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The Effect of Market Efficiency of ECX on Coffee Export Performancein Ethiopia

by

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Statement of Certification

This is to certify that Hanna Yadene Bosho has carried out his research work on the topic entitled The Effect of Market Efficiency of ECX on Coffee Export Performance in Ethiopia. The work is original in nature and is suitable for submission for the reward of the M.Sc Degree in Marketing Management.

Advisor: Mulugeta Gebre-Medhin (PhD): _____

Statement of Declaration

I, Hanna Yadene Bosho, have carried out independently a research work on The Effect of Market Efficiency of ECX on Coffee Export Performance in Ethiopia partial fulfillment of the requirement for the M.SC program in Marketing Management with the guidance and support of the research advisor.

This study is my own work that has not been submitted in any other institutions for diploma or degree program.

The Effect of Market Efficiency of ECX on Coffee Export Performance in Ethiopia

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Definition of Terms

Akrabies: are suppliers who submit the coffee to the Auction center

Commodity: Exchange: is where trading takes place. 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." (Gebre-Medhn and Goggin, 2005).

Futures Contract: Futures contracts are one of the most common derivatives used to hedge risk. A futures contract is an arrangement between two parties to buy or sell an asset at a particular time in the future for a particular price. The main reason that companies or corporation use futures contract is to offset their risk exposures and limit themselves from any fluctuations in price.

Long position: Refers to a position where the exporter has the stock at hand at the time of concluding the contract (Tadesse, 2009).

Risk Management: In Agriculture defines agricultural risk in the following way: "Agricultural risk is associated with negative outcomes that stem from imperfectly predictable biological, climatic, and price variables (UNCTAD, 2008).

Price Discovery: Refers to the mechanism through which prices come to reflect known information about the market. The price level established on the open market can therefore represent an accurate depiction of the prevailing supply/demand situation in the underlying commodity markets (UNCTAD, 2008).

Market Integrity: Is the extent to which a market operates in a manner that is, and is perceived to be, fair and orderly and where effective rules are in place and enforced by regulators so that confidence and participation in their market is fostered (IOSC, 2011).

Market Efficiency: Refers to the ability of market participants to transact business easily and at a price that reflects all available market information. Factors considered

when determining if a market is efficient include liquidity, price discovery and transparency (IOSC, 2011).

Specialty coffee: Is defined as coffee, from a known geographic origin, that has a value premium above commercial grade coffee due to its high quality in the cup and to particular attributes that it possesses (ECX, Jan 4 2010).

Sebsabies: Are who collect the coffee from farmers.

Short position: Refers to a situation where the exporter does not have the stock of the coffee in its warehouse at the time of concluding the contract (Tadesse, 2009).

Transaction Cost: Are distinct from physical marketing costs are related to conducting or coordinating market transactions between actors, such as the costs involved in searching for and screening a trading partner, obtaining information on prices, qualities and quantities of goods, negotiating a contract, monitoring contract performance, and enforcing contracts (Paul, 2011).

Abbreviation

ACDDCs: Agricultural Commodity Dependent Developing Countries

AMC: Agricultural Marketing Corporation

CBK: CoffeeBoardofKenya

CCMMAA: CommercialCoffeeMillersandMarketing AgentsAssociation

CTA: Coffee and Tea Authority

ECX: Ethiopian Commodity Exchange

ECEA: Ethiopian Coffee Exporter Association

ECEE: Ethiopia Coffee Export Enterprise

ECMC: Ethiopian Coffee Marketing Corporation

ECPSE: Ethiopian Coffee Purchase and Sales Enterprise

GI: GeographicalIndication

GOE: Government of Ethiopia

KPCU: KenyaPlanter'sCooperative Union

MCTD: Ministry of Coffee and Tea Development

MY: Market Year

NY: New York

OTC: Over-the-Counter

VIF: Variance Inflation Factor

Abstract

This study intended to assess efficiency of Ethiopian CommodityExchange to coffee export performance in Ethiopia. The study used the variables risk management, price discovery, transaction cost and market integrity to measure market efficiency of ECX. The unique nature of this study from previous studies on efficiency of ECX is that the study tried to see efficiency from different angles using several measuring variables. Different literatures were reviewed to see previous study opinions on efficiency of ECX. Primary method was used in order to collect data on the subject matter under study. Census research method was used to collect relevant data from respondents in the case of this study from coffee exporters.However, from 214 Ethiopian coffee exporters, the researcher could manage to distribute 195 questionnaires and only 101 useable questionnaires were collected and used for this research. In depth interview was made with eleven industry experts. Multiple regression equation was used to analyze data collected from respondents using 5 point Likert Scale questions. Frequency tables were used to analyze data related to respondent's profile. Results from the multiple regression showed that risk management and transaction cost are found significant to explain market efficiency of ECX. However, price discovery and market integrity are found insignificant and are not good enough to explain efficiency of ECX. But allthe four variables can determine efficiency of ECX according to the data from the qualitative results. Risk management system offered by ECX to the market players means exporters will be protected from international price fluctuation and their exporter performance will increase. When a true price discovery of a commodity exists, exporters will be competitive in the international market and will able to sell their coffee in volume. When a commodity exchange reduces transaction cost by offering services at a lower cost, exporters profit margin will increase. And finally market integrity has same effect on coffee export performance by Ethiopian coffee exporters.

Key Words: Coffee, Commodity Exchange, Risk Management, Price Discovery, Transaction cost, Market Integrity.

CHAPTER ONE

1. Introduction

1.1 Background of the Study

World Commodity Exchange began with the idea of trading agricultural productsin a more effective and efficient ways thereby reducing marketing and transaction costs. The Chicago Board of Trade (CBOT) was setup in 1864.As trading developed overtime, producers and dealers looked for ways to preserve product from price risk as a result of natural disaster and supply and demand fluctuation. As mentioned by Allan Capital, markets for futures trading were developed initially to help agricultural producers and consumers manage the price risks they faced harvesting, marketing and processing food crops each year(http://allanicapital.com/education/commodity-futures/history-of-commodity-exchanges/).

Similarly, in many African countries commodity exchange was introduced and established to develop agricultural markets and to improve food security of their farmers. According to Robbins P. (2011), commodity Exchange in Africa is developed as a means of improving the life of smallholder farmers and their linkages to markets and the advantages in terms of new opportunities, more reliable trading relationships and improved incomes, comparedwith traditional commodity trading routes.

In Ethiopia, the main cause for the establishment of commodity exchange was the gradual fall in the commodity prices and the need to stabilize prices and production. Production of agricultural commodities play a major economic role in many developing countries, especially in the least developed. Therefore, in order to help rural farmers to get the right price from what they produce, the establishment of commodity exchange became very important (Paul I., 2011).

The Ethiopian Commodity Exchange (ECX) was established in 2008 with the purpose of creating an efficient, transparent and orderly marketing system, providing centralized trading mechanism (Proclamation no. 550/2007). Accordingly, ECX commenced trading operation in 2008 to benefit and modernize the way Ethiopia was trading it's most valuable assets, that is its commodities (http://www.ecx.com.et/CompanyProfile.aspx).ECX is a national multi- commodity exchange undertaking government agency with the aim of providing market integrity, by guaranteeing the product grade and quantity. It manages a system of daily clearing and settling of contracts. It also aims to enhance market efficiency by operating a trading system where buyers and sellers use standardized contracts (Alemu D. & Meijerink G., 2010).Ethiopia's exchange is a spot market, which relies on standardized warehouse receipts (Mezui C. A. M, Rutten L., Sekioua S., Zhang J., N'diaye M. M. , Kabanyane N., Arvanitis Y., Duru U. and Nekati B., 2013).

The fundamental reason of a Commodity Exchange whether in world, in Africa or Ethiopia is to provide service and add value to all market players. A Commodity Exchange adds value to the market by addressing the risk of contract default on physical delivery or payment and the risk of adverse unforeseen price movements or changes in supply and demand in the future (Gabre-Madhin Z. E., 2007). Rashid S., Winter-Nelson A. and Garcia P.2010, also indicated that simply by centralizing trade in a commodity exchange could facilitate title transfer, market transparency, and price discovery.

A commodity exchange performs these roles by bringing countless buyers and sellers into a single trading platform whichis characterized by more efficient and low cost manner. To do so, the market operates with certain basic rules and with certain types of actors (Gabre-Madhin, E. Z. and Goggin I., 2005).

Coffee is one of the most traded commodities at the Ethiopia Commodity Exchange. Ethiopia is the largest producer of coffee in Sub-Saharan Africa and is the fifth largest coffee producer in the world after Brazil, Vietnam, Colombia, and Indonesia. Nearly all traded coffee is sold on the ECX trading floor done either directly through private suppliers and exporters who have seats (full members) or by intermediary members (IM) who buy and sale their own as well on behalf.Coffee production is important to the Ethiopian economy with about 15 million people, directly or indirectly, deriving their livelihoods from coffee. Half of Ethiopia's coffee production goes to export generating about 25% of Ethiopia's total export earnings (Tefera A. and Tefera T., 2013).

Over the last decade, Ethiopia's coffee export earnings haveimproved dramatically. A large growth rate has been noticed in values and quantities of the Ethiopia coffee export at the end of 2012, which was four times higher than it was at the beginning of 2003. However, there was a significant drop in the real value and the quantity of exports from the trend line in 2009 (Minten B., Tamru S., Kuma T., and Nyarko Y., 2014).

The aim of this paper is to evaluate the effect of market efficiency of ECX on coffee export performance. To the best knowledge of the researcher, few studies were done considering the coffee export performance. Hussein (2010), studied on market efficiency of ECX evaluating the price movement of coffee traded at the exchange. Andthe result suggested persistent and strong dependencies in the price series. Mengistu S. B. (2013), studied on the operation of coffee exporters after the launch of the Ethiopia Commodity Exchange and the result showed that ECX influenced positively and strongly sales and profit of exporters. Some of the strong influences include, exporters are incurring additional transaction cost and as the warehouses are inefficient, there is delay in delivery of purchased coffee, loss of weight and inconsistent quality.

However, efficiency of a commodity exchange can be evaluated in terms of different variables.

Therefore, this study will look at market efficiency of Ethiopia's Commodity Exchange on coffee export performance interms of price discovery, risk management, transactioncost and market integrity.

1.2. Statement of the Problem

Although agricultural products were brought to the market and sold in the country for over 100 years, there was lack of sufficient market coordination, lack of market information, lack of trust among market actors, lack of contract enforcement and lack of grades and standards in Ethiopia (Gabre-Madhin, E. Z. and Goggin I., 2005). ECX was instituted to give solution to these problems and to bring market integrity, transparency, efficiency and market information.

However, little is known about the impact of ECX in enhancing the efficiency of the market in terms of risk management, price discovery, transaction cost and market integrity in a way that helps the coffee export performance. To the best knowledge of the researcher, no study has been conducted in Ethiopia that investigated the market efficiency of ECX in terms of risk management, price discovery, transaction cost and market integrity along with its resulting effect on the coffee export performance of Ethiopia. This study, therefore, was intended to analyze the effect of ECX on the export performance of coffee in Ethiopia.

1.3. Research Questions

The following basic questions were addressed in this study.

1.3.1. Main research question

To what extent does ECX bring market efficiency in terms of risk management, price discovery, transaction cost and market integrity and how does it affect the coffee export performance of Ethiopia?

1.3.2. Sub-research questions

1. How does ECX help the market to reduce price risk, credit risk and operational risk?
2. To what extent does ECX trading platform contribute to discover the fair price of the coffee?
3. To what extent does ECX bring down transaction cost?
4. To what extent ECX works to ensure market integrity?
5. How does ECX market model affect coffee export performance of Ethiopia?

1.4. Objective of the Study

1.4.1 General objective

The general objective of this study wasto examine the market efficiency of ECX in terms of risk management, price discovery, transaction cost and market integrity and to measure its effect on coffee export performance in Ethiopia.

1.4.2 Specific Objectives

The specific objective of the study was:

1. Examinethe market efficiency of Ethiopia Commodity Exchange in risk management that traders might face in their market participation.
2. Assess whether Ethiopian Commodity Exchange helps in proper price discovery.
3. Analyze whether Ethiopian Commodity Exchange is helping in minimizing transaction cost.
4. Review how Ethiopian Commodity Exchange works for market integrity.
5. Assess the role of ECX inEthiopian coffee export performance

1.5. Research Hypothesis

There are many variables that can be linked to coffee export performance. However, this study took only four variables for the purpose of studying coffee export performance. These variables are risk management, price discovery, transaction cost and market integrity.

1. Risk Management and Coffee Export Performance

Ethiopian coffee exporters face price risk that is related to internationalpricevolatility. Low risk management results in low export. As exporters will limit their participation in the marketsince there is no means to transfer their risk to a third part.

Hypothesis1.ECX risk management mechanism has a positive contribution to the coffee export performance of Ethiopia.

2. Price Discovery and Coffee Export Performance

An efficient market is one in which prices always "fully reflect" availableinformation and where no traders in the market can make a profit with monopolistically controlled information, Fama, 1970 (as cited in Wang and Ke, 2012).And in addition real price discovery is a result of trade between myriad of buyers and sellers in a commodity exchange.

Hypothesis2. ECX price discovery system, availability of market information and participation of many buyers and sellers has a positive contribution to the coffee export performance of Ethiopia.

