deviation =.674) and storage & grading (mean = 2.86, standard deviation =.652) function dimensions had a mean score of less than 3.00, suggesting that members who export coffee were dissatisfied with these two essential Exchange (ECX) services. Additionally, these two dimensions received lower scores than the export performance rate as a whole (3.37). Below is a discussion of the descriptive analyses of the items under each variable.

4.1.4.1 The Role of ECX in Facilitating Physical Commodity Trade

As can be seen in table 4.6 below, the majority of respondents (86.5%) categorically agreed with the statement that ECX's cash market has decreased default risk, while only 2.5% disagreed. This outcome makes the widely held assertion that ECX's cash market has decreased default risks for its members stronger.

However, while 13.5% of respondents disagreed with this statement, 72.1% of respondents said that ECX had made it easier for them to access distant markets. The majority of respondents (68.6%) expressed satisfaction with ECX's ability to assist coffee exporter members in readily obtaining the type of coffee they desire, while 14.4% expressed displeasure. This demonstrated that one of an exchange's primary functions is to facilitate the trade of tangible commodities, which the exchange has done to the members' satisfaction. This was corroborated by the respondents' highest ranking of this feature.

Table 13 Descriptive Statistics of Facilitation of Physical Commodity Trade

Dimensions	Mean score	Strongly disagree (%)	Disagree (%)	Neutral (%)	Agree (%)	Strongly Agree (%)	Total (%)
ECX has helped me in getting the type of coffee I want easily.	3.58	7.6	6.8	16.9	57.6	11.00	100.0
ECX has reduced default risk because of its cash market.	4.14	-	2.50	11.00	53.4	33.1	100.0
ECX has helped us access remote markets easily.	3.77	5.9	7.6	14.4	47.5	24.6	100.0

Source: Survey result, 2024

4.1.4.2 Market Information Provision Role of ECX

With a mean score of 3.52 (std. dev.=.660), ECX had the second-highest score among respondents in the market information dimension, after the ease of physical commodities trade. Three question items were used to measure this dimension. With 65.3% of respondents agreeing that ECX informs them of the market's actual prices, genuine price information distribution obtains the highest rating among the three items used to measure this feature. Just 8.5% of those surveyed disagreed with this statement. Similarly, 58.5% of respondents said that ECX helps coffee purchasers to base their marketing decisions on market data, and 57% said that ECX provides them with timely and accurate market information. However, 25.7% of them disagreed that coffee purchasers might use market data to inform their marketing decisions thanks to ECX. According to the statistics, coffee

exporter members have been satisfied with ECX's role in providing market information (see table 4.11 below).

Table 14 Descriptive Statistics of Market Information Provision

Dimensions	Mean score	Strongly disagree (%)	Disagree (%)	Neutral (%)	Agree (%)	Strongly Agree (%)	Total (%)
ECX enables coffee buyers to make marketing decisions based on market data.	3.30	3.4	22.0	16.1	58.5	0.0	100.0
ECX makes me informed about the real price information at its market.	3.70	0.0	8.5	26.3	51.7	13.6	100.0
I get reliable and timely domestic and international coffee market information through ECX.	3.55	3.4	4.2	34.7	49.2	8.5	100.0

Source: Survey result, 2024

4.1.4.3 The Role of ECX in Enabling Competition

Encouraging competitiveness, one of ECX's functions for its coffee exporter members, was evaluated on two different categories and received an average mean score of 3.37. The majority of respondents (70.4% in the category) concurred that a small number of coffee traders do not control the majority of the ECX coffee market, as the above table illustrates. According to coffee exporters, this suggests that the ECX market is not a concentrated one. However, 22% of respondents disagreed with the statement that ECX's coffee industry is competitive, while 26.3% of respondents agreed.Even if the rating is still above 3.00 on this item, as seen in the table below, a significant portion of them still have a neutral stance on this concept, suggesting that there is still opportunity for improvement.

Table 15 Descriptive Statistics of Enabling Competition

Dimensions	Mean score	Strongly disagree (%)	Disagree (%)	Neutral (%)	Agree (%)	Strongly Agree (%)	Total (%)
ECX‘s coffee market is not dominated by a few coffee traders.	3.71	.8	7.6	21.2	60.2	10.2	100.0
ECX‘s coffee market is competitive.	3.03	1.7	20.3	51.7	26.3	0.0	100.0

Source: Survey result, 2024

4.1.4.4 Market Development Function of ECX

Four factors were used to measure the market development dimension, as shown in table 4.13 below: increasing ICT proficiency, facilitating international trade, introducing new goods and services, and capacity building and training. With 75.4% and 61.9% of respondents' agreement level, respectively, the launch of new services and goods received the highest ranking among these things, followed by an improvement in ICT level. International trade facilitation services received the lowest score level, with only 28% of respondents agreeing. This item had a score of 2.73, which is below average. Even though the Exchange's total market development score was 3.24, it was still below than the average rating of 3.37 for export performance. The findings showed that ECX needs to improve its market development role, particularly in terms of facilitating international commerce, and that members should get ongoing capacity building to improve the performance of coffee exporters.

Table 16 Descriptive Statistics of Market Development

Dimensions	Mean Score	Strongly disagree (%)	Disagree (%)	Neutral (%)	Agree (%)	Strongly Agree (%)	Total (%)
ECX gives traders continuous capacity building and training.	3.06	9.3	21.2	28.0	37.3	4.2	100.0

ECX gives international trade facilitation service.	2.73	6.8	41.5	23.7	28.0	0	100.0
ECX has improved my information and communication technology level.	3.45	4.2	8.5	25.4	61.9	0	100.0
ECX introduces new products and services to meet evolving needs.	3.71	4.2	0.0	20.3	71.2	4.2	100.0

Source: Survey result, 2024

4.1.4.5 Price Discovery Role of ECX

One of the main purposes of any commodity trade is price discovery. The price discovery function of ECX for coffee exporters received a rating of 2.89, which is below average. The respondents rated the other factors used to measure the price discovery function below average, with the exception of its role in providing a greater supply of coffee to its market. Supply and demand are not the only factors influencing price movement at ECX, as the majority of respondents (59.4%) did not believe that the price of ECX represents the fundamentals of the domestic and global coffee industry. According to the respondents, the market's issues are inter-seasonal price fluctuations and artificial shortages. This suggests that the Exchange needs to do a lot to strengthen its position in this area. The price discovery descriptive statistics were compiled in Table 4.14 below.

