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"Cereal Market Performance of Mekelle Market, Tigray, Ethiopia"

By:

Hailu Negash

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Advisor:

Yassin Ibrahim (Ph.D)

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DECLARATION

This is to certify that this thesis entitled, "Cereal Market Performance of Mekelle Market, Tigray, Ethiopia" submitted in partial fulfillment of the requirements for the award of the degree of Masters of Art Degree in Cooperative Marketing to the College of Business and Economics, Mekelle University, through the Department of Cooperative Studies, done by Mr. Hailu Negash Tedla, Id number COANR / PR0020/01 is authentic work carried out by him under my guidance. The matter embodied in this project work has not been submitted earlier for award of any degree or diploma to the best of my knowledge and belief.

Name of the student: Hailu Negash Tedla

Signature & Date_____

Name of the supervisor: Dr. Yassin Ibrahim

Signature & Date_____

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ABSTRACT

The general objective of the study is to evaluate the performance of cereal market and the specific objectives are: to analyze the current status of cereal markets, to identify constraints of the cereal market, to analyze the integration of markets around Mekelle, and to analyze the role of cooperative societies in Tigray in the out put market. The populations of the respondents are 50 traders, 50 consumers and 100 farmers and 25 experts that is, total of 225. The method of sampling is simple random sampling for traders and systematic sampling method for consumers and farmers. This is because there is no list of consumers and farmers coming to the market inaddition the list of the farmers in each tabia is huge that makes the simple random sampling more difficult, so as a solution the systematic random sampling method is chosen. The performance of the cereal market using concentration ratio has shown that the cereal market is competitive that is the market share of the 4 largest traders is 22.31%, 19.12%, 20.3%, 16.73%, and 13.9% for wheat, tef, sorghum, others and all cereals respectively. In addition the research finds that most markets around Mekelle are integrated and the total gross marketing margin is computed to be 8.7% and 9 % for wheat and barley, respectively. This shows that the farmers' share is high that is 91.3% for wheat and 91% for barley and even it is more than that if it is calculated taking the farmer retailers' price that is about 93.37% and 93% for wheat and barley, respectively. The identified cereal market problems are: infrastructure problem followed by price related problems, supply problems, lack of proper contract agreement and enforcements and lack of real and timely information, and demand shortage. The recommendations given are: Expand and strengthen the already started market information system of the region, that is, weakly dissemination of price information through the local radio and notice board and the biweekly publishing magazine of market information. Increase the knowledge of farmers and traders through adult education programs and extension services especially that of marketing related extension services. Cooperatives together with government participation in the market can be solutions to the long marketing chain, market failure, to eliminate mal practices, to add value, to reduce costs, to increase satisfaction and generally to improve the market and marketing systems. Financial constraint is still problem of farmers, so needs to strength the saving and credit cooperatives to handle the problem, which will have dual advantage that is solving the capital shortage and reduce food insecurity. Therefore, *cooperatives should be given enough technical and financial support .*

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LIST OF ACRONYMS

1. ADLI	Agricultural Development Led Industrialization
2. AMC	Agricultural Marketing Corporation
3. APMC	Agricultural Produce Marketing Committee
4. BOARD	Bureau of Agriculture and Rural Development
5. CSA	Central Statistics Authority
6. CR	Concentration Ratios
7. E.cal	Ethiopian calendar
8. EGTE	Ethiopian Grain Trade Enterprises
9. EPRDF	Ethiopian Peoples Revolutionary Front
10. FCPC	Federal Cooperative Promotion Commission
11. G.c	Gregorian calendar
12. GDP	Gross Domestic Products
13. ICA	International Cooperative Alliance
14. MOFED	Ministry of Finance & Economic Developments
15. MORAD	Ministry of Rural & Agricultural Development
16. NGOs	None Governmental organizations
17. PASDEP	Plan for accelerated & sustained development to end poverty
18. SCP	Structure, Conduct & Performance
19. TAMPA	Tigray Agricultural Marketing Promotion Agency
20. T.I.T	Trade, Industry and Transport
21. USA	United Stats of America

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Chapter I: Introduction

1.1 Background

Ethiopia with a population of 73,918,505 is predominated by agriculture, it contributes 46.7 percent (%) of the GDP, provides employment for 85 %, accounts 90% of the export revenue and (&) contributes significant amount in supply of raw materials requirements of the country's industries (CSA, 2008).

Market is derived from the Latin word ''Marcatus'' meaning merchandise, wares, traffic or a place where business is conducted. Market is a place where goods and services are exchanged. Market consists of buyers and sellers with facilities to communicate with each other for transaction of goods & services (Subba et al, 2004).Therefore, markets involve sales locations, sellers, buyers, and transactions.

A country like Ethiopia with a huge potential to feed the sub-region can barely feed itself partly due to inefficient agricultural marketing system, (World Bank, 1987). According to Welday (2002), any improvement in the agricultural marketing is a means of stimulating agriculture and economic development of the country. "Marketing is as critical to better agriculture as farming itself. Therefore, marketing reform ought to be an integral part of any policy for agricultural development" Ramkishen (2005).