3. Transaction Cost and Coffee Export Performance

Transaction costs are costs of searching for and screening atrading partner, the costs of obtaining information on prices,qualities and quantities of goods, the costs of negotiating acontract, the costs of monitoring contract performance, and thecosts of enforcing contracts (Gabre-Madhin, E. Z. and Goggin I., 2005).

Hypothesis3. Transaction cost charged by ECX has a positive effect on coffee export performance in Ethiopia.

3. Market Integrity and Coffee Export Performance

Market integrity is when a market operates in a fair and orderly manner and where effective rules are in place and enforced by regulators so that confidence and participation in their market is fostered (IOSC, 2011).

Hypothesis4. Market integritymechanism by ECX has a positive contribution on coffee export performance in Ethiopia.

1.6 Significance of the study

The study may add current fresh pieces of information in already existing literature and helps as additional reference to the management of Ethiopia Commodity Exchange, to the coffee exporters, to concerned government officials etc. It gives insight into the problems that Ethiopia Commodity Exchange is facing. Finally, the suggested recommendation could be useful as additional alternative for solution to the problem.

1.7 Delimitation of the study

Among the different commodities that are traded at ECX, this research paper only dealswith the commodity coffee, since it plays vital role in Ethiopia economy.

In addition, efficiency of a commodity exchange can be evaluated using different variables, however, this research waslimited to the variables risk management, price discovery, transaction cost and market integrity.

1.8 Organization of the Study

This study isorganized in the common approach to show the flow of each chapter of the study. Chapter one of the study is introduction that includes background of the study, statement of the

problem, research question, objective of the study, hypothesis, significance and delimitation of the study. Chapter two of the study deals literatures and theoretical frame works. Chapter three focuseson the methodological approach of the study. The research overall design, sampling, data gathering approaches and data analysis ways is described and explained. Chapter four takes account of data analysis and interpretation. Chapter is summary of major findings conclusions and recommendations.

CHAPTER TWO

2. Literature Review

2.1. Introduction

This chapter presents review of literatures related to a commodity exchange.Existing literatures were examined through reviewing past and current theoretical and empirical studies. The first part includes definition of a commodity exchange and theoretical framework including benefits of a commodity exchange, commodity exchange in Africa and Commodity Exchange in Ethiopia. Empirical review is the second part that includes efficiency of ECX to coffee export performance. The last part is the conceptual framework that shows the conceptual model designed by the researcher.

2.2. What is a Commodity Exchange?

A Commodity Exchange is where commodities trading takes place. It 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, E. Z. and Goggin I., 2005).

Nigussie G. K. 2011, defines a Commodity Exchange trading system as a ring-based trading system in which members trade openly and verbally on a trading floor by 'crying' out their price in a designated area. In this system, all the participants should attend on the trading floor and hence the optimal bargain price is discovered. Shouting is essential to draw attention towards the system for the price of the commodity being quoted by the trader.

As defined by UNCTAD 2009, a commodity exchange is a financial market where different groups of participants trade commodity-linked contracts, with the underlying objective of transferring exposure to commodity price risks.

These definitions give literal meaning to a commodity exchange like Ethiopian Commodity Exchange that only deals with a physical market that brings buyers and sells in one place and allow transfer of risk of the physical commodity. However, when a commodity exchanges offer trade instruments such as forwards and futures contracts also provide sector participants with a means of managing exposure to commodity price volatility (UNCTAD 2009).

2.3. Theoretical Framework

2.3.1. History of Commodity Exchange

Commodity Market was developed initially to help agricultural producers and consumers manage the price risks they face in harvesting, marketing and processing food crops each year.

Organized commodity exchanges have a long history. Grain traders in Japan began experimenting with the idea in 1730. Futures trading began in the US only towards mid 1800's. The Chicago Board of Trade (CBOT) was setup in 1864. The London Metal Exchange (LME) was setup in 1877. The New York Coffee, Cotton and Produce exchanges were only established in the 1870s and 1880s. (http://www.nasdaq.com/article/commodity-trading-chapter-1-history-of-commodity-trading-cm118267).

During the last decades, commodity exchanges in Europe and the USA went through a massive transformation, adding financial contracts to the traditionally traded physical commodities, innovative instruments (options were added to the traditional futures contracts followed by index contracts and other more exotic products), opening up to a much larger audience, and revolutionizing their technology. These decades were very profitable for the exchanges, giving them the capital base to continue adapting to even greater and faster changes in capital markets during the 1990s and 2000s (Mezui C. A. M, Rutten L., Sekioua S., Zhang J., N'diaye M. M. ,

Kabanyane N., Arvanitis Y., Duru U. and Nekati B., 2013).

2.3.2. Benefits of a Commodity Exchange

2.3.2.1. Risk Management

Risks can be identified as production risk that is associated with uncertainty about quantity and quality of output; price riskassociated with commodity-price volatility that creates uncertainty about the level of return on investment and asset; market riskassociated with uncertainty about whether a purchaser can be found for farmers' produce; credit risk, associated with uncertainty about securing funds to cover working capital during the course of the season and investment for the next year's crop. Institutional risk, associated with uncertainty about changes to public regulation or to government support regimes that may adversely affect the producer (UNCTAD, 2009).

Pirrong C. (2014), also mentioned that commodity trading involves myriad risks such as operational risk which result from the failure of some operational process rather that from variation in prices or quantities. Performance risk: A firm that enters into contracts to purchase or sell a commodity is at risk to the failure of its counterparty to perform. Currency risk: most commodity trading takes place in US Dollars, but traders buy and/or sell some commodities in local currency. This exposes them to exchange rate fluctuation.

When a commodity exchange is linked to a negotiable warehouse receipts system, the increased liquidity gives a way to higher transactions, over time evolving to futures trading, which implies that as the thinness of markets lessens, the market can be expected to enable the transfer of risk from market players such as farmers to those who are keen to absorb risk, such as speculators. By storing their goods in a reliable warehouse, farmers can use the warehouse receipt that is issued as loan collateral and thus access finance without selling their goods. Warehouse receipts can be

made transferable, so that farmers can transfer the speculative risk through sale of the receipt. Thus, through linking a receipt program to a commodity exchange, receipts can be traded on the exchange and enable the transfer of risk in an organized fashion (Gabre-Madhin, E. Z. and Goggin I., 2005).

2.3.2.1.1. Commodity Price Risk Management Instruments

There are four types of risk management instruments that can be used with a commodity exchange. These are forward, future, option and swap contracts. They 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.

A. Forward contracts

Forward contracts are agreements to purchase or sell a specified amount of a commodity on a fixed future date at a predetermined price. Physical delivery is expected and actual payment occurs at maturity (the future date that has been agreed to in the contract) (UNCTAD, 1998).

Forward contracts are legally binding for both parties. They help in risk management by allowing the parties to take a long or short position in the market. For example, if the actual price at maturity (the spot price) is higher than the price in the forward contract, the buyer makes a profit, and the seller suffers a corresponding loss. If, on the other hand, the spot price is lower, then it is the buyer who loses and the seller who profits. A major advantage of forward contracts is that the establishment of a predetermined price eliminates the risk of price changes for both the buyer and the seller (ibid).

The principal reason to enter into a forward contract is to minimize risk, or reduce the probability of an adverse fluctuation in price of a commodity. By guaranteeing a price, the seller of a forward

contract establishes his price. Farmers and other commodities producers gauge today's prices for the commodity against the "spot price," or the price at which the commodity may sell at the delivery date in the future. A buyer of a forward contract may expect the price of the commodity to increase by the delivery date and thus wants to lock in a lower price (http://smallbusiness.chron.com/forward-contract-work-18907.html).

Forward contracts tend to be risky, as market participants will be tempted to default on their obligations if physical market prices move strongly in their favour (Mezui C. A. M, Rutten L., Sekioua S., Zhang J., N'diaye M. M. , Kabanyane N., Arvanitis Y., Duru U. and Nekati B., 2013).

B. Futures contracts

Futures contracts, like forward contracts, are agreements to purchase or sell a given quantity of a commodity at a predetermined price, with settlement expected to take place at a future date. However, certain specific characteristics of the futures contract put in a category of its own. For example, unlike forward contracts, a futures contract does not necessarily imply physical delivery in fulfillment of the agreement (UNCTAD, 1998).

Futures contracts can be very useful in limiting the risk exposure that an investor has in a trade. The main advantage of participating in a futures contract is that it removes the uncertainty about the future price of an item. By locking in a price for which you are able to buy or sell a particular item, companies are able to eliminate the ambiguity having to do with expected expenses and profits. When a company knows that it will be making a purchase in the future for a particular item, it should take a long position in a futures contract to hedge its position. And if a company knows that it will be selling a certain item, it should take a short positionin a futures contract to hedge its position (http://www.investopedia.com/articles/trading/05/021605.asp).

Futures contracts protect both the buyer and seller against the risk of price change between the

moment of the contract transaction and the time of delivery (the expiration date) by helping both parties to lock in current prices, that is, the prevailing prices at the time the contracts were bought or sold. Futures contracts can be bought or sold at any time by anyone and they can change hands any number of times before expiration (Katz J. O. and McCormick D. L., 2001).

Companies from developed countries still account for the bulk of commodity exchange futures activity, be it speculative or for hedging purposes. Their use by developing countries and Eastern European countries of the exchanges, directly or through intermediaries, is rather limited, but seems to be growing (UNCTAD, 1998).

C. Options

Options are risk management instruments that do not lock in prices, but protect those who buy them against unfavourable price movements while retaining the possibility of profiting from favourable ones. An option contract is the right (but not the obligation) to purchase or sell a certain commodity at a pre-arranged price (the "strike price") on or before a specified date. For this contract, the buyer or seller of the option has to pay a price to his counterpart at the time of contracting, which is called the "premium"; if the option is not used, the premium is the maximum cost involved (ibid).

D. Swaps

Swaps were developed on the OTC (Over-the-Counter) market as a long-term price risk management instrument. With swaps, producers can effectively fix, that is, lock in, the prices they receive over the medium to long term, and consumers can fix the prices they have to pay. No delivery of commodities is involved: the mechanism of swaps is purely financial. In a swap agreement covering a specified volume of a commodity, two prices are involved. One of these prices is variable and is usually expressed in relation to a published price index such as the price

of a futures contract. The other is fixed at the time of the swap agreement (ibid).

2.3.2.2. Price Discovery

Price discovery refers to the mechanism through which prices come to reflect known information about the market. The price level established on the open market can therefore represent an accurate depiction of the prevailing supply/demand situation in the underlying commodity markets, whether in the spot market for current deliveries or in the forwards/futures markets for deliveries at specified future occasions. The benefits of price discovery can be categorized as those arising from a more efficient price formation process, and those arising from the wider supply of more and more accurate market information (UNCTAD, 2009).

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 (Gabre-Madhin, E. Z. and Goggin I., 2005).

Price discovery and price risk mitigation are the main objectives of commodity futures markets, which enables the farmers to take rational decisions about cropping and marketing of their produce to increase their farm income. This creates incentives and resources forinvestment in agricultural operations to improve productivity. Effective price discovery requires the direct participation of several players in commodity market: farmers/producers, intermediaries, wholesalers, investors and other players. Price discovery depends heavily on physical market infrastructure, as well as handling costs, storage costs, transportation costs, tax rates and other factors (Chhajed I., Mehta S., Bhargava I., 2012).

2.3.2.3. Transaction cost

In developing countries, major constraints can be identified as either linked to weak infrastructure or to missing institutions. In terms of infrastructure, major concerns are the weak access of smallholder farmers to roads, as well as limited telecommunications and storage infrastructure. Beyond infrastructure issues "transaction costs," are constraining to trade. These costs, distinct from physical marketing costs, are costs related to conducting or coordinating market transactions between actors, such as the costs of searching for and screening a trading partner, the costs of obtaining information on prices, qualities and quantities of goods, the costs of negotiating a contract, the costs of monitoring contract performance, and the costs of enforcing contracts (Gebre-Medhn and Goggin, 2005).

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 (UNCTAD, 2009).

2.3.2.4. Market Integrity

A commodity exchange market operates with a certain set of rules or conventions that are widely known. These rules pertain to four key dimensions of the market: the product, its price determination, the actors, and the contractual relations that bind them. These rules and modalities together create much needed integrity and trust in the system.

First the product traded must be standardized according to known standards of quality and

quantity for exchange. The grading and certification of coffee done by licensed inspectors and those must be qualified. This helps to define better quality standards, by creating incentives for market participants to produce commodities that meet exchange specifications. Second, an exchange operates in a given system of price bidding that is aimed at publicly displaying buy and sell offers in a transparent and low-cost manner. Third, in order to ensure that the rules are followed, exchanges operate with membership based trading,where membership is based on the ability to comply with the rules of the exchange and to meet certain standards (Gabre-Madhin, E. Z. and Goggin I., 2005).

Moreover, since chaos would quickly result if membership were continuously open to increasing numbers, membership in an exchange is fixed. However, brokers as members of the exchange, trade on behalf of an unlimited number of buyer and seller clients. Fourth, the exchange's regulations and directives usually make it mandatory for members to make use of standard contractsprepared by the exchange to which they belong. Thus, members are required to strictly adhere to the terms and conditions laid down in the contracts, to keep appropriate records of their transactions; and to submit these documents bound by the disciplinary rules of the exchange (ibid).

In addition, common mechanisms used to uphold market integrity include: ensuring a time-stamped audit trail of all trading activity; position limits for speculative participants, including tighter limits in delivery months; constant monitoring of trading for suspicious patterns; free, transparent dissemination of data; an approval process by the external regulator for new contracts to ensure an adequate deliverable supply (among other factors); and "know-your-customer" requirements for intermediaries (UNCTAD, 2009).