Table 17 Descriptive Statistics of Price Discovery

Dimensions	Mean score	Strongly disagree (%)	Disagree (%)	Neutral (%)	Agree (%)	Strongly Agree (%)	Total (%)
ECX‘s price reflects the fundamentals of the local and international coffee industry.	2.48	15.3	44.1	17.8	22.9	0.0	100.0
I get wider supply of coffee at ECX.	3.35	2.5	15.3	35.6	38.1	8.5	100.0

ECX avoids shortages, gluts and other pricing distortions by creating better price signals.	2.81	15.3	20.3	32.2	32.2	0.0	100.0
Inter-seasonal price variety is reduced by ECX.	2.91	4.2	34.7	31.4	25.4	4.2	100.0

Source: Survey result, 2024

4.1.4.6 The Role of ECX in Storage and Grading of Coffee

With a mean score of 2.86, much below average, the storage and grading function received the lowest grade. According to the table below, 59.4% of respondents expressed uncertainty about the Exchange's rating and the caliber of the coffee they purchase. Of them, a sizable portion (49.2%) continued to disagree that ECX has improved the quality of coffee. Storage metrics, however, have performed better than expected. The analysis's findings showed that the Exchange's grading service is subpar and requires improvement because members give it the lowest rating.

Table 18 Descriptive Statistics of Storage and Grading

Dimensions	Mean score	Strongly disagree (%)	Disagree (%)	Neutral (%)	Agree (%)	Strongly Agree (%)	Total (%)
ECX avoids coffee wastage because of better storage facilities.	3.36	3.4	13.6	33.9	41.5	7.6	100.0
ECX introduces better and scientific storage hardware and practices.	3.09	0	26.3	38.1	35.6	0.0	100.0
I am confident on the grade and quality of the coffee I buy through ECX.	2.36	15.3	44.1	30.5	10.2	0.0	100.0
Coffee quality has improved because of ECX.	2.61	10.2	39.0	30.5	20.3	0.0	100.0

Source: Survey result, 2024

4.1 Correlation Analysis

The correlation between independent and dependent variables was analyzed using Statistical Package for Social Science (SPSS) using a Pearson Correlation coefficient. The table below shows the findings of the correlations between the variables that were utilized in the questionnaires.

Table 19 Pearson Correlations Matrix

Correlations								
		Price Discovery	Facilitation of Physical comm. Trade	Storage & Grading	Market Development	Enabling Competition	Market Information Provision	Export Performance
Price Discovery	Pearson Correlation	1						
	Sig. (2tailed)							
Facilitation of Physical commodity Trade	Pearson Correlation	.545**	1					
	Sig. (2tailed)	.000						
Storage and Grading	Pearson Correlation	.618**	.563**	1				
	Sig. (2tailed)	.000	.000					
Market Development	Pearson Correlation	.270**	.022	.317**	1			
	Sig. (2tailed)	.003	.812	.000				
Enabling Competition	Pearson Correlation	.088	.021	.141	.581**	1		
	Sig. (2tailed)	.342	.818	.127	.000			
Market Data Dissemination	Pearson Correlation	.270**	.022	.317**	1.000**	.581**	1	
	Sig. (2tailed)	.003	.812	.000	.000	.000		
Export Performance	Pearson Correlation	.447**	.347**	.665**	.493**	.358**	.493**	1
	Sig. (2tailed)	.000	.000	.000	.000	.000	.000	
	N	118	118	118	118	118	118	118
**. Correlation is significant at the 0.01 level (2-tailed).								

Source: Survey result, 2024

Bivariate Correlation determines if two variables have a linear relationship, meaning that when one rises, the other rises as well, or when one rises, the other falls. Furthermore, the linear correlation between two variables, X and Y, is measured by the Pearson product moment correlation coefficient, which has a value between +1 and -1 inclusive, with 1 denoting a total positive correlation, 0 denoting no connection, and -1 denoting a total negative correlation (Pedhazur, 1982). A strong correlation between the two variables is indicated when Pearson's r is near 1. This indicates a high correlation between changes in one measure and changes in the other. A poor correlation between the two variables is indicated when Pearson's r is around zero. According to Malhotra and Briks (2007), this indicates that there is no correlation between changes in one measure and changes in the other.

Field (2009) states that the correlation coefficient (r) is classified as follows: >0.5 indicates strength, 0.3 to 0.49 indicates moderateness, and 0.1 to 0.29 indicates weakness. Conversely, when Pearson's r is positive (+), it indicates that the value of the second variable rises in tandem with the value of the first. In a similar vein, when the value of one variable falls, the value of the second likewise falls. We refer to this as a positive association. When Pearson's r is negative (-), it indicates that the value of the second variable falls as the value of the first one rises. We refer to this as a negative association.

Sig (2-Tailed) value: According to Pedhazur (1982), this value tells that whether there is a statistically significant correlation between two variables or not. If the Sig (2-Tailed) value is greater than 0.05, the researcher can conclude that there is no statistically significant correlation between two variables. That means, increases or decreases in one variable do not significantly relate to increases or decreases in the second variable. If the Sig (2-Tailed) value is less than or equal to .05, the researcher can conclude that there is a statistically significant correlation between two variables. That means, increases or decreases in one variable do significantly relate to increases or decreases in the second variable.