The development of an effective and efficient agricultural marketing system is necessary for the economic development. Improvements in productivity and production needs the development of properly performing markets, which gives incentives for both the producers and consumers by minimizing costs, reducing price volatility and consistence supply. But the country in general and the rural area in particular has the lowest market infrastructure network coverage, even in sub-Saharan standards. According to MOFED (2005), road density is 33.6 Km/1000Km^2 , telephone distribution is 5 lines/1000 persons, 83 % of the rural population is living very far away from the nearest public call center; and access to electric power in the rural area is almost non-existent. In addition, only 44 % of rural households can access food markets within a distance of less than 5 kilometers. Moreover, for one out of four rural households the nearest food market is 10 or more kilometers away and 45% need to travel for 15 or more kilometers to reach the nearest telephone service unit.

Although access has been improving after 1993, only 44 percent households can get telephone service within less than 10 km, 29% at least 20 kilometers away from the service and 94% of urban households have the telephone service within less than 5 kilometers compared to 17 % of rural households (PASDEP 2006), and only about 42% of rural households are less than five kilometers away from the closest all weather road, even the all weather road within 5 km radius has been increasing that is from 37 % in 2000 to 42% in 2004. Moreover, more than 43% of rural households have to travel over 15 km to access publicly-available transport services and 97 percent of urban households against 28 percent of rural households can have access to transport services within a distance of less than 5 kilometers (Ibid, 2006).

Ethiopia is now moving towards a more decentralized and market oriented economy, as a result the government recognizes the importance of privatizing business enterprises and rehabilitating agriculture. It is promoting business-oriented cooperatives based on the 7 international accepted principles. The principles are voluntary and open membership, democratic member control, member economic participation, autonomy and independence, education, training and information, co-operation among cooperatives, concern for community (ICA 1995).

"Marketing is as critical to better agriculture as farming itself. Therefore, marketing reform ought to be an integral part of any policy for agricultural development" (Ramkishen, 2005). The development of an effective and efficient agricultural marketing system is necessary for the economic development. Improvements in productivity and production needs the development of properly performing markets, which gives incentives for both the producers and consumers by minimizing costs, reducing price volatility and consistence supply. Hence, the Ethiopian development strategy document SDPRP (2002) has given emphasis to market-led agricultural development that will be achieved by development of infrastructures, establishing and implementing grades and standards, improving the provision of market information, expanding and strengthening cooperatives, and improving and strengthening private sector participation in the agriculture system.

An understanding and knowledge of the market structure is essential for identifying the performance of a market, for it determines the market conduct then together with the conduct determine the market performance. So in order to address these issues the study on the cereal market performance of Mekelle market is conducted.

1.2. Statement of the Problem

Agricultural marketing plays a vital role in the production, consumption and the economy in general, however, due to the underdeveloped markets in Ethiopia, the benefits of exchanges can not be realized and the economy remains trapped in a largely subsistence-oriented structure (Wolday and Elleni, 2003). The weak performance of the agricultural markets has recognized in various studies as a major hindrance to the agricultural development and the overall economy. Studies, for example, has been observed that some regions experience depressed local price due to surplus production but higher in other regions, even when there is a balance between aggregate supply and demand at national level due to the poor marketing system. So a critical problem stands in the course of formulating appropriate policies and procedures for the purpose of increasing marketing efficiency.

According to Wolday and Elleni (2003) agricultural marketing is complicated by the diverse nature of the products to be handled and their perish ability. The challenge is therefore, to develop an enabling environment and institutional framework that will foster the growth of efficient markets for farm produce by harnessing synergies between the private and public sectors. Thus, an efficient, integrated, and responsive market mechanism is of critical importance for optimal use of resources in agriculture and in stimulating producers to increase their output (Jones, 1972).

Since 1993, following the development and implementation of ADLI, attempts are under gone by the government and others to bring about improvement in the rural economy, through the development of modern marketing.

In moving from subsistence farming towards market-oriented production system, the role of well functioning market and marketing system is substantial. Well functioning markets benefit both the producers and consumers by reducing market channels, market margins and the transaction costs involved, there by potentially lowering prices to consumers and simultaneously raising prices to producers, so improving the market & marketing system is necessary. The continuous improvements of the agricultural output market system needs competition, establishment of standardization and grading, improvement of the information system, high cooperatives involvement, improve the private investor's participation and increase government involvement during market failure in the marketing system. Thus, the improvement of the cereal market system will give advantages to the producers, traders and consumers and play its positive

role to development of the economy and the success of food security. The study is conducted on cereal markets for cereals constitute the lions' share of grain markets and Mekelle market is selected for its center of marketing activities of the region.

Therefore, the study is paramount in helping the regional government's policy by identifying the constraints of cereal markets and improving the marketing system, which has its role in the development of the region as well as the country.

1.3. Objectives

General objective

The general objective of the study is to evaluate the performance of cereal market in Mekelle Tigray, Ethiopia.

Specific objectives

1. To analyze the current status of cereal markets.
2. To identify the main constraints of the cereal market.
3. To analyze the integration of Alamata, Maichew, Abi-Adi and Adigrat markets with that of Mekelle cereal market
4. To analyze the role of Tigray cooperatives in the output market.