2.3.3. Commodity Exchanges in Africa

2.3.3.1. Overview of Commodity Exchange in Africa

Africa was home to one of the world's first commodity exchanges: Egypt's cotton exchange, the oldest established in 1861 in Alexandria. However, as a result of the steady encroachment of the State in cotton trading, the exchange was closed. Then the Continent remained without commodity exchanges until 1994. (Mezui C. A. M, Rutten L., Sekioua S., Zhang J., N'diaye M. M. ,Kabanyane N., Arvanitis Y., Duru U. and Nekati B., 2013).

In 1994, the first "modern" commodity exchanges was created in the continent in Zimbabwe, the Zimbabwe Agricultural Commodity Exchange (ZIMACE), followed by Zambia and then in 1995 in South Africa. The second one was started in Ethiopia in 2008. The Ethiopian Commodity Exchange (ECX), which was mainly driven by government and donor support (ibid).

When we see the trading experience of African Commodity Exchanges, they use different trading system. For example, Egypt's exchange traded spot trading, forward trading and futures contracts. South Africa's exchange trades futures and options, and recently also started offering trade in warehouse receipts. Zimbabwe's ZIMACE was a spot market in which buyer and seller, once they were matched, negotiated directly on delivery specifics. Ethiopia's exchange is a spot market, which relies on standardized warehouse receipts. Malawi's ACE trades warehouse receipts, operates auctions for large buyers, and offers a spot trade matching facility. Bourse Africa (an initiative of India's Financial Technologies group which includes a number of exchanges that is headquartered and licensed in Botswana) plans to operate a multi-asset platform, with both spot and futures contracts, and associated to it, an electronic warehouse receipt system. GBOT in Mauritius only trade futures (ibid).

In emerging markets 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. However, 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 (ibid).

In developed countries, commodity exchanges typically act as a platform for trade in futures contracts. For instance, CME group is the largest US futuresexchangeformed by the Chicago Mercantile Exchange (CME) and the Chicago Board of Trade (CBOT) in 1874.Second example is the Korea Exchange (KRX) has been the world's largest futures exchange from 2001 to 2006, falling to the second position in the world ranking in 2007.Eurex, headquartered in Frankfurt, Germany, is the world's third largest futures exchange(UNCTAD, 2009).

African countries are initiating commodity exchanges projects spending many million dollars more than ever before. At the same time, there are a lot of critics about the usefulness of promoting commodity exchange in the Continent and their chances of success (Mezui C. A. M, Rutten L., Sekioua S., Zhang J., N'diaye M. M. ,Kabanyane N., Arvanitis Y., Duru U. and Nekati B., 2013).As identified by Robbins P. 2011, different problems were noticed in the development of commodity exchange in Africa. For instance, in the case of ZAMACE, weaknesses were found that were obstacle to its development.

Some of these problems are first it had limited capacity to enforce contracts that companies entered into on the exchange. Second, all the brokers in the exchange were also traders in the physical commodity as the exchange was unable to recruit new participants. This leads to conflict of interest and was not interesting to attract new entrants. Third, the cost to operate on the exchange is

expensive for many participants. Fourth, the exchange was dominated by few market participants and manipulated instead of being real price discovery place. Fifth, the exchange was unable to bring financial institutions into the system. And finally, there was intervention of the government into the exchange in the maize sector that resulted in varying tariff, import and export restriction etc which created uncertainty in the physical market. Robin's study(as cited in Mezui C. A. M, Rutten L., Sekioua S., Zhang J., N'diaye M. M. , Kabanyane N., Arvanitis Y., Duru U. and Nekati B., 2013).

Rashid 2015explained this saying most studies claimed that benefits of Agricultural Commodity Exchanges (ACX) in developing countries that is improving price discovery, linking smallholders to markets, reducing transactions costs, and increasing agricultural export earnings cannot be supported by empirical evidence because agricultural commodity exchanges have not been successful in emerging countries, they have either failed or remain in operation with government or donor supports.

2.3.3.2. Reason for the Development of Commodity Exchange in Africa

The main reason for the development of the commodity exchange in the developing countries was the removal of the control of commodity trade by the government due to liberalization and deregulation. This created a problem for the farmers and traders during commodity price volatility and they were unable to handle this by themselves. Because of these, the new need for price discovery and even physical trading mechanisms begin to rise. Hence, recent years have seen the rapid creation and growth of new commodity exchanges in developing countries that are a new approach to commodity-price-risk management. (UNCTD,2007, UNCTD,2009 and Mezui C. A. M, Rutten L., Sekioua S., Zhang J., N'diaye M. M. , Kabanyane N., Arvanitis Y., Duru U. and Nekati B., 2013).

2.3.3.3. Kenya's Coffee Trade

A commercial miller means any person who mills ten thousand or more metric tons of parchment coffee per crop year on wholesale basis for the purpose of providing service for financial profit. Milling coffee involves hulling, polishing and grading the wet-processed berries to remove layers covering the green coffee.

Itisdividedintotwoprocesses:

•Wet Milling: smallholders (less than 5 acres) deliver harvested cherries to a co-operative society's processing factory, where it is pulped, washed and dried. Estates are able to wet-process their coffee on their own. The parchment coffee is delivered to a commercial dry coffee mill for milling or secondary processing.

•Dry Milling: Both co-operative societies and estates transport the obtained parchment to a miller where it is milled to remove the parchment skin, and then grade it. Millers process in to seven official grades based on bean size and bean density, ready for auctioning. Oncethisis done, the coffee is referred toas clean/greencoffeebeans.

There are 8 commercial coffee mills in Kenya, licensed by the Coffee Board of Kenya for the purpose of milling farmers' coffee. The KPCU(Kenya Planter's Cooperative Union)used to run the largest mill and controlled 70% of milling capacity in the country. Since it collapsed, private mills have appeared and are licensed to mill only the coffee of growers by virtue of a contract.

There are two types of marketing agents:

•The Commercial marketing agents offer a service to the contracted farmers for a fee.The

commercial millers send the graded coffee to marketing agents who prepare, classify the coffee prepare catalogues for the dealers before the auction(two weeks before)and set a reserved price for each coffee to be sold.

•The Grower marketing agents are registered and licensed by the Board to market their own coffee only. Generally for the cooperatives, the marketing agent is also the miller of the coffee. Prior to April 2002 (liberalization), CBK was the sole marketing agent. As of 13th April 2011, there are 8 marketing agents. According to the Coffee Act, no dealer who exports coffee and no roaster of coffee shall be licensed as a marketing agent. Considering that the marketing agent acts on behalf of the producer, his participation to the GI is needed especially considering the marketing services provided to the grower. The marketing agents met during the mission did not express either interest nor disregard to the GI project.

These are coffee buyers, licensed by the Coffee Board of Kenya to buy coffee from the auction through a competitive bidding process. Most coffee dealers are agents of some overseas coffee buyers and buy coffee as directed by their principals abroad. Two weeks before the auction, the dealer receives the catalogue from the marketing agent and is able, within these two weeks, to carry out his own quality analysis (cupping on each lot of coffee) and make a decision on what coffee(s) to target during the given auction. According to the last list of license holders (13thApril2011), there are 76 traders of coffee in Kenya of which only around 5 are really active.

2.3.4 Commodity Exchange in Ethiopia

2.3.4.1 History of Commodity Exchange in Ethiopia

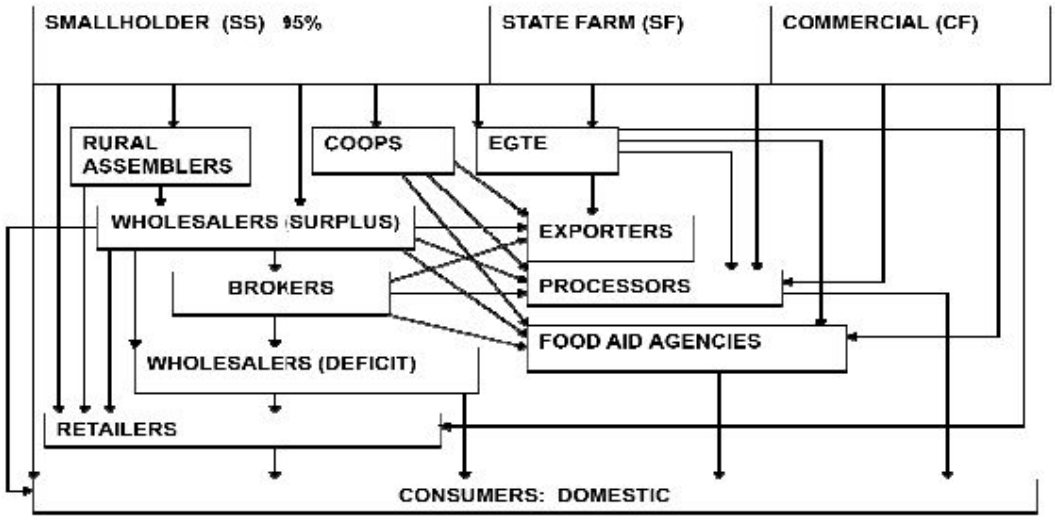
From 1974 to 1987, Ethiopia was run by a communist military junta whichcollectivized much of the country's agricultural sector and imposed a co-operative system among agricultural workers (Robbins P., 2011). It was by the Dergue government who tightly controlled grain trade, through

cooperatives and its parastatal agency Agricultural Marketing Corporation (AMC). However after the fall down of the Dergue in May 1991, the EPRDE government fully liberalized the grain market lifting all restrictions on private inter-regional trade flows, removing official pricing and quotas, and eliminating the monopoly status of the marketing board. Lirenso's and Amha's study(as cited in Gabre-Madhin, E. Z., 2001).

In late 2003, one of the ten action points of the agricultural action planadopted by the Government was to study the possibility of creating a commodity exchange. In 2005, a report published by the Ethiopian Development Research Institute recommended an integrated commodity exchange development initiative which will include developing all the components of the system, including the warehouse receipts system. Accordingly, in 2006 the Government established the Ethiopia Commodity Exchange (ECX), and received support from a range of development partners (UNDP, World Bank, USAID, Canadian Development Agency, World Food Programme) for its development. In April 2008, ECX started trading with commodities such as wheat, maize and haricot beans. (Mezui C. A. M, Rutten L., Sekioua S., Zhang J., N'diaye M. M. ,Kabanyane N., Arvanitis Y., Duru U. and Nekati B., 2013).

The following figure shows the market structure of the disorderly and complex agricultural market in Ethiopia before ECX:

Figure 1: Agriculture Market Structure in Ethiopia before ECX



Source: Hussein (2010)

2.3.4.2. Reason for Establishment of ECX

The first reason was liberalization of trade and reduction of government support to the agricultural sector that created the fertile ground for the creation of new commodity exchanges and the further development of existing ones (UNCTAD, 2008). Secondly, over the past few decades, the market for agricultural commodities has shown a pattern of long-term fall in prices and short-term price instability. Such declining and volatile prices are unfavorable for commodity producing countries, and it will have adverse effect on Agricultural Commodity Dependent Developing once (ACDDCs):Department for International Development's study (as cited in Paul I., 2011).

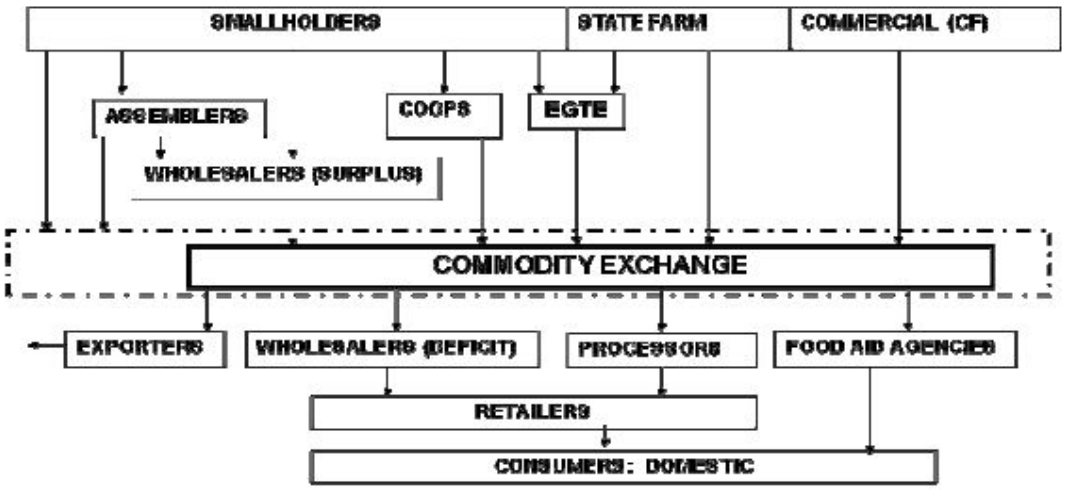
In addition, in Ethiopia the presence of high transaction cost were evidenced by the lack of sufficient market coordination between buyers and sellers, the lack of market information, the lack of trust among market actors, the lack of contract enforcement, and the lack of coffee grades and standards. Thus, market actors conduct business across short distances, with few partners, in

few markets, and with limited storage (Gabre-Madhin, E. Z. and Goggin I., 2005). Transaction costs tend to be significantly higher in developing economies than in developed ones as a consequence of imperfect market formation and weak or absent infrastructure and sector support institutions (UNCTAD, 2009).