As indicated in the above correlation matrix, the six independent variables were positively (either moderately or strongly) correlated with export performance; the strongest correlation coefficient

being between export performance and storage & grading (r=.65, $p \leq 0.01$). Export performance is moderately correlated with the remaining independent variables ranging from r=.347, $p \leq 0.01$ for facilitation of physical commodity trade to r=.493, $p \leq 0.01$ for both market development and market information provision. Hence, there is a moderate positive relationship between these variables and export performance.

4.2 Regression Analysis

Regression is a technique used to predict the value of a dependent variable using one or more independent variables (Albaum, 1997). Regression analysis is a statistical tool for the investigation of relationships between variables. Linear regression estimates the coefficients of the linear equation, involving one or more independent variables that best predict the value of the dependent variable (Field, 2009).

4.2.1 Assumption Tests of Regression Analysis

Regression analysis assumptions must be met, as advised by Hair et al. (2010), in order to verify that the data collected accurately reflected the sample and that the researcher had the best outcomes. As a result, in addition to the normality test carried out in the preceding section, the assumptions of multi-collinearity, independent errors, and linearity were examined below.

a. Multi-collinearity

The undesired state in which one independent variable is a linear function of other independent variables is known as collinearity (or multi-collinearity) (Gelman, 2006). Variance inflation factor (VIF) statistics and tolerance were used in this study to check for multicollinearity. According to Andy (2006), a tolerance number below 0.1 most often denotes a significant collinearity issue. According to Burns and Burns (2008), a VIF number higher than 10 is likewise cause for worry. Multi-collinearity was not a problem in this investigation, as shown by the fact that all of the independent variables had tolerances more than 0.1 and VIF values less than 10 (see table 4.17 below). Regression analysis was therefore suitable for this specific investigation.

Table 20 Multi Collinearity Test

Model		Colliniarity Statistics	
		Tolerance	VIF
1	Price Discovery	.540	1.852
	Facilitation of Physical Commodity Trade	.563	1.775
	Storage and Grading	.502	1.992
	Market Development	.515	1.943
	Enabling Competition	.551	1.816
	Market Information Provision	.583	1.714
Dependent variable: Export Performance			

b. Independent errors

The residual terms ought to be independent or uncorrelated for any two observations. Some people refer to this situation as a lack of autocorrelation. By looking for serial correlations between errors, the Durbin-Watson test can be used to examine this assumption. In particular, it determines if there is a correlation between nearby residuals. According to Field (2009), the test statistic might range from 0 to 4, with a value of 2 indicating that the residuals are uncorrelated. With a score of 1.913 (see table 4.18 below) on the Durbin-Watson test of the model summary, which is extremely near to 2, the residual components were either uncorrelated or independent.

c. Linearity

The linearity of the relationship between the dependent and independent variable represents the degree to which the change in the dependent variable is associated with the independent variable (Hair et al., 2010). Conventional regression analysis would underestimate the relationship when nonlinear relationships are present, i.e., R^2 underestimates the variance explained overall and the betas underestimate the importance of the variables involved in the non-linear relationship (Malhotra and Briks, 2007). The mean values of the outcome variable for each increment of the

predictor(s) lie along a straight line. In plain English this means that it is assumed that the relationship the researcher is modeling is a linear one. If the researcher models anon-linear relationship using a linear model then this obviously limits the generalizability of the findings (Field, 2007). In the correlation analysis, the entire above correlation matrix shows that all independent variables are positively and either moderately or strongly correlated with the dependent variable. Therefore, there were linearity of the relationship between the dependent and independent.

4.2.2 Multiple Linear Regression Analysis

To find the relationship and the most important factors influencing the dependent variable (export performance), multiple linear regressions were used to assess the explanatory power of the independent variables (price discovery, facilitating the trade of physical commodities, storage and grading, market development, enabling competition, and market information provision). A 95% confidence interval and a significance threshold of 0.05 were applied. Multiple regression analysis was used to evaluate the role and impact of ECX's role factors on exporters' export performance. Table 4.18 below displays the regression analysis's model summary.

Table 21 Model Summary

Model Summary[b]					
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.739[a]	.546	.525	.50410	1.913
a. Predictors: (Constant), Market Information Provision, Facilitation of Physical Commodity Trade, Enabling Competition, Price Discovery, Storage and Grading, Market Development					
b. Dependent Variable: Export Performance					

Source: Survey Result, 2024

The above regression model presented how much of the variance in the measure of export performance is explained by the underlying ECX‘s role variables.

R – Indicates the value of the multiple correlation coefficient between the predictors and the outcome, with a range from 0 to 1, a larger value indicating a larger correlation and 1 representing an equation that perfectly predict the observed value (Pedhazur, 1982). From the model summery

(R = 0.739) indicates that the linear combination of the six independent variables (price discovery, facilitation of physical commodity trade, storage and grading, enabling competition and market information provision) strongly predicted the dependent variable (export performance).

R Square (R^2) – indicates the proportion of variance that can be explained in the dependent variable by the linear combination of the independent variables. In another word R^2 is a measure of how much of the variability in the outcome is accounted for by the predictors. The values of R^2 also range from 0 to 1 (Pedhazur, 1982). The linear combination of the predictor variables i.e. price discovery, facilitation of physical commodity trade, storage and grading, market development, enabling competition and market information provision explain 54.6% of the variance in export performance and the remaining 45.4 % is explained by extraneous variables, which have not been included in this regression model. According to Mooi and Sarstedt (2011), in cross-sectional designs, values of around 0.30 are common while for exploratory research, using cross-sectional data; values of 0.10 are typical.

Adjusted R Square (R^2) – The adjusted R^2 gives some idea of how well the model generalizes and its value to be the same, or very close to the value of R^2. That means it adjusts the value of R^2 to more accurately represent the population under study (Pedhazur, 1982). The difference for the final model is small (in fact the difference between R^2 and Adjusted R^2 is (.546− 0.525 = 0.021) which is about 2.1%. This means that if the model were derived from the population rather than a sample it would account for approximately 2.1% less variance in the outcome.