1.4 Research questions

What does the structure and conduct of the Mekelle cereal market looks like?

What are the main constraints in the cereal market?

Is there integration between markets of Alamata, Maichew, Abyi-Adi &Adigrat with that of Mekelle?

What is the role of Tigray cooperatives in the out put market?

1.5 Scope and limitation of the study

Many researchers have applied the "structure-conduct-performance"(S-C-P) paradigm in studying the performance of a market. This paradigm is used as a guide line, to identify the different aspects of the problem in marketing (Lutz, 1994).

The study is limited only to Mekelle cereal market (which is chosen because of its center of marketing activities for the region) due to budget and time constraints and shortages. To conduct

the research the study has tried to solve the challenges as much as possible. The problems which were challenging are lack of proper secondary data, especially the record of the actual number of the cereal traders in the city both at the zone and wereda offices was difficult to obtain, limited literatures and earlier studies and problem of cooperation and involuntariness to fill and return the questionnaires and to give interviews. Therefore, though the study has tried to solve the challenges as much as possible and to address broad range of issues it does not mean it is exhaustively resolved so needs further additional research.

1.6 Significance of the study

Tigray has an agrarian economy and its major population depends on agriculture, so improvement of market and marketing is paramount. The policy of market economy and the strategy of ADLI, which is expected to increase productivity & production needs the improvements of market & marketing. So the study will have its own contribution towards increasing productivity and production by familiarizing policy makers and planners, which will have its impact on the lively hood of the majority of the people. The region is deficit area and has supply shortage that needs balancing it from other surplus regions that makes the improvement of market and marketing system more serious. In addition it is useful in identifying the problems and constraints of markets and marketing to be corrected for the smoothening of the system. Generally it will be useful to policy makers on their decisions on market and marketing improvements; to experts especially at lower levels, cooperative societies and for farther research purposes.

Chapter II: literature review

2.1. Theoretical concepts

2.1.1 Market and Marketing Concepts

The concept of exchange and relationships lead to the concept of market. Conceptually, however, a market can be visualized as a process in which ownership of goods is transferred from sellers to buyers who may be final consumers or intermediaries. Market is a place where goods and services are exchanged. Market consists of buyers and sellers with facilities to communicate with each other for transaction of goods and services (Subba et al, 2004).Therefore, markets involve sales locations, sellers, buyers, and transactions.

Markets for some commodities and countries have developed at a faster rate than for others, some of the reasons as stated in (Acharya,1998) are the nature of demand, the nature of products, transportation and communication facilities, quantum of supply and demand, public policies, banking facilities, peace and security, economic growth.

According to Acharya & Agarwal (2004), the growth of agricultural sector has a multiplier effect on the growth of the economy, via expansion in trade and services required to handle the agricultural surpluses and supply of essential farm inputs, but the development of markets play an important role in triggering the growth process. Thus, the rate of economic growth not only affects the market development but is also conditioned by it. It is possible to conclude that one of the main ways of improving the producer's productivity does not consist merely in improving the production methods. It is equally important to secure a reliable market, a suitable price, and a system by way of which a producer can market its produce, and at the same time receive the highest possible share of the price paid by the consumer for that produce.

2.1.2 Output market

The subject of output market is as old as civilization itself. Agricultural output market is a market, which consist the results of agricultural production process, that is, is disposed of on the market or to be disposed of on the market. Agricultural product means any commodity, raw or processed, that is marketed for consumption both for human or animal feed. Acharya and

Agarwal (2004) argued that, 'the importance of output marketing has become more conspicuous in the recent past with the increased marketable surplus of the crop and other agricultural commodities following the technological breakthrough.' Output marketing is nothing but the consumer satisfaction with the goods and service.

2.1.3 Understanding the market mechanism

At its core, the market mechanism is about obtaining returns to one's assets: exchange of goods (input and output), exchange of services (credit, storage, transport…) and exchange of labor and land. The market mechanism is about arbitrage: seeking opportunities to buy low and sell high, gaining profit. Arbitrage is the process of capturing extra profits by buying in one market and selling it in another market. The two aspects of arbitrage are:

1 Temporal arbitrage: it aims to reduce price difference between seasons by product storage, which is encouraged only when the price difference is higher than storage costs.

2 Spatial arbitrages: Its aim is to reduce price difference between regions to the level of transaction costs. This implies that the higher the level of transaction costs between the two markets the smaller the productivity that exchange will take place. Arbitrage and market integration are two highly linked but different notions, very often used as synonyms. Arbitrage is defined as the process of exchange between actors on a market with the objective of taking advantage of price differences that exceed transaction costs. As such the arbitrage process encompasses all aspects of the structure and performance of the market. But market integration signifies that different markets or market segments are linked as a result of the arbitrage process. However, the concept of market integration is more specific and requires that several features are achieved. Generally, market mechanism is about risk and speculation /acting on judgment about risk/.