All these reasons raised the need for the development of Ethiopia Commodity Exchange that is integrated, transparent in giving market information, graded and standardized, contract enforcement(Gabre-Madhin, E. Z. and Goggin I., 2005).

A commodity exchange together with its linked institution provides a dependable alternative that can potentially clear the back-draws of the existing market structure and fill the gaps that were open in unorganized market.The following figure shows the change in market structure that a commodity exchange brings to the market.

Figure 2: Agricultural Market Structure with a Commodity Exchange



Source: Hussein (2010)

2.3.4.3. Plan of ECX to maintain efficiency of the market

This research paper attempts to see efficiency of ECX in terms of the variables: price discovery, risk management, transaction cost and market integrity.

1. In order to maintain integrity of the price discovery process and to safeguard the quality of the market, the Exchange has a market surveillance team that detects and prevents market manipulation practices, insider trading and misstatements (false information to mislead the public) (Hussein, 2010).

To facilitate the integrity of the market more, the Ethiopia Commodity Exchange (ECX) currently is making preparations to introduce online trading that enables market players to participate directly in trade wherever they are. By implementing the Online Trading System, ECX will become more accessible to its stakeholders; especially the millions of smallholder farmers which areexpected to increase liquidity.http://www.icfafrica.org/news/ecx-to-launch-online-trade-operations/.

2. The plan of ECX tofacilitate risk management was by offering contracts for future delivery, providing sellers and buyers a way to hedge against price risk. However, contracts for future delivery will only be implemented after the ECX spot market trading has been shown to be successful (Laibuni N., Njenga M., Kiriga B, Omiti J. and Ikiara M., 2012).Accordingly, ECX addresses the physical commodity, therefore it only deals with risk related with the buying and selling of underlying product. They are not used for risk management because they don't have future and option contract.

Commodity Exchange addresses *contract performance risk*by ensuring that products that are traded are as standardized as possible, that the products are receipted and certified, that market information is disseminated to all, and that payment and delivery are guaranteed to both parties of the transaction (buyer and seller) through a clearing and settlement system. It addressed *market risk* by enabling market actors to lock in or "hedge" the value of their trading positions. Market

risk management using futures contracts is based on the idea of *"hedging"* through the principle of *"offsetting"*(Gabre-Madhin Z. E., 2007).

An Exchange that only offered spot trading would mean that the Exchange could notfulfill a central function to all exchanges which is to address market risk. Therefore, it is quite clear that Ethiopia Commodity Exchange without the possibility to enable market risk management through offering futures contracts has limited chances for success (ibid).

The plan of ECX to facilitate risk management was by offering contracts for future delivery, providing sellers and buyers a way to hedge against price risk. However, contracts for future delivery will only be implemented after the ECX spot market trading has been shown to be successful (Laibuni N., Njenga M., Kiriga B, OmitiJ. and Ikiara M., 2012). Accordingly, ECX address the physical commodity, therefore it only deals with risk related with the buying and selling of underlying product. They are not used for risk management because they don't have future and option contract.

3. The ECX marketplace aims to address several transaction costs and risks of the current markets in Ethiopia. These transaction risks are reduced by bringing market order, integrity, transparency, and efficiency to the sesame and traded commodity markets. *Market order*is established through an organized trading platform, formal rules and procedures, standardized contracts and standardized products. *Market integrity*is achieved through grading and certification of the quality and quantity of products traded, warehouse receipting of commodities traded, enforcing fair competition and ethical business conduct, and clearing all payments between buyers to sellers. *Markets become transparent*through a system of industry-accepted product grades and standards, rapid and reliable dissemination of market information to all actors, and enforcing disclosure and audit reporting requirements for its Members. *The market efficiency*is ensured through use of

information technology to automate the End-to-End system from warehousing to trading to clearing and settlement of payments to delivery of commodity, and through a centralized trading platform offering low-cost service to all market users (Alemu D. & Meijerink G., 2010).

After ECX, transaction costs have declined in terms of (i) the average number of intermediaries each trader used (buying agents, brokers, and selling agents) along with the role of ethnicity and religion, (ii) average number of people consulted and involved to make a transaction per market day, and (iii) time required per transaction.Similarly, marketing costs have declined by about 57% as compared to the situation before the start of the ECX (Mezui C. A. M, Rutten L., Sekioua S., Zhang J., N'diaye M. M. ,Kabanyane N., Arvanitis Y., Duru U. and Nekati B., 2013).

4. To keep the integrity of the Ethiopian Commodity Exchange, first membership is mandatory for participants in order to have access to the market. Non-members can trade through brokers who already have membership. Second, three regulatory bodies govern the commodity exchange.

ECX works on the basis of membership seat that is a permanent and transferable right to trade on the exchange. Only members can trade on the exchange, which means that non-members use the services of a member to conduct trading. Members purchase permanent and freely transferable trading rights known as seats. By owning a seat, members become core stakeholders maintaining the integrity of the commodity exchange market place. Together they safeguard the interest of the marketing system. They also bear the liability for all transactions that they conduct on ECX (Paul I., 2011).ECX offers two classes of membership: (1) trading member (TM) trades only on his or her own account; and (2) An intermediary member (IM) trades either on his or her own account or on behalf of Clients (Laibuni N., Njenga M., Kiriga B, Omiti J. and Ikiara M., 2012)

Governance is the second mechanism that ECX used to keep market integrity. There are

three bodies governing the ECX: (i) the Ethiopian Commodity Exchange Authority (ECEA) which acts as a state regulatory body, (ii) the Exchange itself, and (iii) the National Association of Market Actors. The ECEA is a public institution, which approves and regulates contracts, membership, trading, clearing, and other ECX rules. It safeguards the interests of society. The ECEA is accountable to the Prime Minister. ECX offers the sale of membership seats, which are privately owned, permanently and freely transferable rights. The Government of Ethiopia is the owner of the ECX. The National Exchange Actors Association (NEAA) is recognized by the ECEA for the purpose of upholding and maintaining the standards of integrity, professionalism, and skills of all exchange actors (Alemu D. & Meijerink G., 2010).

2.3.5. Coffee Export Performance

Ethiopia is Africa's leading coffee producer and the fifth largest in the world accounting for about 4 % of the world coffee production. Ethiopia is considered as the birthplace of coffee and producer of high-quality Arabica coffee. About 95% of Ethiopian coffee production comes from 4 million of smallholder farmers that mostly live in the southwestern and southeastern part of the country. The Government has a plan to quadruple the coffee production so as to generate a significant amount of the export income. Ethiopia's coffee has strong international demand for its aroma and flavour. As local coffee consumption is considerably big, about half of the coffee produced is supposed to be shipped for foreign market. Ethiopia mainly exports green bean coffee with small amount of roasted coffee. 70-80 percent of Ethiopian green coffee is Unwashed and 20-30 percent is washed. And the unwashed coffee commands lower price (Tefera, 2015).

Coffee is Ethiopia's number one export item. It used to account for 70% of Ethiopia's total export earnings, but its share of total export earnings has gradually declined in recent years as a result of increased exports of other commodities such as gold, flowers, Khat, textiles, and leather products (Tefera A. and Tefera T., 2013).

Accordingly, an impressive performance of Ethiopia's coffee export sector has been observed over the last decade with the real value of coffee exports rising four-fold between 2003 and 2012. The increases in export values have largely been driven by increases in international coffee prices between 2003 and 2012. Coffee export market is highly differentiated in Ethiopia, with quality premiums being offered for washing, grades, certification, and specific geographical indications. There are strong effects of geographic indications of origin with Yirgacheffe and Harar coffee commanding large premiums over coffees originating from elsewhere in Ethiopia. Certified coffee and coffee marketed by co-operatives are being sold at higher prices than coffee sold by the private sector (Minten B., Tamru S., Kuma T., and Nyarko Y., 2014).

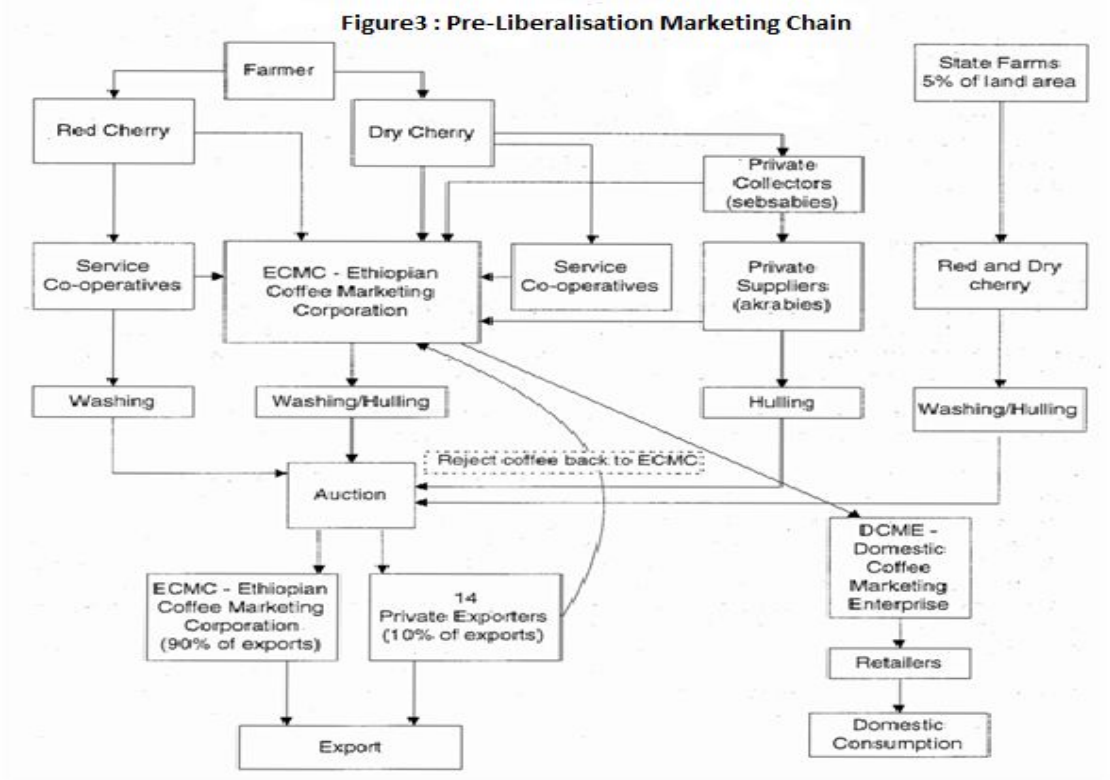
2.3.5.1. Coffee Trading and Marketing before ECX

Pre-Liberalization

Before 1991 Ethiopian agricultural policy was centrally planned and controlled by a system of quotas and price fixing. Coffee production and marketing were heavily controlled by the state under the Ministry of Coffee and Tea Development (MCTD). Producers had to sell at a fixed price and there was little flexibility for them to choose when they sold. While private traders were permitted, licensing requirements, fees and taxes severely constrained their activities and the majority of the crop was handled by the Ethiopian Coffee Marketing Corporation (ECMC). All coffee, whether handled by private traders or the ECMC, had to go to auction.

Before auction, coffee was registered, sampled and graded (by defect count) by the Marketing, Inspection and Control Department of the MCTD. All washed coffee was also cupped. The auction was regulated by the MCTD and there was no competition between public and private bidders as participants were issued with a quota. The ECMC bought all the washed coffee and had the largest quota of the unwashed coffee, and private exporters were not allowed to compete for coffee until the ECMC's quota had been met. The coffee that was offered to private buyers was generally of a poor standard.

Figure3 : Pre-Liberalisation Marketing Chain



Liberalization Process

Since 1991 there has been a transformation from a centrally planned economy to one which is market oriented. This was a result of the replacement of the military government by a democracy in 1991 which brought Marxist economic policies to an end. Also, production and exports of coffee had fallen drastically due to the lower international prices after the collapse of the International Coffee Agreement quotas. With the consequent lower export revenue, and facing strong pressure from the private exporters, the new government, with a different political ethos,

sought to address these issues. Liberalization of the coffee sector was initiated as a means to increase grower's prices, which would both promote production and reduce the incidence of smuggling. Coffee exporters form more than 60% of Ethiopia's foreign Exchange earnings.