Durbin-Watson- the Durbin–Watson statistic expresses that whether the assumption of independent errors is acceptable or not. As the conservative rule suggested that, values less than 1 or greater than 3 should definitely raise alarm bells (Field, 2009). So that the desirable result is when the value is closer to 2, and for this data the value is 1.913, which is so close to 2 that the assumption has almost certainly been met.

4.2.3 ANOVA Analysis

The next part of the SPSS output reports an analysis of variance (ANOVA).

Table 22 ANOVA of Export Performance

ANOVA[a]						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	34.568	6	5.761	22.792	.000[b]
	Residual	28.058	111	.253		
	Total	62.625	117			
a. Dependent Variable: Export Performance						
b. Predictors: (Constant), Facilitation of Physical Trade, Enabling Competition, Price Discovery, Market Information, Market Development, Storage and Grading						

Source: Survey result, 2024

The ANOVA table shows the overall significance/ acceptability of the model from a statistical perspective (Pedhazur, 1982). The summary table shows the various sum of squares described in the table above and the degrees of freedom associated with each. From these two values, the average sums of squares (the mean squares) can be calculated by dividing the sums of squares by the associated degrees of freedom. The most important part of the table is the F-ratio, which is a test of the null hypothesis that the regression coefficients are all equal to zero. Put in another way, this F statistics tests weather the R^2 proportion of variance in the dependent variables accounted for by the predictors is zero and the table also shows the associated significance value of that F-ratio (Field, 2009).

For this data, F is 22.79, which is significant at $P<.0001$ (because the value in the column labeled *Sig.*is less than 0.001). This result tells us that there is less than a 0.1% chance that an F-ratio this large would happen if the null hypothesis proposed about F- ratio were true. Therefore, it can be concluded that the regression model resulted in significantly better prediction of export performance and that the regression model overall predicted export performance significantly well.

4.2.4 The Regression Coefficient

The goal of this study was to determine which independent variable contributed most to the dependent variable's prediction. Therefore, using the standardized beta coefficient, the degree to which each predictor (independent variable) influenced the criteria (dependent variable) was examined.

The average amount of change in the dependent variable brought about by a unit change in the independent variable is explained by the regression coefficient. An independent variable is more strongly supported as the key factor in predicting the dependent variable if its beta coefficient is higher.

Table 23 Summary of Coefficients

Coefficients[a]								
Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.	95.0% Confidence Interval for B	
		B	Std. Error	Beta			Lower Bound	Upper Bound
1	(Constant)	-.621	.395		-1.573	.119	-1.404	.161
	Price Discovery	.027	.094	.025	.292	.771	-.159	.214
	Facilitation of Physical Comm. Trade	.017	.087	.017	.198	.843	-.156	.191
	Storage and Grading	.614	.101	.547	6.100	.000	.415	.814
	Market Development	.261	.118	.196	2.213	.029	.027	.494
	Enabling Competition	.179	.097	.145	1.840	.068	-.014	.371
	Market Information Provision	.304	.113	.228	2.689	.008	.080	.528
a. Dependent Variable: Export Performance								

Source: Survey result, 2024

The value for the intercept (a) in the regression equation on the first row, designated (constant), is shown in indicated column B. Since the constant beta value is negative, the dependent variable would equal that negative value (-.621) if all independent variables were zero. The regression coefficient values for price discovery, facilitating physical commodity trading, storage and grading, permitting competition, and providing market information are indicated by the figures below the column "βeta." Pedhazur (1982) recommended that in the multiple regression, this standardized regression coefficient Beta (β) is useful, because it allows us to compare the relative strength of each independent variable's relationship with the dependent variable.

The constant beta value (β) and p-value of the variables are displayed in the coefficient table above to assess the hypothesis's significance. Each variable's standardized coefficients are.025,.017,.547,.196,.145, and.228 respectively, and its significance level (P-value) is.771,.843,.000,.029,.068 and.008 respectively.

The table above also provides the results of the model predicting export performance through the variables of price discovery, facilitation of physical commodity trade, storage and grading, market development, enabling competition and market information provision. According to the results in confirmation with the correlation analysis explained above export performance had a positive and significant relationship with storage and grading and a positive and moderate relationship with the remaining five variables. But in regression analysis, except storage and grading (p=.000), market information provision (p=.008), and market development (p=0.029) other variables were found insignificant.

These findings lead to the following regression equation, which, using the linear combination of Price Discovery, Facilitation of Physical Commodity Trade, Storage and Grading, Market Development, Enabling Competition, and Market Information Provision, forecasts the impact of ECX on export performance:

EP = -.621 + 0.027 PD + 0.017 FPCT + 0.614 SG +0.261MD+ 0.179 EC +0.304 MIP+ e

Where: EP=Export Performance

PD = Price Discovery

FPCT = Facilitation of physical Commodity Trade

SG = Storage and Grading

MD = Market Development

EC=Enabling Competition

MIP= Market Information Provision

E = sampling error

From the above equation, it is indicated that storage and grading was the most important determinant of export performance (β=0.614, sig=0.000). The next significant correlation was with the dimension of market information provision (β=0.304, sig=0.08) followed by market development (β=0.261, sig=.029).

4.3 Hypotheses Testing

Six hypotheses were created to determine the impact of ECX on the export performance of coffee exporter members. These hypotheses were then experimentally evaluated to determine their statistical significance within the study setting. The following lists these hypotheses:

H1: ECX‘s price discovery function has a significant and positive influence on coffee exporters‘ export performance.

H2: by facilitating the physical commodity trade, ECX brings a positive and significant influence on coffee exporters‘ export performance.

H3: ECX has a strong and positive influence on coffee export performance by providing storage and grading service (H3).

H4: ECX‘s market development function has a significant positive influence on coffee exporters‘ export performance.