2.1.4 Getting markets right

The fundamental market problem is not whether to free or to restrict markets but it is to understand how market functions, know what role different institutions and actors play and how to design, transfer, and maintain these institutions. Beyond market reform, in which it was mainly concerned about getting prices right, getting markets right involves: guidance of a "visible hand "rather than an invisible hand, defining the role of the public and the private sector

correctly, designing the right institutions and policies, fulfill needed infrastructures, and addressing what happens when markets have negative impact on those who are asset poor or vulnerable. Current farmers view "I would rather sell my grains to the average consumer than to the trader. At least I know the consumer is like me and we are both benefiting. No matter what, the trader will never stop being a thief. Never! I am a simple man, I can't measure kilograms, and the trader cheats me on the kilos all the time" (Adaa Liben farmer, October 2005, cited in Elleni 2005).

Getting markets right requires aligning incentives, institutions and infrastructures; transforming underlying institutions is both an external (state) and internal (private) role and requires the visible hands of the state (Elleni, 2005).

2.1.5 Characteristics of developed markets

A developed market is the sine qua non of any developing country; it should satisfy the objectives of marketing system for all the persons associated with marketing in the process of movement of produce from producer to the consumer (Yassin, 2008).

As to Acharya and Agarwal (2004), a good developed market should possess the following characteristics:

1. It should provide commodities which the consumers want and are ready to pay for
2. It should provide a wide variety of products to consumers so that they may easily choose for themselves but should not be so wide as to create confusion for them
3. No harmful products should be offered for sale in the market. Precautions should be taken to protect consumers.
4. The information on the presence of goods in the market and their merits should be available to all the prospective consumers
5. There should not be any sort of pressure on consumers to buy from a particular trader
6. The retailing service should be available in the market for small consumers.
7. Price should be fair and uniform for the products for all categories of consumers
8. There should not be any inefficiency or wastage in the market
9. The producer should be able to sell his surplus quickly and get a price which is consistent with the demand and supply situation.

Farmers' need above all is to have trust in the market system, secure reliable markets, and fair

price. However, markets in developing countries face many problems such as transportation, underdeveloped markets, inaccurate measurements, storage, packing and containers, price, credit, information. Over all the farmers in developing countries have a very slim bargaining power and are exploited by middlemen and private traders (Gordon and Kindness, 2001. Nevertheless, local companies and marketing organizations have no economic interest in providing market services to the remote rural areas, without such services; the majority of small farmers will not take risk of stepping up agricultural production beyond their own consumption (Gordon et al 2001). According to Biscoe and Ward (2005) the purpose of agricultural marketing cooperatives is to help producers improve the effectiveness and profitability of their own individual business. As cited in Gebru (2007), Galor also extended the competitive advantage of agricultural cooperative marketing in terms of saving expenses of the middlemen who benefit from the producers in various fields such as bad weight, very low price and loans at higher interest rates. Therefore the need of establishment and strengthening of cooperatives is unquestionable.

2.1.6 Cooperative

According to ICA (1995), cooperative is an autonomous association of persons; united voluntarily to meet their common economic, social and cultural needs through jointly owned and democratically controlled enterprises. This definition emphasizes that cooperative is independent of any organizations including government and it is not owned by any one other than the members. It is an association of persons, which includes members of people but also 'legal persons'. Members of cooperatives are voluntarily united, so that people should be free to join or leave the cooperative and it is designed to meet member's needs; an association set up primarily to meet the need of others is not a cooperative (Birchall, 2004).

2.1.7 Cooperative marketing

It is an extension of the principles of cooperatives in the field of marketing. It is a process of marketing through a cooperative association. It is the system by which a group of people or market gardeners join to carry on some or all the process involved in bringing goods from the producers to the consumers. Marketing cooperatives are set up in order to search markets and sell the surplus products of members and to buy necessary goods and services. According to

Biscoe and Ward (2005) the purpose of marketing cooperatives is to help producers improve the effectiveness and profitability of their own individual business. It is also extended to the competitive advantage in terms of saving expenses of the middlemen who benefit from producers. However, the performances of agricultural marketing cooperatives in most developing countries appear to be poor. According to Hyden quoted in Gebru (2007) many cooperatives in Tanzania were set up by local governments, the main argument was that cooperatives would minimize exploitation but the cooperatives were established without any feasibility study, and as a result they fall in to considerable dependence on external organizations, management problems, corruption and lack of skilled man power. Furthermore, in the case of Ethiopia, many evidences such as unfaithfulness of members, low price and delay of payments, inefficient management and corruption are the main reasons for the failure of many cooperatives (Gebru, 2007).

2.1.8 Structure-Conduct-Performance (S-C-P) paradigm

Many researchers have applied the "structure-conduct-performance"(S-C-P) paradigm in studying the performance of a market. This paradigm is used as a guide line, to identify the different aspects of the problem in marketing (Lutz, 1994). Three related levels are distinguished by the method (the structure of the market, the conduct of the market and the performance of the market). As a method for analysis the SCP paradigm postulates a causal relation, starting from the structure, which determines the conduct, and together determines the performance of the market (Bain, 1968).