Post Liberalization

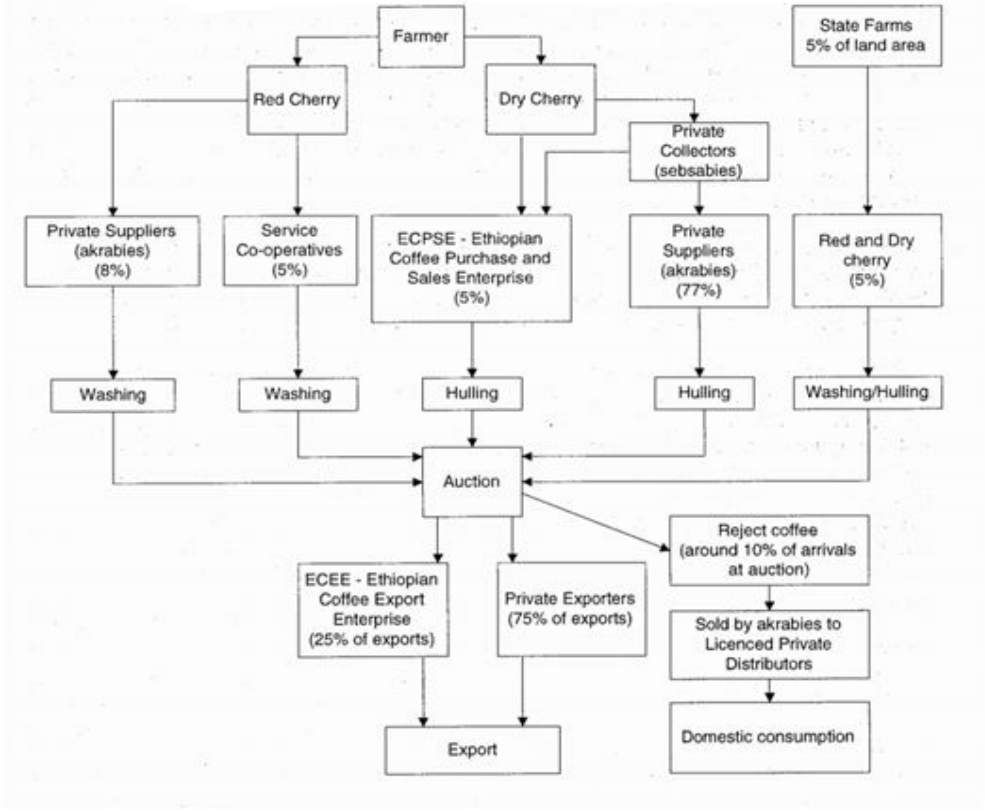
Liberalization in 1992/93saw the ECMC split into two public enterprises, the Ethiopian Coffee Purchase and Sales Enterprise (ECPSE) which purchases coffee internally and delivers it to the auction and the Ethiopian Coffee Export Enterprise (ECEE) which purchases coffee from the auction and exports it. Increased opportunities have opened up for private participation in the market.

Auctions, which are conducted by the CTA, are held at regular times, every day from Monday to Friday, and twice a day during the two to three month peak-season. In the peak season there can be as many as 150 to 200 trucks at the auction at any one time, and sometimes trucks have to wait in a queue for three to four days before the coffee can be auctioned. Coffee is sold at the auction by the truckload and payment for the coffee should occur within 48 hours of the auction, although this does not always happen in practice. Akrabies have the right to withdraw coffee from the auction. When the coffee is sold at the auction, the akrabies lose possession of it and if the exporter does not pay for the lots, akrabies must pursue the claim through the legal system, which can take years.

Purchased coffee is then processed, sorted and graded by the exporters. As a result, of the reforms, the number of licensed private exporters has increased from 14 to 240 (around 75 of which are active) and their share in total exports increased from 10% prior to liberalization to 75% in 1997/98.

The international trade-houses are prohibited from buying coffee at the auction (they are not issued with a license from the Ministry of Trade and Industry). However, they have agents based in the country who purchase coffee from the exporters.

Figure 4: Post-Liberalisation Marketing Chain (1997/98



Following liberalization, for washed coffee production, farmers sell cherry to akrabies or service co- operatives. The ECPSE does not purchase washed coffee.

For sun-dried coffee, farmers take the dry cherry to marketing centers for sale to sebsabies, who are required to sell it to either akrabies or the ECPSE. The ECPSE can also purchase unwashed coffee directly from the farmer. Only in Eastern Hararge do some farmers hull sun-dried coffee on the farm by pounding it. All other farmers deliver dry cherry to the market. Sebsabies have a monopoly on primary marketing of sun-dried coffee in the private sector (excluding production handled by co-operatives) since growers are not permitted to deliver unwashed coffee directly to

the akrabies. Akrabies, sebsabies and exporters are all licensed separately. Sebsabies are permitted to buy from farmers but can only sell to akrabies or the ESPSE, and cannot take coffee to the auction. Akrabies are permitted to buy coffee up country from sebsabies (but not from farmers) and deliver it to the auction but not export it and exporters are only permitted to buy coffee from the auction and not from sebsabies or farmers. The state farms wash or sun-dry and hull their coffee and send it directly to the auction.

Total arrivals at the auction have increased from around 102,000 MT in 1994/95 to just over 155,000 MT in 1997/98. As a result of liberalization, the proportion of total coffee brought to the auction by the akrabies has increased in recent years, at the expense of all the other internal traders. For example, akrabies brought 61% of all coffee to the auction in 1994/95 (1% of washed coffee and 72% of unwashed) and this had increased to 85% by 1997/98 (47% of washed coffee and 92% of unwashed). The share of coffee brought to the auction by the service co-operatives has fallen from 8% of all deliveries in 1994/95 to 5% in 1997/98 although in 1997/98 they delivered around 35% of all washed coffee to the auction and a negligible amount of unwashed coffee. The ECPSE's share has also fallen substantially, from 20% of total coffee in 1994/95 to 5% in 1997/98. Finally, the state farms delivered 11% of coffee to the auction in 1993/94 (69% of washed coffee and a negligible amount of unwashed coffee), and 5% in 1997/98 (just under 20% of washed coffee and 2% of unwashed coffee).

Auctions, which are conducted by the CTA, are held at regular times, every day from Monday to Friday, and twice a day during the two to three month peak season. In the peak season there can be as many as 150 to 200 trucks at the auction at any one time, and sometimes trucks have to wait in a queue for three to four days before the coffee can be auctioned. Coffee is sold at the auction by the truckload and payment for the coffee should occur within 48 hours of the auction, although this does not always happen in practice. Akrabies have the right to withdraw coffee from the

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2.4. Empirical Review

2.4.1. Efficiency of ECX to Coffee Export Performance

Hussein (2010) studied on market efficiency of ECX in trading its major commodity, namely export coffee. Evaluated price formation behavior and price movement of washed and unwashed export coffees traded in the exchange for 16 months since its establishment. And the result suggested that ECX is a weak-form inefficient and there is possibilities of taking trading position that potentially offer traders excess profit using the predictability in the price series. However, Hussein (2010) notes that this result may be a consequence of the short time span between the introduction of the Exchange in 2008 and the evaluation in 2010.

Mengistu S. B. (2013), investigated how coffee exporters have been operating after the launching of ECX and the influences and contribution of the exchange on sales and profit performance of coffee export. The result of the study showed that ECX strongly and positively influenced sales and profit of exporters. In addition, cost has been increased on the exporters because exporters are

obliged to collect the coffee they purchased from regional warehouses. The study also indicated there is delay in delivery of coffee purchased from ECX, loss of weight, inconsistent quality and out of stock situation. Prices at the exchange are not in alignment with international coffee price. There is higher cost of purchase of coffee. All these affect sales and profit of the coffee exporters.

2.4.1.1.Direct Specialty Trade (DST)

Even though, the Ethiopia commodity exchange meet the demand of large importers, China and other importing countries that pay low price, however, cannot meet the demand of all end markets specially high value markets such as Japanese (Mheen-Sluijer J. V. D., 2010). In February 2010, the ECX launched Direct Specialty Trade (DST), a new platform in which producers of specialty coffee can transact directly with international buyers seeking to purchase premium beans on a fully traceable basis. The DST facility was established because the normal trading procedures of the ECX cannot take into account the various specialty coffees (there are 256 to 781 coffee variety grades) (Laibuni N., Njenga M., Kiriga B, Omiti J. and Ikiara M., 2012).

2.4.1.2.Marketing

The government of Ethiopia established the Ethiopian Commodity Exchange (ECX) to handle the marketing of agricultural commodities like coffee, sesame, and beans. Nearly all coffee is sold on the ECX floor either directly through organized coffee producer's cooperatives or middlemen. The main reason for establishing ECX was to eliminate the huge number of middlemen involved in coffee distribution and to enable coffee farmers to benefit from prevailing market prices. Coffee sold through ECX is considered as commodity coffee and will not get the possible premiums of being organic coffee. Coffee grading is conducted by ECX using a well-established laboratory (Tefera A. and Tefera T., 2013).

2.4.1.3. Constraints of ECX in the Coffee Sector

Even if ECX is proposed as an innovative institution tailored to the particular requirements of the Ethiopian agricultural commodities, the country has still faced multiple problems such as lack of efficiency in terms of infrastructure, access to technology and financial and technical services, all these significant challenges pose to its ability to really transform the country's agricultural markets (Nigussie G. K. , 2011).

One of the main challenges for the ECX regarding coffee is that of guaranteeing coffee differentiation and traceability for specialty, fair trade and organic markets, which is lost once coffee is deposited in the ECX warehouses and graded according to regional types and quality. This is currently being addressed through the Direct Specialty Trade (DST), a new platform created by the ECX through which producers of specialty coffee are supposed to transact directly with international buyers. The question is, which producers are able to access the differentiated markets and which ones are to stuck to standardized production? (ibid).

2.4.2. Policy Reforms that Affect Performance of the Coffee Export Sector

Several government policies reforms had affected the performance of the coffee sector in the last decade. Amongst these from December 2008 onwards it became mandatory for private traders to sell their coffee through the Ethiopian Commodity Exchange (ECX).The establishment of the ECX has led to important changes in the structure of the coffee value chain (Gabre-Madhin's study (as cited in Minten B., Tamru S., Kuma T., and Nyarko Y., 2014).Second, the government intervened in the coffee market on several occasions in an effort to reduce hoarding by exporters. In April 2009, six large traders were banned from exporting coffee because of their presumed excessive coffee volume hoarding. The government revoked their licenses, closed down their warehouses, seized their coffee stocks, and sold them on their behalf. (Alemu study as cited in Minton B., Tamru S., Kuma T., and Nyarko Y., 2014).

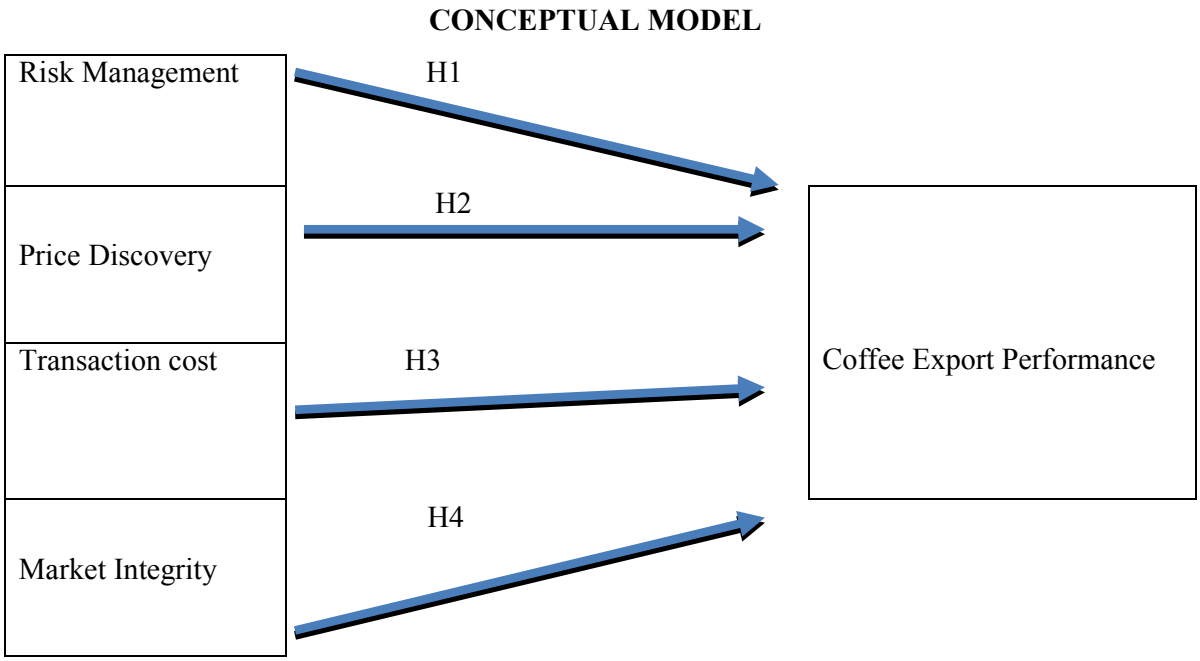
In addition, according to Tefera A. and Tefera T.(2013), the Ethiopian Government's coffee policy revolves around its trade and controlling the hard currency earned from exports aiming to maximize foreign exchange income from coffee export. There are no concrete or stipulated polices affecting coffee production. However, there are some regulations that affect the marketing process such as that forbid to sell export quality coffee on the local market even if there is a better local price. Any coffee related business requires a special license for domestic wholesaling, coffee exporting, or coffee roasting.

2.5. Conceptual Framework

The Ethiopian Commodity Exchange (ECX) was designed to be a market place where buyers and sellers meet to trade, assured of quality, delivery and payment. It is meant to manage a system of daily clearing and settling of contracts. It enhances market efficiency by operating a trading system where buyers and sellers use standardized contracts. Market transparency is achieved by disseminating market information in real time to all market players (Laibuni N., Njenga M., Kiriga B, OmitiJ. and Ikiara M., 2012).

The conceptual framework is designed by the researcher based on the literatures reviewed. It shows the relationship between the independent variables and the dependant variable.

Figure 5: Conceptual Framework



Source: Designed by the researcher (2016)

The model takes risk management, price discovery, transaction cost and market integrity as independent variables to measure market efficiency of Ethiopia Commodity Exchange and its effect on coffee export performance, the dependant variable.