H5: ECX has a significant positive influence on coffee exporters‘ performance by creating a competitive market.

H6: ECX has a positive influence on coffee export performance by providing reliable and timely market information.

Table 4.20 above indicated that the three variables: storage & grading , market information provision and market development influence export performance of coffee exporters significantly at 95% confidence interval with a sig. value of 0.000 , 0.008 and 0.029 (sig at ≤0.05) respectively. Based on these statistical results, the hypothesis tests results are summarized below.

Table 24 Hypothesis Test Result

S.N	Hypothesis	Result
1	H1: ECX‘s price discovery function has a significant positive influence on coffee exporters‘ export performance.	Not supported
2	H2: by facilitating the physical commodity trade, ECX has a significant positive influence on coffee exporters‘ export performance.	Not supported
3	H3: ECX has a significant positive influence on coffee export performance by providing storage and grading service (H3).	Supported
4	H4: ECX‘s market development function has a significant positive influence on coffee exporters‘ export performance.	Supported
5	H5: ECX has a significant positive influence on coffee exporters‘ performance by creating a competitive market.	Not supported
6	H6: ECX has a significant positive influence on coffee export performance by providing reliable and timely market information.	Supported

4.4 Secondary Data Analysis

Secondary data were collected to measure the items of the variable ‖enabling competition‘‘ in addition to the primary quantitative data collected from the survey. Accordingly, the concentration level and competitiveness of the ECX coffee market were measured below using a one year trade data of export coffee for the period from May 01, 2023 to April 30,2024.

Market Concentration Level of ECX Coffee Market

One of the hypothesized roles of ECX on coffee exporters was that ECX has a significant positive impact on coffee exporters‘ performance by creating a competitive market. One of the items used to measure this impact was level of market concentration of export coffee at ECX which is measured using the market using concentration index. Concentration ratio is expressed in terms of CRx which stands for the percentage of the market sector controlled by the biggest X traders.

Church and Ware (2000) recommended that the most common concentration ratio to evaluate the market structure is the CR4 which in this case means the four largest traders (both exporters and suppliers) of coffee at ECX. Low market concentration is seen as 0 to 50%, medium concentration with 50 to 80% and high market concentrations with 80 to 100%. The greater the degree of concentration, the higher will be the non-competitive behavior and formation of collusion in the coffee market. Thus, CR4 of export coffee was calculated as:

$$MKTS_i = Vi/TC$$

Where, *MKTSi= market share of coffee Trader i, Vi= amount of coffee handled by Trader i and TC=the total coffee traded/sold in ECX.*

Concentration Ratio of m coffee buyers: combined market share of the m largest coffee buyers in the market is calculated as:

$$CRm = \sum_{i=1}^{m} MKTS_i$$

According to Naldi and Flamini (2014), the CR4 index (the concentration ratio for the top 4 firms) has been the most relevant index to measure concentration before the advent of the HHI. It is given by the sum of the market shares of the largest 4 firms in the market. The CR4 does not consider the whole market, but just a limited number of companies. While it is clear that a low value of the index represents a larger competition level, while a high value (close to 100) represents oligopoly situation, there is not a general consensus on the correspondence between the value of the index and intermediate concentrations. Typically, if CR4<40, the industry is considered as very competitive.

CR4 Range	***Competition level***
0	*Perfect Competitions*
0–40	*Effective Competition or Monopolistic Competition*

40–60	*Loose Oligopoly or Monopolistic Competition*
>60	*Tight Oligopoly or Dominant Firm with a Competitive Fringe*

Source: Naldi and Flamini (2014)

One critique of the concentration ratio is that it does not take into account the distribution of market share across all firms in an industry (Boetel and Liu, 2010; Church and Ware, 2000; cited in Tamirat, 2013). Concentration index that does not share this weakness is the Herfindahl-Hirschman Index (HHI). The Herfindahl index is the sum of the squares for each market shares from major coffee traders in the sector. This index provides an indicator range from 0 to 1, with higher numbers generally indicating a decrease in competition and an increase in market share for the largest traders in the market.

$$HHI = \sum_{i=1}^{m} (MKTSi)^2$$

HHI	***Competition level***
<0.15	*Unconcentrated Markets/competitive*
0.15–0.25	*Moderately Concentrated Markets*
>0.25	*Highly Concentrated Market*

Source: Naldi and Flamini (2014)

Using the aforementioned two measures of market concentration and competition, the degree of concentration and competition for both buyers and sellers of coffee, sesame and pea beans for the trade conducted during the period May 01, 2023 to April 30,2024 has been presented as follows.

Table 25 Market concentration measures of ECX Coffee Market

Concentration measure	Buyers	Sellers
CR4	29.19	16.00
HHI	0.03	0.02

Source: Author‘s calculation based on secondary data

From the result, both CR4 and HHI results indicated that the coffee market of ECX was unconcentrated and perfectly competitive which indicates that there is low market concentration and lesser threat of oligopoly from both the suppliers and buyers (exporters) side of ECX‘s export

coffee market. This result is supported by the findings of the descriptive statistics in which the majority respondents (70.4%) agreed that ECX‘s coffee market is not dominated by a few coffee traders.

4.5 Discussions of the Results

The objective of this study was to examine the role of ECX in stimulating coffee export by measuring the level of influence of ECX‘s core functions on coffee exporters‘ export performance by analyzing ECX‘s price discovery, facilitation of physical trade, market development, storage and grading, enabling competition and market information provision roles‘ influence on coffee exporters‘ performance.

To determine the general profiles and features of the respondents, factors such membership categories, years of experience in the coffee export industry, and membership year at ECX were taken into consideration. Out of the 118 responders, 84% were members and 16% were direct traders who were not members. Nevertheless, there were no fundamental differences between these two strata in terms of the services they receive from the Exchange, and there was no discernible difference in how they answered the questions. In terms of length of membership year at ECX, the majority (63.6%) of the respondents have worked over five years with ECX. Regarding their experience in coffee exporting, 88% of them have over five years‘ experience in the coffee export business.