A) Market structure

According to Bain (1968), it is the characteristics of the organization of a market, which seem to influence strategically the nature of the competition and pricing within the market. It also includes the manner of the operation of the markets (Acharya, 2004). The dimensions include: The number and size (concentration) of the buyers and sellers, the degree of ease or difficulty to entry and exit, (the barrier can be technological, capital, institutional, regulatory, policy, experience, knowledge and the like), and degree of the product homogeneity or differentiation. An understanding and knowledge of the market structure is essential for identifying the performance of a market, for it determines the market conduct then together with the conduct

determines the market performance.

According to Scott (1995), markets are classified as perfectly competitive; monopolistic; oligopoly /a market structure in which there are a few large firms, entry is difficult but possible and the produce can be homogenous or heterogonous but the firms are interdependent that is there is a reaction by other firms for every action taken by one firm/, monopoly or monopsony.

The economic theory prevails that the only market structure which assures efficiency in resource allocation is the perfectly competitive market structure, which possesses the following characteristics:

(a) There are many buyers and sellers in the market so that a single seller or a single buyer cannot influence the market price through changing its supply or demand. That means each economic agent acts as a price taker. There are no dominant market participants powerful enough to pressurize competitors or engage in unethical marketing practices.

(b) All sellers and buyers in the market have full information about the price, quantity, quality and the like.

(c) There is no open or concealed complicity (collusion) among market participants regarding pricing and other marketing decisions.

(d) There are no artificial restrictions that obstruct mobility of resources that is firms are free to enter to and exit from the market.

(e) There is free entrance of buyers and sellers to the market with no special treatment to particular groups or individuals, and

(f) There is a homogeneous product so that customers are indifferent between supplies offered by alternative channels. Hence any market that does not possess the above mentioned characteristics is considered as imperfect market.

According to Wolday and Elleni (2003), and Gebremeskel (1998), the market system should be evaluated in terms of the degree of concentration, entry barriers, degree of transparency and degree of product differentiation that influence the conduct.

B) Market Conduct

According to Meijer (1994), conduct is, “a pattern of behavior which enterprises follow in adopting or adjusting to the market in which they sell or buy”, to say it differently it is the

strategies of the actors operating in the market. There are criteria that describes firms conduct, these criteria includes whether:

1) There is free movement of prices, both up and downs
2) There is no unjustified price discrimination
3) There is no collusion among different firms on prices or other matters
4) Truthful product claims exists
5) Meaningful product differentiations exists on meaning full differences
6) Firms are not engaged in unfair trade practices

C) Market performance

Performance of a market is a reflection of the impact of both structure and conduct on the produce price, cost and the volume and quality of output (Cramers and Jensen, 1982). If the structure in the industry resembles monopoly rather than pure competition, then one expects poor market performance.

2.1.9 Evaluation criteria for market performance

The structure-conduct-performance model provides a way to evaluate the performance of a market. As a method for analysis the SCP paradigm postulates that the relationship exists between the three levels. One can imagine causal relations starting from the structure, which determine the conduct, and together determine the performance (technological progressiveness, growth orientation of marketing firms, efficiency of resource use, and product improvement and maximum market services at the least possible cost) of agricultural marketing system in developing countries (Meijer, 1994).

The way firms are organized in a market, (their structure) tells a great deal about how they make decisions (their conduct), which in turn influences the level of efficiency & fairness present in the market (their performance). Therefore, if society seeks to affect the efficiency & equity of its markets it must alter the structures. There is some evidence that markets with few suppliers operate less efficiently than markets with many suppliers and that having too few suppliers can result in higher prices for consumers and undue profits for producers. This implies that the best policy for society is to do every thing possible to insure that enough suppliers operate in each market to effectively compete against one another. When sufficient numbers of firms are present

in a market that is the structure, individual firms must respond to the market rather than trying to control it that is the conduct. This leads to more reasonable levels of prices & profits that is the performance. The result is more efficient market with higher levels of consumers' satisfaction & no undue profits enhancement that is excess profits on the part of producers or middle men.

Market performance can also be evaluated by analysis of costs and margins of marketing agents in different channels, and market integration. A commonly used measure of system performance is the marketing margin or price spread. Margin can be useful descriptive statistics if used to show how the consumer's food price is divided among participants at different levels of the marketing system (Getachew, 2002 as cited in Anteneh 2001).

The performance indicators are: the number of buyers and sellers, the concentration level, trends in real price levels over time, distribution of profit among actors, the level of spending on research and development, price decisions, productivity of the firm, cost minimization, integration of markets and the like.

2.1.10 Market integration

Two spatial differentiated markets for a homogenous commodity are integrated if the price difference between them does not exceed the transaction (transfer) cost of trading. The most important factors influencing extent of market integration include infrastructure (transaction cost) and marketing policy. Favorable infrastructure and transaction cost structure in liberalized marketing regime promote market integration, where as the reverse reduces the extent of market integration.

Testing framework for market integration involves such as price spread analysis, price correlation analysis and Co - integration analysis but for the present research the price spread analysis is chosen as a large body of empirical research in agricultural marketing addresses the issue of market integration, which is approached usually through testing for price transmission between trading markets.