CHAPTER THREE

3. Research Design and Methodology

3.1. Research Approach

The study used mixed research, which involves quantitative and qualitative research methods. Quantitative research involves studies that make use of statistical analysesto obtain their findings. Key features include formal and systematic measurement and the use of statistics. On the other hand, qualitative research involves studies that do not attempt to quantifytheir results through statistical summary or analysis. Qualitative studies typically involve interviews and observations without formal measurement (Marczyk G, DeMatteo D. and Festinger D., 2005).This research chose a mixed approach because the combination of the two was thought to help provide more information.

3.2. Research Design

Research design is a master plan specifying the methods and procedures for collecting and analyzing the intended information (Adams J., KhanT.A. H., Raeside R. and White D., 2007). This study used both descriptive and explanatory research design since it was planned to create understanding and clarifiedthe relationship between market efficiency of ECX and coffee export performance in Ethiopia.

3.3. Populations and Sampling

This research employed census research strategy to capture relevant information from respondents. The target population of the study was Ethiopian coffee exporters. According to Ethiopian Coffee Exporters Association's annual report published on November 2014, there are about 214 active coffee exporters in Ethiopia. 88 are members of the Association and 126 are non-members (Assefa and Abdela, 2014).

3.4. Data Collection Methods

This study usedprimary data to obtain information about the subject under study. Primary source are those in which we need to conduct a new survey for gathering information at different levels with regard to the inquiry. (Adams J., Khan T. A. H., R. and White D., 2007). Accordingly, primary data were obtained from ECX officers and managers of coffee exporter companies through survey questionnaire and in depth interview.

3.5. Data Analysis Techniques

Descriptive statistics and multiple regression model were used in order to analyze data collected through survey questionnaire. Analysis of the data was done using SPSS software(version 17.0). Frequencies and percentages were used to analyze personal profiles, position of respondents in the company, work experience, etc. Multiple regression was used to test data collected using 5 point LIkert Scale from coffee exporters evaluating the effect of ECX on coffee export performance in Ethiopia.

3.6. Variables and Measurement

Coffee export performance of exporters wasused as dependant variable and was measured by volume, value and profit margin. Risk management, price discovery, transaction cost and market integrity was used as independent variables.

3.7. Research Validity and Reliability

Validity andreliability are used for testing and evaluating measurements of variables, quality of data, the research design method and the overall accuracy of the study(Adams J., KhanT.A. H., Raeside R. and White D., 2007).

3.7.1. Validity

Validity is the strength of our conclusions, inferences or propositions. It involves the degree to which youare measuring what you are supposed to. More simply, it is the accuracy of your measurement (ibid).

In order to test validity of the questionnaire items,expert opinion were taken. Besides, literatures were thoroughly examined to ensure the content and construct validity of the measures.

Interview was done with government official and managers who are related to the subject matter under study. Moreover, in depth interview was used to validate data from interviews.

3.7.2. Reliability

Reliability refers to the consistency or dependability of a measurement technique, and it is concerned with the consistency or stability of the score obtained from a measure or assessment over time and across settings or conditions. (Marczyk G, DeMatteo D. and Festinger D., 2005). Cronbach's alpha with a value of 0.70 and above was used to ensure the reliability of the instrument.

3.8. Model and Estimation Techniques

The study used multiple regression model to measure the level of significance relationship between the dependent and independent variables. The general model was expressed as below;

$$Y=a+b_1x_1+b_2x_2+b_3x_3+b_4x_4+e$$

Where,

Y= Coffee Export Performance

a=Y intercept

b_1=Regression or beta weight of risk management

x_1=Risk Management by Ethiopia Commodity Exchange

b_2=Regression or beta weight of Price discovery

x_2=Price Discovery role of Ethiopia Commodity Exchange

b_3=Regression or beta weight of transaction cost

x_3= Transaction cost role of Ethiopia Commodity Exchange

b_4=Regression or beta weight of market integrity

x_4= Market integrity of Ethiopia Commodity Exchange

e=error term

3.9. Ethical Issues

Virtually all studies with human participants involve some degree of risk. These risks mayrange from minor discomfort or embarrassment caused by somewhat intrusive or provocative questions to much more severe effects on participants' physical or emotional well-being. These risks present researchers with an ethicaldilemma regarding the degree to which participants should be placedat risk in the name of scientific progress.To address such ethical dilemmas, a number of ethical codes have been developed to provide guidance and establish principles (Marczyk G, DeMatteo D. and Festinger D., 2005).

Accordingly, the researcherconsidered all potential risks and ethical conflicts like confidentially and dignity of the participants when designing and conducting the research.The researcher was familiar with the ethical issues and did not mention name of respondents of the research questionnaire on the research paper and used the research for academic purpose only. Moreover, no plagiarism, fabricating and destroying of data was accounted.

CHAPTER FOUR

4. Data Analysis and Interpretation

This chapter deals with presentation, interpretation and analysis of the data used for the study. The data were gathered through questionnaires and interviews.

As the theoretical framework showed, some of the benefits of a commodity exchange are Risk Management, Price Discovery, Transaction Cost and Market Integrity. The study took these benefits as variables to study efficiency of Ethiopian Commodity Exchange to Coffee Exporters in Ethiopia. Questionnaires were distributed to the exporters and interview was made with some industry experts.

4.1. Descriptive Statistics

Descriptive statistics were used to make simple comparisons of data, and were addressed in this section in the same order as they appeared on the questionnaire and these included: position in the company, work experience and academic qualification.The statistical program used for the analyses and presentation of data in the study wasStatistical Package for the Social Sciences (SPSS version 17.0).

The researcher used different channels to distribute the questionnaires. It was difficult to get all the exporters as a result of time constraint and most exporters were not willing to respond to the questionnaire. As a consequence, out of 214 Ethiopian coffee exporters, the researcher could manage to distribute 195 questionnaires. Out of 195 questionnaires 105 responses were collected back. After going through the data, 101 usable questionnaires were found, which had been considered for this study.

The questionnaire was structured and undisguised. It had multiple choice and 5 point Likert Scales. The aim was tocollect data on the opinion of respondents about efficiency of ECX to coffee exporter in Ethiopia.The questionnaire had six sections.

Section I Personal information of respondents: Three(3) multiple choice

Section IICoffee export performance related 5 point Likert Scales: Five (3)

Section IIIRisk Management related 5 point Likert Scales: Four (4)

Section IVPrice discovery related 5 point Likert Scales: Four (4)

Section VTransaction cost related 5 point Likert Scales: Six (4)

Section VIMarket Integrity related 5 point Likert Scales: Four (4)

4.1.1. Respondent's Profile

A total of 101 respondent's profile has been summarized in table 1 that is their position, work experience and academic qualification.

Table 1: Respondent's Profile

Respondent's Position	Frequency	Percent	Valid Percent	Cumulative Percent
Owner	14	13.9	13.9	13.9
General Manager	4	4.0	4.0	17.8
Deputy Manager	6	5.9	5.9	23.8
Export Manager	26	25.7	25.7	49.5
Marketing Manager	9	8.9	8.9	58.4
Trader	38	37.6	37.6	96.0
Other	4	4.0	4.0	100.0
Respondent's Work Experience	Frequency	Percent	Valid Percent	Cumulative Percent
1-3 Years	20	19.8	19.8	19.8
4-6 Years	26	25.7	25.7	45.5
7-8 Years	19	18.8	18.8	64.4
> 9 Years	36	35.6	35.6	100.0
Respondent's Academic Qualification	Frequency	Percent	Valid Percent	Cumulative Percent
12 Grade	7	6.9	6.9	6.9
Certificate	3	3.0	3.0	9.9
Diploma	18	17.8	17.8	27.7
Bachelor Degree	57	56.4	56.4	84.2
Masters and above	16	15.8	15.8	100.0

Source: Owen Survey (2016)

The first question respondents asked was about their position in the company. Table 1 presents their responses both in number and percentage terms. Respondents held different position in the company. Out of the 101 respondents 37.6% (N=38) were trader, 25.7%(N=26) were export manager, 13.9(N=14) were owner, 8.9%(N=9) were marketing managers, 5.9%(N=6) were deputy manager, 4%(N=4) were general manager and 4%(N=4) held other positions in the company.

Table 1 also indicated respondent's responses to work experience question. Out of the 101 respondents 35.6% were in the work experience category of >9 years, 25.7% were in the category of 4-6 years, 19.8% were in the work experience category of 1-3 years. While the rest 18.8% were in 7-8 years category.

Most respondents of this research paper hold bachelor degree that is 57 respondents out of the total 101 respondents. Diploma took the next position that is 18 respondents. 16 respondents hold maters and above. The rest hold 3 respondents had certificate and7 respondents were in grade.

4.2. Quantitative Data Analysis

4.2.1. Reliability Test

Reliability measure helps to determine the extent to which the items in the questionnaire are consistent to measure the dependent variable and to identify problem items that should be excluded from the scale.The test for reliability of the multiple Likert Scale was done using the Cronbach's alpha criterion. According to Sekaran (2013),the reliability of a measure is established by testing for both consistency and stability. Consistency indicates how well the items measuring a concept hang together as a set. Reliabilities less than 0.6 are considered to be poor, those in the 0.7 range areacceptable, and those over 0.8 good. The closer Cronbach's alpha to 1, the higher the internal consistency.

The below table 2 measured the reliability of the dependent and independent variables. The dependent variable, coffee export performance, had 3 likert scale questions with Cronbach's Alpha 0.808. The independent variables Risk Management, Price Discovery, Transaction Cost and Market Integrity had Cronbach's Alpha 0.761, 0.793, 0.805 and 0.844 respectively. And each had

4liker scale questions. Accordingly, all the dependent and independent variables were reliable measurements. The overall Cronbach‘s alpha was 0.897 which was scored as good scale and according to this the four independent variables were reliable to measure the dependent variable.

Table 2: Cronbach‘s Alpha for the dependant and independent variables

Variable	No. of Items	Cronbach's Alpha
Coffee Export Performance	3	.808
Risk Management	4	.761
Price Discovery	4	.793
Transaction Cost	4	.805
Market Integrity	4	.844
Overall Reliability	19	.897

Source: SPSS output (2016)

4.2.2. Normality Test

A normal distribution is a distribution of the values of a variable that, when plotted, produces a symmetrical, bell-shaped curve that rises smoothly from a small number of cases at each extreme to a large number of cases in the middle. Determining whether variables are normally distributed involves examining each variables skewness and kurtosis. Skewness measures the overall lack of symmetry of the distribution, and whether it looks the same to the left and right of the center point. Kuttosis measures whether the data are peaked or flat relative to normal distribution. (Marczyk G, DeMatteo D. and Festinger D., 2005).

Skewness and kurtosis value of 0 means the distribution is perfectly normal. Normal is used to describe the greatest frequency of scores in the middle, with smaller frequencies towards the extremes. Positive skewness values indicate a clustered to the left at the low values. Negative skewness values indicate a clustering of scores at the high end (right-hand side of a graph). Positive kurtosis

value indicates that the distribution is rather peaked (clustered in the centre), with long thin tails. Kurtosis values below 0 indicate a distribution that is relatively flat (Julie Pallantt, 2002).

Accordingly, as indicated on the below table 3, all the variables risk management, price discovery, transaction cost and market integrity have positive skewness value. This means their scores are clustered to the left. When we see their kurtosis values risk management and price discovery have positive value and means that they havepeaked distribution.On the other hand, transaction cost and market integrity have negative kurtosis value and means that have flat distribution.

Table 3: Normality test.

	N	Mean	Std. Deviation	Skewness		Kurtosis	
	Statistic	Statistic	Statistic	Statistic	Std. Error	Statistic	Std. Error
COFFEXPPERFORMANCE	101	2.1205	.82601	.264	.240	-.775	.476
RISKMNGMNT	101	1.8927	.70557	.726	.240	.257	.476
PRICEDSCVY	101	1.9084	.83421	1.146	.240	.893	.476
TRANCACNTCOST	101	2.1427	.73658	.422	.240	-.142	.476
MRKTINTEGRITY	101	2.2149	.76177	.290	.240	-.373	.476
Valid N (listwise)	101						

Source: SPSS output (2016)

4.2.3. Correlation Analysis

The Pearson's Product Moment Correlation Coefficient is a measure of the degree of association between variables. It takes a value between -1 and 1. A value of near to 1 indicates strong positive association and near -1 indicates a strong negative association (Adams J., Khan T.A. H., Raeside R. and White D., 2007). Dancey and Reidy's (2004) categorize value of the correlation coefficient and strength of correlation like 1 value of correlation coefficient means perfect, 0.7-0.9 value of correlation coefficient means strong, 0.4-0.6 value of correlation coefficient means moderate and 0.1-0.3 value of correlation coefficient means weak.

The following table 4 indicated correlation between independent variables (risk management, price discovery, transaction cost and market integrity) and the dependent variable (coffee export performance). It showed that there is a positive correlation between the independent and dependent variables.

Table 4. Correlation Matrix

		COFFEE EXPORT PERFORMANCE	RISK MANAGEMENT	PRICE DISCOVERY	TRANSACTION COST	MARKET INTEGRITY
COFFEE EXPORT MANAGEMENT	Pearson Correlation	1				
	Sig. (2-tailed)					
	N	101				
RISK MANAGEMENT	Pearson Correlation	.473**	1			
	Sig. (2-tailed)	.000				
	N	101	101			
PRICE DISCOVERY	Pearson Correlation	.210*	.483**	1		
	Sig. (2-tailed)	.035	.000			
	N	101	101	101		
TRANSACTION COST	Pearson Correlation	.555**	.359**	.316**	1	
	Sig. (2-tailed)	.000	.000	.001		
	N	101	101	101	101	
MRKTINTEGRITY	Pearson Correlation	.287**	.405**	.280**	.369**	1
	Sig. (2-tailed)	.004	.000	.005	.000	
	N	101	101	101	101	101

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

*. Correlation is significant at the 0.05 level (2-tailed).