The descriptive analysis's findings showed that, for the most part, all of the independent variables had mean scores above the midpoint (3.00), with the exception of price discovery, storage, and grading, which had mean scores of 2.89 and 2.86, respectively. This below average rating of the storage and grading service of ECX was also reported by the research of Worku et al (2016). On their study on the contribution of ECX to exporters of agricultural commodities, these authors indicated that the grading and sampling system of ECX had a problem of bias and warehouse quality problem occurred as a result of inefficient infrastructure and inadequate physical infrastructure.

Regarding price discovery role of ECX, the majority (59.4%) indicated that ECX‘ price does not reflect the fundamentals of local and international coffee market. Similarly, 59.4% of the respondents indicated that they are not confident on the grade and quality of the coffee they buy through ECX market.

According to the research findings, ECX's overall influence on coffee exporting members' export performance was rated 3.37 by the members, indicating a positive and significant correlation between exporters' success and ECX's primary tasks.

From the regression analysis result, it was indicated that there was significant and positive relationship between storage and grading, market information provision and market development services of ECX and export performance of its coffee exporting members. This was also supported by the findings of UNCTAD (2009).

The results of the descriptive analysis and secondary data analysis using the CR4 and HHI, which demonstrated that the coffee market in ECX was competitive and not concentrated, further reinforced the conclusion that there is a positive association between facilitating competition and export performance. This finding is consistent with the result of the study conducted by Tamirat (2013) which indicated that ECX has a low concentration and lesser treat of oligopoly. However, the findings of the regression analysis did not support the claim that ECX‘s competitive market has significant and positive influence on exporters‘ performance.

Similarly, the results of this correlation study showed that exporters' export performance and ECX's participation in price discovery are positively correlated. The results of the regression analysis, however, did not support the assertion that ECX significantly improves the performance of coffee exporters through its price discovery function. This is in contrast to the findings of UNCTAD (2009) and Mukesh (2014), who discovered that one of the commodity exchange's functions was to inform market actors of prices. Price discovery as a fundamental role of commodity exchanges is critical factor to the existence of commodity exchanges. From the descriptive analysis, it was also found out that this role was one of the least rated roles of ECX. Several factors may have contributed for this finding as indicated in the ratings of the respondents.

First, coffee market price at ECX was not based on the local supply and demand and not in alignment with the international market movement because of different factors. Second, ECX‘s price was not able to avoid unnecessary price distortions; and thirdly, availability of inter-seasonal price variety at ECX‘s market. Even some argue that coffee price at ECX is greater than the international market price which they associate with lack of regulatory controls in the sector.

The regression result showed no significant positive relationship between export performance and the facilitation of physical commodity trade, which was contrary to the findings of UNCTAD (2009) and Tamirat (2013), who contended that this was one of the functions of commodity exchanges to their market actors.

With a correlation coefficient of 0.665 and a p value of 0.000, which was less than 0.05, this research demonstrated a substantial association between the export performance of coffee exporters and the storage and grading service of ECX. This result, however, contradicted the findings of the study by Worku et al. (2016), which showed that bias existed in the ECX grading and sample system and that poor warehouse quality was caused by ineffective and insufficient physical infrastructure.

However, the rating given to storage and grading in the descriptive analysis was 2.86 which was the least rated variable by the respondents as mentioned above. This shows that as storage and grading had the strongest influence on coffee exporters‘ performance, and at the same time the least rated service, a lot should be done by the Exchange to improve the satisfaction of its members on this service.

With a correlation coefficient of 0.447 and a p value of 0.008, it was determined that there was a strong association between the performance of coffee exporters and the market information provided by ECX. This result contradicted Ahmed's (2017) results, which found that ECX had not given traders accurate and trustworthy market information.

The market development and export performance were found to be significantly correlated with a correlation coefficient value of 0.493 and _p‘ value of 0.029. This finding was found to be consistent with UNCTAD (2009) which found out market development function as one of the functions of commodity exchanges.

CHAPTER FIVE: SUMMARY, CONCLUSION AND RECOMMENDATION

This chapter presents summary of findings, conclusion and recommendations. Moreover, implications and contributions of the findings are also explained in this chapter. Lastly, the chapter describes the recommended area for further research direction.

5.1 Summary of Major Findings

This thesis examined the role of ECX in stimulating coffee export by measuring the level of influence of ECX‘s core functions: price discovery, facilitation of physical trade, market development, storage and grading, enabling competition and market information provision on coffee exporters‘ export performance. Accordingly, the overall findings of the research are summarized as follows: -

- The mean score was higher than the likert scale's midpoint (3.00), which was 3.37, according to the average descriptive statistics for ECX's impact on coffee exporters' export performance (dependent variable). The ECX role variables—price discovery, facilitating the physical exchange of commodities, storage and grading, market development, encouraging competition, and market information provision—were the source of this respondents' overall assessment.

- The results of the descriptive statistics of the independent variables showed that, the mean scores facilitation of physical commodity trade, and market information provision were 3.83 and 3.52 which were the highest and second highest ratings respectively. The mean score of the enabling competition and market development was also above the mid-point rating with values of 3.37 and 3.24 respectively. However, the ratings given for price

discovery and storage and grading were found to be below 3.00 (mid-point) with scores of 2.89 and 2.86 respectively. The result showed that ECX's facilitation of physical commodity trade service was given the highest score while the storage and grading service was given the least score by the respondents.

- According to the correlation matrix, export performance was strongly connected with all six independent variables; the largest link was found between export performance and storage & grading ($r=.65$, $p < 0.01$). From $r=.347$, $p \leq 0.01$ for the facilitation of physical commodity trade to $r=.493$, $p \leq 0.01$ for both market development and market information provision, export performance has a moderate correlation with the other independent variables. Therefore, these characteristics and export performance have a moderately positive association.