Price spread analysis: Is the difference between commodity prices observed at different locations at similar periods. Markets with price spread less than or equal to transfer costs are supposed to be integrated other wise not (is uncompetitive market).

The formula for integration of markets is $(p_i - p_j) \leq T_{ij}$

Where p_i is commodity price at market i

P_j is commodity price at market j

T_{ij} is the transaction cost incurred in moving the commodity from one market to others.

2.1.11 Pricing

In the days of primitive trading, where large markets & price information sources, where not in existence, buyers and sellers were found to make a price determination on the spot. Buyers offered as low a price as possible and sellers demanded as high a price as possible. In view of this, Acharya and Agarwal (2004), ascertained that in rural marketing mostly, the final price was determined by negotiation but it is time consuming (Yassin, 2008). Minouti and Krishnamoorthy (2003), explained price as the motivating factor to produce more as follows: "The farmers would be motivated to increase yield only if they receive remunerative prices for their produce. There for, agricultural pricing is very important for growth and development of agriculture". They argue that agricultural price regulates market conditions such as supply and demand and quality of the products.

It also improves standardization and grading of agricultural products, transportation of these products and finally selling these products through various outlets to the consumers. Agricultural price policy exhibits a coordinated of all factors such as grading, standardization, purchasing and distribution measures.

In Ethiopia, even now, the objective of the sellers is to secure as high price as possible and that of the buyers is to purchase with as low price as possible. But in the free market economy, the market governs these two conflicting interests. The market determines the value of products based on the prevailing supply and demand conditions.

2.1.12 Standardization and grading

Standardization is the process of fixing certain norms that are established by customs, traditions or certain authority for a product. It involves determination of basic characteristic such as size, color, form, weight, shape, texture, acidity, quantity, quality and the like of a product on the basis of which the product can be divided into various groups (Minouti Krishnamoorthy, 2003).

According to Ramkishen (2005) grading is defined as "the process of dividing a quantity of the same kind of goods into uniform groups according to the standards of size, shape, color, texture, acidity, or other significant characteristics."

Historically, standards and grades have been viewed in the public realm. However, recently, in situations where public standards have been missing or inadequate private firms have been developing their own standards and grades to use as means of competition in differentiated markets to build reputation for quality and safety and to support brands. Increasingly, private grades and standards are being incorporated into meta-management system to ensure quality and safety at all levels of the chain and enforces and certifies the implementation of the process standards (Reardon and Farina, 2002 as cited in Yassin, 2008).

Standardization and grading are one of the marketing functions that facilitate the exchange by reducing time, cost, confusion and unfairness (mal practices).

2.1.13 Market information

According to Tousley (1968), "Market information is broadly defined as a communication or reception of knowledge or intelligence". It includes all the facts, estimates, options, and other information which affects the marketing of goods and services." It is one of the indicators of market performance, which ensure the smooth and efficient operation of the marketing system. Decisions about what to produce, when to market, where to market, with what price to sell and buy, whether to sell or to store, and the like, the produces can be facilitated by actual, adequate, and timely available market information. Therefore, knowledge of price trend, costs, demand, supply, and policy are all necessary to make wise marketing decisions. Acharya and agarwal, (2004), argue that market information is the lifeblood of a market. According to Yassin, (2008), a good information must meet; comprehensiveness, accuracy, relevance, confidentialness, trustworthiness, equal and easy accessibility and timeliness.

2.2 Empirical studies

During the emperor government participation in marketing was very limited, so the private traders had an influential role in handling the most products flowing to the primary, secondary and terminal markets (Lirenso 1987). Active government participation in grain marketing took place with the establishment of agricultural marketing corporation (AMC) in 1976 (Kebede 1976). AMC administered a highly distorted trade regime in which official prices were set below producer's cost where the magnitude of producer losses varied from 24% for wheat to 52% for tef (Amha, 1994). The March 1990 policy reform of the administration of Derg was

aimed at achieving a mixed economy based on wide private sector participation and great use of market mechanism to guide economic decisions. Accordingly, the results of some studies are:

The Derg reform actually removed the major bottle necks in agricultural marketing particularly in food grain marketing and eliminated quotas, fixing prices and the legal monopoly of the parastatals and reduced the number of check points (Amha, 2002).

The most comprehensive study, random of 4000 rural house holds and 220 wholesaler grain traders, drawn from all over the country conducted on grain markets by Gebremeskel at el, (1998) finds that at national level, grain wholesale trade seems to be dominated by a small percentage of merchants that is the largest 10 traders command about 43% of the volume traded at wholesale level. While the degree of inequality in market share at the local market level varies from market to market and from crop to crop; the computed Four-firm Concentration Ratio (CR4), however, of most markets and crops the CR4 is less than 33% specifically it is 8 %, 7.84%, and 20.35% for tef, sorghum and all grains, respectively. Farmers normally bring their marketable grain to markets that are 5 to 20 km away from their villages and about 79% of their annual grain sales occur immediately after the harvest when they need cash to purchase food, cover wedding expenses, repay outstanding loans, and pay tax. Generally, farmers and merchants do not have access to high-quality market information upon which they base their marketing decisions. The information that farmers get in particular does not assist them in deciding what and how much crops to plant. There is practically no market extension service in the present system that guides farmers in their production, storage and marketing decisions.