Source: SPSS output (2016)

Based on the result of the Table 4, the independent variables risk management and transaction cost has moderate correlation with coffee export performance by scoring value of 0.473 and 0.555 respectively. While the independent variables price discovery and market integrity has weak

correlation with the dependent variable with score of 0.210 and 0.287 respectively.

4.2.4. Multiple Regression Analysis

Multiple regression model was used in order to determine the value of the dependent variable in this case coffee export performance using multiple independent variables i.e risk management, price discovery, transaction cost and market integrity. Also the model was used to examine the relationship between the dependant and independent variables. Based on this the under stated multiple regression equation was developed.

$$Y=a+b_1x_1+b_2x_2+b_3x_3+b_4x_4+Error\ term$$

Where, *a* is the regression constant that is the value of Y when the value the other variables is zero and b1, b2, b3 and b4 are regression coefficients, and the Error Term is the variation in Y not accounted by the independentvariables in the equation. Y is the dependent variable and x1, x2, x3 and x4 are the independent variables i.e. risk management, price discovery, transaction cost and market integrity respectively.

Value of the dependent and independent variables were determined by computing mean of the multiple liker scale questionnaires collected from respondents. Values assigned to each liker scale had been explained in the following table 5.

Table 5. Likert Scale Numerical Values

Respondent's selection	Numerical Value
Strongly Disagree	1
Disagree	2
Neutral	3
Agree	4
Strongly Agree	5

4.2.5.Multicollinearity Test

Multicollinearity exists when the independent variables are highly correlated. Two valuesTolerance and VIF are used to test multicollinearity problem. Toleranceis an indicator of how much of the variability of the specified independent variable is notexplained by the other independent variables in the model. If this value is very small (less than .10),it indicates that the multiple correlation with other variables is high, suggesting the possibility of multicollinearity. The other value given is the VIF (Variance inflation factor), which is just the inverse of the Tolerance value (1 divided by Tolerance).VIF values above 10 would be a concern here, indicating multicollinearity. If values in the results exceed these levels, you should seriously considerremoving one of the highly intercorrelated independent variables from the model. (Julie Pallantt, 2002).

Table 6. MultiCollinearity Test

Model		Collinearity Statistics	
		Tolerance	VIF
1	RISK MANAGEMENT	.668	1.496
	PRICE DISCOVERY	.740	1.351
	TRANSACTION COST	.792	1.262
	MARKET INTEGRITY	.775	1.290

a. Dependent Variable: COFFEXPPERFORMANCE

Source: SPSS output (2016)

As mentioned on the above table 6, the tolerance value for the independent variables risk management, price discovery, transaction cost and market integrity are 0.668, 0.740, 0.792, and 0.775respectively which is not less than 0.10. This is also supported by the VIF values 1.496, 1.351, 1.262 and 1.290, which are well below the cut-off of 10. Therefore, all the independent variables do not have multicollnearity problem.

4.2.6 Regression Coefficient

The regression coefficient B indicates the change in the value of the independentvariable for a unit means a change in the mean value of the dependent(Y) variable by the amount of the coefficient value holding the other variables constant.

Table 7Regression Coefficient

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig. (p-value)	95.0% Confidence Interval for B	
		B	Std. Error	Beta			Lower Bound	Upper Bound
1	(Constant)	.420	.254		1.651	.102	-.085	.925
	RISK MANAGEMENT (X1)	.422	.113	.360	3.736	.000	.198	.646
	PRICE DISCOVERY (X2)	-.109	.091	-.111	-1.207	.231	-.290	.071
	TRANSACTION COST (X3)	.516	.099	.460	5.195	.000	.319	.713
	MARKET INTEGRITY (X4)	.003	.097	.002	.027	.979	-.190	.195

a. Dependent Variable: COFFEXPPERFORMANCE

Source: SPSS Output (2016)

As mentioned on table 7, the p-value or sig. explained which of any of the predictors are statistically significant.The independent variablesrisk management and transaction cost were significant to explain the variation on coffee export performance with sig. 0.000 at confidence level of 95% because their p-value was less than 0.05. On the other hand, the variables price discovery and market integrity were found insignificant to explain coffee export performance with sig. 0.231 and 0.979 respectively since these p-values were greater than 0.05.

Hypothesis Test

A hypothesis is often described as an attempt by the researcher to explain the phenomenon of interest. Hypothesis can either be supported or refuted on the basis of the data. The null hypothesis always predicts that there will be no effect or relationship between the groups being studies. While the alternative hypothesis takes the form that there is an effect or relationship. Therefore, a key

decision that researcher must make with the assistance of statistics is whether the null hypothesis should be rejected or not rejected (Marczyk G, DeMatteo D. and Festinger D., 2005). In this case the relationship is between the dependent variable and independent variable.

H0= Null Hypothesis

H1= Alternative Hypothesis

For most statistical analysis, α is set to 0.05. A p-value less than α indicates that we have enough statistical evidence to reject the null hypothesis, and thereby, indirectly accept alternative hypothesis. If p>0.05, then we do not have adequate statistical evidence to reject the null hypothesis or accept the alternative hypothesis.

Accordingly, the result of the study has been discussed as follows whether the four hypothesis articulated by the researcher earlier were supportedby data. And decision whether to accept the alternative hypothesis or reject the null hypothesis.

Hypothesis1.

H_{O1}: ECX risk management mechanism has no positive contribution to coffee export performance in Ethiopia.

H_{11}: ECX risk management mechanism has a positive contribution to coffee exportperformance in Ethiopia.

Since p-value for risk management (0.000) is less than α, we reject the null hypothesisH_{O1}. This means that we accept the alternative hypothesis$H_{11.}$ This means thatrisk management mechanism provided by ECX has a positive contribution to coffee export performance.

Hypothesis2.

H_{O2}: ECX price discovery mechanism has no positive contribution to coffee export performance in Ethiopia.

H_{12}: ECX price discovery mechanism has a positive contribution to coffee export performance in Ethiopia

P-value for price discovery is equal to 0.231 which is greater than alpha. Price discovery was found to be insignificant to coffee export performance. Therefore since we fail to reject the null hypothesis, hypothesis2 is excluded in this study.

Hypothesis3.

H_{O3}: Transaction cost charged by ECX has no contribution to coffee export performance in Ethiopia.

H_{13}: Transaction cost charged by ECX has a positive contribution to coffee export performance in Ethiopia

Hypothesis3 is accepted by this study since P-value for transaction cost is 0.000 which is less than alpha. The null hypothesis may therefore be rejected: as hypothesized earlier by this study and as study show transaction cost has a positive contribution to coffee export performance in Ethiopia.

Hypothesis4.

H_{O4}: Market integrity mechanism by ECX has no contribution to coffee export performance in Ethiopia.

H_{14}: Market integrity mechanism by ECX has a positive contribution to coffee export performance in Ethiopia

Hypothesis4 is rejected by this study since P-value for market integrity is 0.979 which is greater than alpha.

4.2.7.Prediction of Coffee Export Performance

Table 8. R-Square

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.635[a]	.403	.379	.65114

Source: SPSS output (2016)

The value of Rfor modelsthat are produced by the regression analysis procedure ranges from zero to one. The larger the value of R display that there is strong relationship among observed and predicted value. In this study R is 0.403. As clearly described in Table 8 Adjusted R-squared value for the regression model was 0.379. This indicates the variables risk management, price discovery, transaction cost and market integrity jointly explain about 37.9 percent of market efficiency of ECX to coffee export performance in Ethiopia. The remaining 62.1 percent are explained by other variables which are not included in the model of this research.

4.3. Qualitative Data Analysis

In-depth Interview was made with industry experts, ECX official and Ethiopian Coffee Exporters Association. The industry experts are in the coffee industry for a long period of time and the researcher was able to contract them by recommendation.

Table 9 Numbers of Individuals Interviewed for Expert Validity

Official's	# interviewed
Industry Experts	9
ECX official	1
Ethiopian Coffee Exporters Association	1
TOTAL	11

4.3.1. Coffee Export Performance Related Issues

Interview result with the industry experts showed that all agree export performance,as below table, has indeed increased since the introduction of ECX. ECX was established in 2008. As explained by the Ethiopian Coffee Exporters Association (ECEA), the export performance during the transition period has unfortunately declined significantly. However, coffee exports quickly

rose and reached the highest volume traded in Ethiopian history in 2012/13 at 199,103.58 tons. Value has also increased reaching its highest yet at 841.6 million USD in 2010/11.

Table 10Coffee ExportinVolume and Value (2000/2001 – 2014/2015)

YEAR	VOLUME IN METRIIC TONS	VALUE (IN MILLIONS OF USD)
2000/2001	99,134.00	177,167.95
2001/2002	110,347.00	162,448.60
2002/2003	126,100.00	165,300.00
2003/2004	144,629.00	208,313.00
2004/2005	159,845.00	334,509.00
2005/2006	153,155.00	365,834.00
2006/2007	176,400.00	424,144.00
2007/2008	171,000.00	524,744.00
2008/2009	134,000.00	375,838.00
2009/2010	172,210.21	524,331.74
2010/2011	196,117.93	841,649.72
2011/2012	169,387.04	832,909.47
2012/2013	199,103.58	746,416.33
2013/2014	190,876.00	718,792.00
2014/2015	183,839.90	780,228.50

Source: Ministry of trade

However, it is difficult to conclude that the increase in both the volume and value of coffee is directly related to the introduction of ECX as there are also other important factors at play, including increase in domestic coffee production as well as increase in the demand of coffee in the international market.

According to Minten B., Tamru S., Kuma T., and Nyarko Y. (2014), over the last decade, a large increase in the value of coffee exports over time have been noted. This change has mostly been driven by increases in international prices and to a lesser degree by increased quantity and quality

of exported coffee from Ethiopia. While the exported quantity has increased, this has seemingly been driven by both increased production and reduced local consumption. Moreover, important premiums being paid in international markets for washing, certification, vertical integration, and for geographical indications of origin which have resulted in increase in value of coffee.

4.3.2 Risk Management Related Issues

The establishment of ECX was initiated with the aim of improving transparency, efficiency, market integrity and information flow of commodity trading system in Ethiopia by introducing modern commodity exchange system in the country. ECX is a spot market and its major activities are related to quality inspection and grading in order to increase high quality coffee export, giving warehouse service to increase quantityand value of coffee export. Moreover,aimed disseminate timely market information and to ensure risk-free payment system (Gabre-Madhin, E. Z. and Goggin I., 2005).

However, as mentioned in the literature review part of the study, price risk is one of the benefits of a commodity exchange. Because ECX does not include risk management system, as industry experts explained, exporters are exposed to international coffee price fluctuation risk. They also confirm that there is quality difference between what they bought from ECX floor trade and what they actually received from ECX warehouse. And there is no mechanism to claim quality difference from ECX at all.

However, ECX official during the interview tried to confirm that these problems happen rarely and if in case occurs the exchange has set a mechanism to claim quality and quantity defaults and the exchange will immediately respond by making payment against the claimed amount.

4.3.3. Price Discovery Related Issues

According to the interview made with ECX, ECX creates platform for exchange. Price is set when buyers and sellersmeet together at the trade floor that can result in price discovery of the commodity. ECX does not set pricebut set price range based on NY price to control price manipulation. Market information is disseminated through different Medias like SMS number 934, IVR 929 in four languages, uses price sticker board to disseminate market information in order to help the market for a better price discovery.

However, industry experts argue that prices at ECX are higher than NY price. As a result exporters are having difficult to decide whether to take long or short position in their marketing strategies because the price gap between ECX and NY is huge. As industry experts commented, the following are some of the problems for true price discovery.

1. Even though ECX claimed that they set price range, there is no price regulation. Prices are set by the market player. As a result, the Ethiopian local market is higher than the international market. This leads the Ethiopian coffee exporters not to be competitive in the international market.

2. Ethiopia consumes about 50% of its annual coffee production locally(Tefera A. and Tefera T., 2013). As the local demand is not satisfied by the coffee that is being auctioned from byproduct of export coffee, the local market pays a better price for any coffee that gets smuggled to it. Thus, coffee that is supposed for international market, including washed coffee is being traded in small shops in the country encouraging the demand for high quality coffee for local market. Even though, a single akrabi (a private processor and the private equivalent to a cooperative) is only allowed to sell their coffee through the Ethiopian Commodity Exchange.

3. Vertical integration via ownership of exporters, processors or producer is not allowed.However, although vertical integration is not permitted and ECX system should prevent intra-firm transactions, some exporters use this method to diversify price risks (Austrian Foundation for Development Research, 2015). Those who have sister companies that are exporting coffee, sell coffee at ECX auction at higher prices by selling small quantity and setting better price for their coffee that they have at ECX through their sister companies. Due to these, the local coffee market goes out of the roof, resulting in the Ethiopian coffee losing its competitive edge towards other coffee origins.

4. Coffee hoarding – coffee suppliers gang up and hoard coffee to wait for the international market rise. This will affect the market by creating artificial shortage at the auction and exporters who are in short for their commitment at that spot on time are forced to pay high prices to cover their contracts. This will have a multiplying effect on the local price, as it is very unlikely to come down, once it gets higher.