- The regression model summary ($R = 0.739$) indicated that the linear combination of the six independent variables (price discovery, facilitation of physical commodity trade, storage and grading, enabling competition and market information provision) strongly predict the dependent variable (export performance). The linear combination of the dependent variables also explained 54.6% of the variance in export performance and the remaining 45.4 % are explained by extraneous variables, which were not included in this regression model.

- The three independent variables (storage & grading, market information provision, and market development) had a significant impact on coffee exporters' export performance at a 95% confidence interval, with a sig. value of 0.000, 0.008, and 0.029, respectively. This was the other key finding of the regression analysis results. Nevertheless, a positive correlation coefficient indicates that the other variables have a favorable impact on coffee export performance. Consequently, $EP = -.621 + 0.027\ PD + 0.017\ FPCT + 0.614\ SG + 0.261MD + 0.179\ EC + 0.304\ MIP + e$ was the study model fit regression equation.

- From the secondary data analysis conducted to measure market concentration and competitiveness of ECX‘s coffee market, both CR4 and HHI results indicated that the coffee market of ECX was un-concentrated and perfectly competitive which indicates that there is low market concentration and lesser threat of oligopoly from both the suppliers and buyers (exporters) side of ECX‘s export coffee market. This result is supported by the findings of the descriptive statistics in which the majority respondents (70.4%) agreed that ECX‘s coffee market is not dominated by a few coffee traders.

5.2 Conclusion

The main purpose of the study was to examine the role of ECX in stimulating coffee export by measuring the level of influence of ECX‘s core functions: price discovery, facilitation of physical trade and market development, on coffee exporters‘ export performance from members‘ perspective. In order to meet the general objective, survey was made. Questionnaire on dimensions of ECX‘s roles were developed and distributed to coffee exporting members and nonmember direct traders of ECX.

Objectives of the research have been attained. The general objective of this study was to measure the role of ECX in stimulating coffee export. Regression analysis was conducted to verify if the independent variables have influence on export performance. According to the findings, storage & grading, market information provision and market development were found to have significant impact on export performance. All the selected dimensions have a positive influence on the dependent variable/export performance. Export performance is also significantly correlated with the independent variables.

All things considered, it can be said that ECX plays a major part in maximizing the performance of its members who export coffee by facilitating physical commodity trade, price discovery, storage and grading, fostering competition, market development, and the provision of market information. However, according to the respondents' evaluations, ECX's services for a few key functions, such as price discovery, grading, and storage, fell short of the midpoint and must be enhanced in order to significantly boost exporters' performance.

5.3 Implications of Findings

The first role of ECX to influence export performance of coffee exporting members strongly was found to be the storage and grading function. On the other hand, this role of ECX was the least rated service by the respondents. Traders lack the confidence on the grade and quality of coffee they trade at ECX. Therefore, this implies that ECX should focus on improving this role dimension in order to impact coffee exporters positively.

The provision of market knowledge was shown to be the second most significant factor influencing export performance, behind market development. Market data has a significant impact on exporters' export performance since it is essential for their market decision-making. However, the majority of respondents expressed satisfaction with ECX's ability to facilitate the physical commodity function. The respondents gave this service the highest rating. The ease of acquiring the commodity type through the ECX market and the decreased default risk were the primary causes of this.

There was no significant correlation between exporters' performance and ECX's involvement in facilitating physical commerce, according to the regression result. To significantly affect the performance of coffee exporters, ECX should continue to provide its highly regarded market information service quality and broaden its scope to include other essential functions like price discovery and physical trade facilitation.

Price discovery was found to be the other least significant contributor to coffee exporters‘ performance which implies that coffee price at ECX market was not discovered merely based on the market fundamentals of supply and demand and international market realities. Policy and regulatory interventions may be needed to make ECX‘s coffee price align with the international price in addition to ECX‘ control mechanisms.

Overall, The study's findings suggest that ECX has to strengthen the functions it covers because they were found to have a favorable association with the success of coffee exporters, however only a small percentage of them were significant.

5.4 Recommendations

The researcher forwarded the following recommendations based on the research findings and the conclusion drawn in the previous sections.

- The majority of respondents were dissatisfied with ECX's storage, grading, and price discovery functions, as shown by ratings below the midpoint. Conversely, these positions have a favorable impact on the performance of coffee exporters. To increase members' trust in this area, ECX should establish and uphold efficient and transparent grading and storage services.

- ECX should focus on building or renting better and scientific storage hardware and introduce better warehouse management practices in order to avoid coffee wastage and quality deterioration during storage of coffee.

- Efficient price discovery mechanism should also be in place as a significant number of respondents believed that ECX‘s price doesn‘t reflect the market fundamentals (supply and demand). The company should also work to protect unnecessary shortages, gluts and other pricing distortions by creating better price signals.

- Market participants who fabricate gluts, shortages, and other needless pricing distortions that do not accurately reflect the domestic and global market realities should be subject to regulation by coffee marketing and export regulators.

- Market development is one core function of commodity exchanges now days. ECX should give attention to this service. Continuous capacity building and training tailored to coffee exporter members should be given. In addition, the company should think of starting international trade facilitation services for its members.

5.5 Implications for Future Research

The study was conducted only on coffee exporting members of ECX. This study was also crosssectional and explanatory in nature. Future researchers could undertake more in depth longitudinal study on other commodities exporter members of ECX.

This study revealed that export performance of coffee exporting members of ECX is affected by other variables than the variables under study (price discovery, facilitation of physical commodity trade, storage and grading, market development, enabling competition and market information provision). Therefore, other variables which could affect export performance of ECX members are potential areas for further study.

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Appendices

Appendix 1: Questionnaire

ST.MARYS' UNIVERSITY

SCHOOL OF GRADUATE STUDIES

Department of Marketing Management

Questionnaire for Coffee Exporting Members of ECX

Introduction

Dear respondent,

My name is Natnaele Workineh. I am attending MA in Marketing at St.Marys' University. I am conducting a thesis on the title **"The Role of ECX in Stimulating Agricultural Commodities Export"**. I need to collect information from you for the successful completion of my research study. Please assist me by giving correct and complete information.