The study of Wolday (1994), on the food grain market of Shashemene market indicated that from the total volume purchased, four of the first four big traders (CR4) had 35% market share. In both cases the result indicated a weak oligopoly.

The study of Asfaw and Jane (1997), shows that the effect of the reform is that the prices of cereals increased in the surplus areas by 12-48% and deficit areas decreased by 6-36%, and the price volatility of wholesalers has declined, which has direct impact in food security. In addition according to Jane, Neggasa and Myers (1998) as cited in Eleni (2001), the result of monthly price data of 8 markets over 9 years, 1987-1996 reviews that average real prices of grain increased in all cases by 16-46% for the surplus regions and decreased in 4 out of 6 cases by 12-15% in deficit regions.

Bekele and Mulat (1995), analyzed market integration of rural markets in Arsi zone and the

result indicates that food grain marketing efficiency need to be improved through a combination of several policy measures which include improving infrastructure particularly rural roads, rural intermediaries and re-evaluation of price stabilization scheme of the government. Wolday (1994), analyzed the marketing system in southern Ethiopia using the industrial organization model and focusing on maize and tef. The study was based on a sample survey of 33 wholesalers, retailers, and farmer-traders. The result concluded that the private grain trade has become competitive and more efficient and grain markets at local and national level has become more integrated following the deregulation of the market. The finding of the new study also shows that the cereal markets around Mekelle are integrated with that of the Mekelle cereal markets.

The study conducted by (Alemayehu, 1993) in Chilalo, Ada, and Addis Ababa aimed at analyzing the impact of deregulation on grain market participants and on the economic performance of the marketing system. It analyzed market structure and performance partly based on primary data sources including a sample survey of 141 farm households, 17 traders engaged in petty trade, assembling, wholesaling, and retailing in the study areas; 10 brokers operating in Addis Ababa, and several other traders from different parts of the country. The study showed that market margins generally declined after deregulation of the grain markets and return to trade were normal compare with the expected and much lower compared with the risk of transporting the grain over space and storing grain over time. A rapid market appraisal was also conducted by KUAWAB Business Consultants in 1994, covering 9 crops and 31 important markets in 13 regions, and it collected data from non-randomly selected farmers, traders, and institutions in both grain surplus and deficit areas of the country. The result is that, although varies from place to place generally appears to be more competitive. It shows also that the return to transport and storage were carried at reasonable efficiency.

According to Yassin (2008), study 92% of the respondents confirm that their products are not graded properly and all of them grade their products by themselves using traditional methods. The positive attitude towards the need of grading is only 3%; in addition 55.7% said that they have never faced problems due to grading. Price is set that is 46.7% by consumers, 28.3% by buyers, 20.3% by merchants and 4.7% by brokers. The source of information is personal observation (that is 57%, which is largely influenced by individual ability and subject to bias) followed by relatives (31%), media only (11.7%), and others (0.3%). Therefore, one of the

marketing functions information is at its infant stage (Yassin, 2008).

In addition research results of Anthony (1999), Caswell, (1997) and Hayami,(2006), as cited in Yassin (2008), shows that adequate and accurate information is critical for correct decision making and planning, it also stimulates private investment , promote competitions and reduced costs. In addition, the research of Pranab (1971) indicates that for designing a suitable price policy needs information about the likely price response of marketed surplus of produces.

As Yassin (2008), there is low price for the products lack of marketing institutions safeguarding farmers' interest and rights over their marketable produces (e.g. cooperatives)

As Minouti and Krishnamoorthy (2003) explained selling the farmers produce and buying different inputs through cooperatives can change the disadvantageous situation that arises from the disorganized nature of individual people. Cooperatives are one of the main components in the channel of distribution because most of the households have few crops often grown for consumption and market so needs assembling, packaging, grading and the like by cooperatives. But according to Yassin (2008), the cooperatives are not performing to the level of expectation in the marketing system. Hence, it is obvious that the market is suffering from the absence of properly functioning marketing channels. Consequently, both producers and consumers are victims of such inefficient market performance.

According to KUAWAB business consultants the main constraints identified are;

Farmers' problem

1) Lack of ability to increase production due to inadequate supply of improved seeds and fertilizers.