4.3.4.Transaction Cost Related Issues

Transaction costs are considerably reduced when the commodity exchange enters the picture by facilitating contact between buyers and sellers; enabling centralized grading of products; ensuring that contracts are enforceable; providing a mechanism for price discovery and simplifying transactions with standard contracts(Hussein, 2010).

However, the interview result with industry experts showed that cost of trading has increased after commencement of ECX. Their idea is supported by Food and Agriculture Organization of United Nations (2014) mentioning some extra costs have been added from 2008 onwards, due to the addition of ECX services: ECX warehouse fees, extra loading fees, and VAT on services. The following table explains this in numeric data.

Table 11 Observed ECX Trading Cost from Djimmah Warehouse to Addis Ababa in ETB/Ton.

	2005	2006	2007	2008	2009	2010	2011	2012
ECX COST								
Transport costs from Djimmah (regional ECX warehouse) to Addis Ababa	0	0	0	750	800	900	950	950
Trading fee on value of purchase(0.4%)	0	0	0	88	92	129	191	382
Warehouse charge (2.10/fers/bag)	0	0	0	25	25	25	25	25
VAT on services charges	0	0	0	17	18	23	32	32
Total Observed Costs	**0**	**0**	**0**	**880**	**935**	**1077**	**1198**	**1389**

Source: Worako (2008) for 2005-2007 and ECX: 2008-2012 (as cited in Analysis of price incentives for coffee in Ethiopia for the time period 2005–2012, 2014)

Before introduction of ECX (i.e before 2008), expenses mentioned on table 11 were zero because akrabies deliver the coffee by truck on their own expense to the auction centre in Addis Ababa and then to the exporter's warehouse once the coffee was sold.

4.3.5. Market Integrity Related Issues

As mentioned in the literature part of the study, in order to keep market integrity of the Ethiopian Commodity Exchange, the exchange operates with a certain rules. Some of these rules are related to the quality of the product. The product must be standardized, well graded and the inspection must be done by qualified inspectors.

According to the interview with ECX official, well-trained graders are used to guarantee the grade and quality of the coffee whoare calibrated every year in order to build their capacity.

However, exporters are still complaining about grades, classification and standardization of coffees. Industry experts confirmed that they are always facing quality differences from the coffee which are categorized under the same grade category as a result of unstandardized product.

4.4. Triangulation between Quantitative and Qualitative Data

In order to improve the validity of the findings of this research, triangulation approach was adopted between the survey questionnaires and interviews. The variables risk management and transaction cost were found determinant factor for coffee export performance by both quantitative and qualitative results. Risk Management system by ECX means coffee export performance will increase since exporters will be protected from price fluctuation risk. When ECX strives to give more efficient service, transaction cost will be minimized and as a result profit of exporters will increase.

Even though, price discovery and market integrity were not found to determine coffee export performance according to the quantitative result, however, they are determinant factors. When there is a true price discovery of a commodity by ECX, it will help exporters to be competitive in the international market and as a result sales volume and profit will increase. Market integrity has the same increasing effect on sales volume and profit margin. When coffees are well-graded and standardized by ECX, exporter will be able to ship on time according to the quality requirement of their buyer. This will result in sales volume and profit margin to increase.

CHAPTER 5

5. Summary, Conclusions and Recommendations

5.1 Summary of Major Findings

This chapter presented major findings of the study. The study was made to investigate efficiency of Ethiopian Commodity Exchange to coffee export performance. According to IOSC 2011, factors considered in determining efficiency of a market include liquidity, price discovery and transparency. The study used four variables as independent variables to measure market efficiency of ECX. These independent variables are risk management, price discovery, transaction cost and market integrity.Questionnaire was designed accordingly to measure market efficiency of ECX.5 point Liker Scale was used to collect data from respondents that is from Ethiopian coffee exporters. Interview guidelines were prepared by the researcher to collected data from industry experts. In total eleven industry experts were interviewed. Multiple Regression equation was used to analyze the result from the 5 point Likert Scale questionnaire using SPSS version 17.0 software.

The major findings can be categorized as quantitative and qualitative. That is results from multiple regression analysis and interviews respectively.

Quantitative Results

- The reliability of the Likert Scale questions was tested using SPSS reliability test and the result showed 0.761, 0.793, 0.805 and 0.894 which can be scored as a good scale to measured efficiency of ECX to coffee expert performance. In overall, the variables scored 0.879 which is closer to acceptable range. Therefore, the 5 point Likert scale questions used

in the study were reliable enough to measure efficiency of Ethiopian Commodity Exchange to coffee exporter performance.

- Risk management and transaction cost were ranked as a major factors among the four variables to measures market efficiency of Ethiopian Commodity Exchange. From the regression coefficient result both were significant with p-value 0. On the other hand, the two variables price discovery and market integrity were excluded from the model as their p-value that is 0.231 and 0.979 respectively which is greater than alpha. Alpha is equal to 0.

- The adjusted value of R square (0.379) which is the outcome of the regression analysis indicates the independent variables in this study i.e risk management, price discovery, transaction cost and market integrity jointly explain about 37.9 percent of market efficiency of Ethiopian Commodity Exchange. The rest 62.10 percent is explained by other variables that are not mentioned in this study.

Qualitative Results

Nine industry experts, one ECX official and one ECEA were interviewed in the study. Findings of the interview are summarized as follow:-

- As data from Ministry of trade shows, coffee export performance has increased indeed after commencement of ECX. However, the industry experts agree that it is difficult to conclude that the increase in coffee export performance is related to introduction of ECX. Because there are other factors to be considered.
- Results from qualitative data showed that exporters are exposed to price risk since ECX does not have risk management system.

- After introduction of ECX transaction cost has increased for the coffee exporter that includes, warehouse cost, trading fee, transportation cost and ECX service charges.
- The aim of ECX is to keep the integrity of the market by providing standardized products that are inspected by qualified inspectors. However, industry experts confirmed that there is quality difference between coffees categorized under the same grade.

5.2 Conclusions

Risk management, price discovery, transaction cost and market integrity are some of the main benefits that a commodity exchanges provide to the market actors. And these variables are the base to measures efficiency of a commodity exchange.

A commodity exchange manage risk, when it provides a tool to the market players to deal with price risk as a result of a commodity price volatility, when it delivers coffee without shortage and quality change and when it helps them to manage risk associated with uncertainty about the future. True price discovery exits when prices are set at the exchange according to international coffee prices. A commodity exchange reduces transaction costs by offering services at a lower cost. A commodity exchange maintains market integrity by providing well-graded and standardized products.

Ethiopian Commodity Exchange is not performing according to these variables that could bring efficiency to the market. Therefore, ECX should increase its efficiency in regards to the variables suggested by this study in order to improve coffee export performance.

5.3. Recommendations

Based on the findings, the study suggests the following recommendations in order to improve the efficiency of ECX.

1. As suggested by Gabre-Madhin Z. E. 2007, Ethiopia Commodity Exchange without the possibility to enable market risk management through offering futures contracts has limited chances for success. Accordingly, the study recommends Ethiopian Commodity Exchange to start futures contracts which are helpful in limiting the risk exposure of market players and remove the uncertainty about the future price of a commodity. Futures contracts protect both the buyer and seller against the risk of price change between the moment of the contract transaction and the time of delivery (the expiration date) by helping both parties to lock in current prices.

2. Kenyan's price-discovery mechanism is the most effective in the world of coffee. Every Thursday traders and exporters receive a catalogue of the coffee lots that will be auctioned the following Tuesday at the Nairobi Coffee Exchange, along with samples of each lot. Traders have the chance to cupand evaluate the samples earlier the auction day. On the auction day more than fifty registered traders show up at the live auction to compete for the coffees. Better tasting lots have a higher potential market value, and without fail there is hearty competition for the really outstanding coffees(http://www.intelligentsiacoffee.com/sites/default/files/coffee-product-docs/product-doc/kenya_gichathaini.pdf). As mentioned on the literature chapter of the study, before establishment of ECX, Ethiopia had virtually the same system. Even though sample lots were not given, exporters had the chance to view samples at the auction centre and trade accordingly. The study recommends that ECX should allow exporters to view coffee samplesbefore making their trade decisions.

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Appendix A

ADDIS ABABA UNIVERSITY

SCHOOL OF COMMERCE

DEPARTMENT OF MARKETING MANAGEMENT

Questionnaires to be filled out by owners, managers, marketers and coffee traders of coffee export companies.

General Direction

The purpose of this questionnaire is to collect relevant information about ECX from owners, managers, marketers and coffee traders of coffee export companies.

The information you provide in this questionnaire will be kept confidential and will only be utilized for academic purpose. Your genuine and frank responses to the questionnaire are highly valuable for the achievement of the objective of this research.

Please answer by putting a thick (√) in one of the blank spaces corresponding to each item.

I. Personal Information Questions.

1. Position in the Company

☐ Owner ☐ General Manager

☐ Deputy Manager ☐ Export Manager

☐ Marketing Manager ☐ Trader

Other _____

2. Work Experience

☐ 1-3 Years ☐ 4-6 years

☐ 7-8 Years ☐ >9 years

3. Academic Qualification

☐ 12 Grade ☐ Certificate

☐ Diploma ☐ Bachelor Degree

☐ Masters and above

II. Coffee Performance Related Survey Questions

Please rate how much you agree or disagree with the following statements by circling on the corresponding lines:

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1. Coffee export volume has increased as a result of introduction of ECX.	1	2	3	4	5
2. Coffee export value has increased as a result of introduction of ECX.	1	2	3	4	5
3. Profit Margin has increased as a result of introduction of ECX.	1	2	3	4	5

III. Risk Management Related Survey Questions

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1. ECX Provides the coffee exporter the tools needed to deal with price risk as a result of commodity price volatility.	1	2	3	4	5
2. ECX helps the exporter to manage quality risk by delivery right quality coffee after purchasing from the Exchange.	1	2	3	4	5
3. ECX helps the exporter to manage quantity risk by delivering coffee without shortage.	1	2	3	4	5
4. ECX helps the exporter to manage risk that is associated with uncertainty about the future.	1	2	3	4	5

IV. Price Discovery Related Survey Questions

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1. ECX brings together many buyers and seller that helps in true price discovery	1	2	3	4	5
2. ECX prices are set according to the international market price.	1	2	3	4	5
3. ECX provides more accurate market information that can result in real price discovery.	1	2	3	4	5
4. Trading at ECX are done openly in a way that everyone can hear bid/offer prices.	1	2	3	4	5

V. Transaction Cost Related Survey Questions

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1. Transaction cost has been minimized for the coffee exporter as a result of introduction of ECX.	1	2	3	4	5
2. Cost of trading has been minimized as a result of introduction of ECX.	1	2	3	4	5
3. Cost of collecting coffee purchased has been minimized as a result of introduction of ECX.	1	2	3	4	5
4. ECX delivers coffee in good time when collecting the coffee regional warehouses.	1	2	3	4	5

VI. Market Integrity Related Survey Questions

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1. ECX provides standardized products.	1	2	3	4	5
2. ECX provides well-graded product.	1	2	3	4	5
3. Coffee at ECX are graded and certified by qualified inspectors.	1	2	3	4	5
4. ECX gives enough market information like price, quantity and quality transparently.	1	2	3	4	5

Appendix B

Structured and semi-structured interview questions for ECX officials, Ethiopia coffee exporters association and manager's of coffee exporter companies who have been involved in the coffee business are prepared in the following format in order to collected more detailed information.

Interview questions for Coffee Industry Experts

1. Does ECX help the coffee exporter in risk management? i.e. price risk, quality risk, quantity risk, uncertainty about future?
2. Does ECX bring together many buyers and sellers that help in true price discovery?
3. Does ECX provide more accurate market information that can result in real price discovery? How does it provide?
4. What transaction cost are you incurring transacting at EXC? Does the introduction of ECX minimize or maximize transaction cost? Like cost of finding trading partner, cost of monitoring contract, costs resulted from defaulting a contract, etc…
5. Are the coffees your are receiving from ECX standardized and well-graded?
6. Does the introduction of ECX helping you to grow your coffee sales volume, value and profit margin?
7. How was the coffee exchange done before the establishment of ECX? Which one is good for your work? What changes has ECX brought that helps the coffee exporters?

Interview questionsfor Ethiopia Commodity Exchange

1. Does ECX offer risk management tool to the coffee exporter? How? Is it helping?
2. Does the exchange has planto include futures markets, hedgers, speculators etc?
3. How do you handle quality and quantity risks?
4. What is your mechanism to bring real price discovery that depict the prevailing demand and supply? And what is your mechanism to bring myriad of buyers and sellers to the market? Do you think prices depict the prevailing demean and supply?
5. How do you disseminate market information? Do you think it will help in real price discovery and in a way that minimize cost of getting information?
6. How does ECX minimize transaction cost to the coffee exporter?
7. How does the exchange uphold market integrity?Like providing standardized contracts, well-graded coffee that is done by qualified inspectors etc.

Interview questionsfor Ethiopian Coffee Exporters Association (ECEA)

1. What is the role the association? What benefits does it provide to the members?
2. How did coffee exporters do their trading before ECX? And after introduction of ECX?
3. Is ECX helping to improve the performance of the coffee exporters? In regards to risk mgt, price discovery, transaction cost and market integrity?
4. What roles does the association provide in their trading at ECX? For example in case of difficulties or problems? What problems does the exporter face?
5. Is sales increasing or decreasing that is in both value and volume terms after introduction of ECX?
6. What is your suggestion to improve coffee export performance?