General Instructions: For your free and genuine responses, please circle only one choice for the first section and use the tick (√) mark for the second section.

Section 1 (Basic Information of the Respondent)	
Please circle your choice.	
Question	Answer
1. How long have you been a member or Non-member direct trader at ECX?	A. Below 2 years B. 2-5 years C. Above 5 years
2. Your membership type at ECX	A. Full member B. Non-member direct trader
3. How long have you been in the coffee export business?	A. Below 5 years B. 5-10 years C. Above 10 years

Section 2					
Please use the tick (√) mark to rate the below services.					
	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
Price Discovery (PD)					
1. ECX's price reflects the fundamentals of the local and international coffee industry.					
2. I get wider supply of coffee at ECX.					
3. ECX avoids shortages, gluts and other pricing distortions by creating better price signals.					
4. Inter-seasonal price variety is reduced by ECX.					
Facilitation of Physical Trade (FPT)					
5. ECX has helped me in getting the type of coffee I want easily.					
6. ECX has reduced default risk because of its cash market.					
7. ECX has helped us access remote markets easily.					
Storage and Grading (SG)					
8. ECX avoids coffee wastage because of better storage facilities.					
9. ECX introduces better and scientific storage hardware and practices.					
10. I am confident on the grade and quality of the coffee I buy through ECX.					
11. Coffee quality has improved because of ECX.					
Market Development (MD)					
12. ECX gives traders continuous capacity building and training.					
13. ECX gives international trade facilitation service.					
14. ECX has improved my information and communication technology level.					
15. ECX introduces new products and services to meet evolving needs.					
Enabling Competition (EC)					
16. ECX's coffee market is not dominated by a few coffee traders.					

17. ECX‘s coffee market is competitive.					
Market Information Provision (MIP)					
18. ECX enables coffee buyers to make marketing decisions based on market data.					
19. ECX makes me informed about the real price information at its market.					
20. I get reliable and timely domestic and international coffee market information through ECX.					
Export Performance (EP)					
21. ECX helps me increase export sale because of its price discovery functions.					
22. ECX helps me increase export sale by facilitating physical trade.					
23. The storage and grading service of ECX has improved my export performance.					
24. ECX helps me increase export sale through its market development roles.					
25. The competitive coffee market created by ECX increased my export sales.					
26. ECX helps me increase export by providing reliable market information.					

Thank you!

Appendix 2: Analysis Results

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
Facilitation of Physical Trade	118	1.33	5.00	3.8305	.69968
Enabling Competition	118	1.00	4.50	3.3686	.59351
Market Data Dissemination	118	2.25	4.50	3.2373	.54972
Market Development	118	2.25	4.50	3.2373	.54972
Price Discovery	118	1.75	4.25	2.8877	.67431
Storage and Grading	118	1.25	4.00	2.8559	.65160
Valid N (listwise)	118				

Correlations

		Export Performance	Price Discovery	Facilitation of Physical Trade	Storage and Grading	Market Development	Enabling Competition	Market Data Dissemination
Pearson Correlation	Export Performance	1.000	.447	.347	.665	.493	.358	.493
	Price Discovery	.447	1.000	.545	.618	.270	.088	.270
	Facilitation of Physical Trade	.347	.545	1.000	.563	.022	.021	.022
	Storage and Grading	.665	.618	.563	1.000	.317	.141	.317
	Market Development	.493	.270	.022	.317	1.000	.581	1.000

	Enabling Competition	.358	.088	.021	.141	.581	1.000	.581
	Market Data Dissemination	.493	.270	.022	.317	1.000	.581	1.000
Sig. (1tailed)			.000	.000	.000	.000	.000	.000
	Export Performance	.	.	.000	.000	.002	.171	.002
	Price Discovery	.000	.000	.	.000	.406	.409	.406
	Facilitation of Physical Trade	.000	.000	.000	.	.000	.064	.000
	Storage and Grading	.000	.002	.406	.000	.	.000	.000
	Market Development	.000	.171	.409	.064	.000	.	.000
N	Enabling Competition	.000	.002	.406	.000	.000	.000	.
	Market Data Dissemination	118	118	118	118	118	118	118
	Export Performance	118	118	118	118	118	118	118
	Price Discovery	118	118	118	118	118	118	118
	Facilitation of Physical Trade	118	118	118	118	118	118	118

	Storage and Grading	118	118	118	118	118	118	118
	Market Development	118	118	118	118	118	118	118
	Enabling Competition	118	118	118	118	118	118	118
	Market Data Dissemination	118	118	118	118	118	118	118

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.739[a]	.546	.525	.50410	1.913

a. Predictors: (Constant), Market Data Dissemination, Facilitation of Physical Trade, Enabling Competition, Price Discovery, Storage and Grading b. Dependent Variable: Export Performance

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	34.568	6	5.761	22.792	.000[b]
	Residual	28.058	111	.253		
	Total	62.625	117			

a. Dependent Variable: Export Performance

b. Predictors: (Constant), Facilitation of Physical Trade, Enabling Competition, Price Discovery, Market Information, Market Development, Storage and Grading

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B	
		B	Std. Error	Beta			Lower Bound	Upper Bound
1	(Constant)		.395		-1.573	.119	-1.404	.161
	Price Discovery	-.621	.094	.025	.292	.771	-.159	.214
	Storage and Grading	.027	.101	.547	6.100	.000	.415	.814
	Market Development	.614	.118	.196	2.213	.029	.027	.494
	Enabling Competition	.261	.097	.145	1.840	.068	-.014	.371
	Market Data Dissemination	.179	.113	.228	2.689	.008	.080	.528

a. Dependent Variable: Export Performance