2) Lack of access to credit

3) Fragmented land holdings, mainly in the central and northern of the country

4) Inaccuracy in weight and measures during marketing

5) Lack of access to information

6) Lack of proper storage

7) Lack of fumigation facilities

8) Assemblers predominantly determine the market price and take the lion's share of the profit margins

Traders' problem

1) Arbitrary taxation

2) Lack of collateral to have access to credit

3) Lack of access to land on which to build stores

4) Lack of access to storage and office facilities for new entrants

5) Infrastructural problems such as proper market place, all weather roads

6) Lack of adequate provision of space for participants

7) Wholesalers and brokers influence prices and take the lion’s share of profit margins. Consumers’ problem

1) High price because of high transport cost and cost of brokers

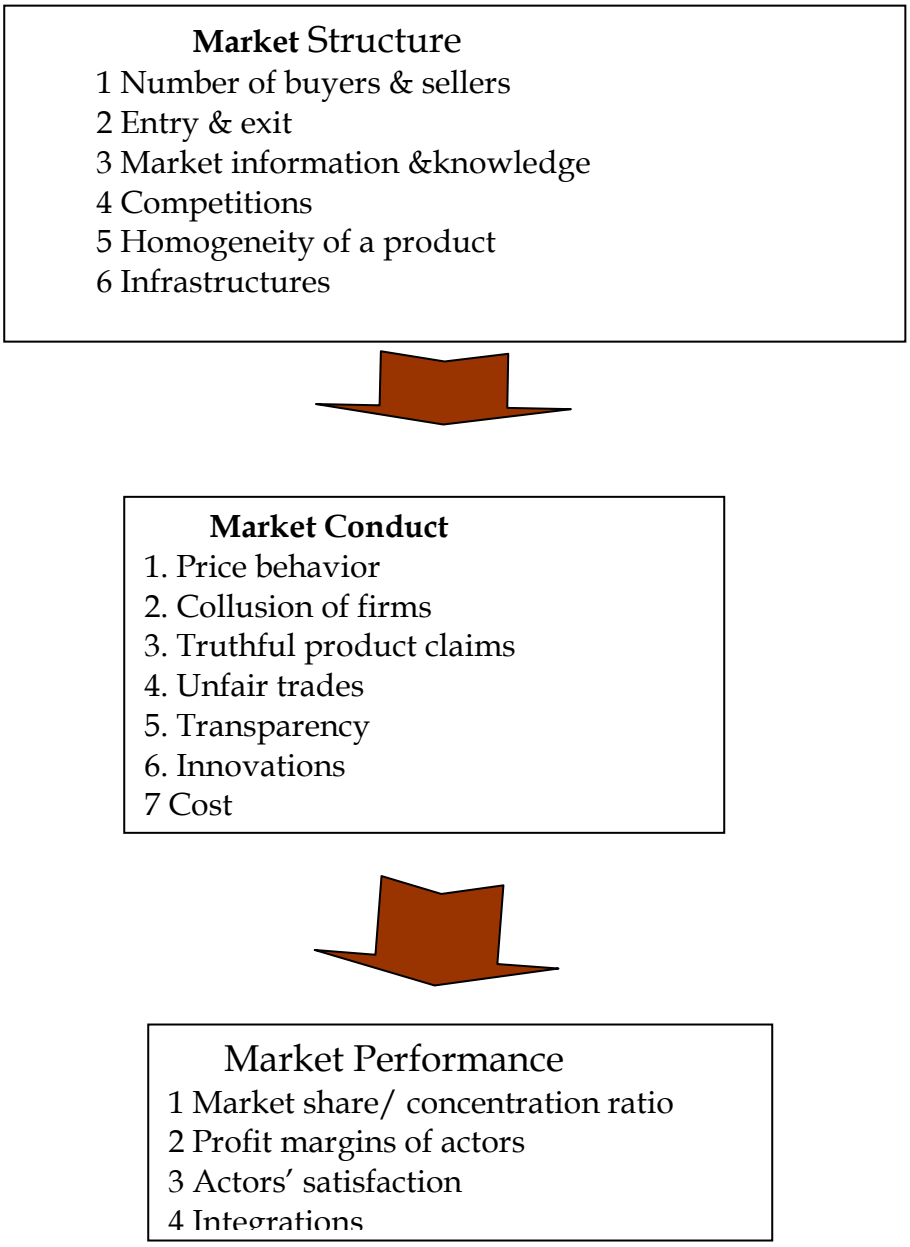
2) Poor qualities due to adulteration, improper handling and storage system

3) Absences of formal standardization and grading

The major constraints of marketing in general include lack of markets to absorb the production, low price for the products, large number of middlemen in the marketing system, lack of marketing institutions safeguarding farmers' interest and rights over their marketable produces (e.g. cooperatives), lack of coordination among producers to increase their bargaining power, poor product handling and packaging, imperfect pricing system, lack of transparency and market information system. There is lack of standard for quality control and hence lack of discriminatory pricing system that accounts for quality and grades of the products.

2.3 Conceptual Framework

Figure 1: Conceptual Framework



Chapter III: Research Design and Methodology

3.1. Description of the study area

3.1.1 Geographic location and population of the region (Tigray)

Tigray, one of the regional federal state of the country, is located north at 12^0 15'N latitude and 36027'E $39^0$51'E longitude and neighbored by Eritrea, the Sudan, Afar region, and Amhara region in the north, west, East and south, respectively. The region has seven administrative zones and divided into 34 rural and 12 urban Woredas (district). The regions' total area is estimated to be 53,623 square kilometers out of which 18.87 percent is cultivable (BOFED 2006). The population of Tigray is 4,314,456; the sex composition is almost equal (CSA, 2008). Agro ecologic zone of the region includes lowland, mid-highland and highland; the average temperature and rain fall is between 15-27.5 ^{0}c and 450-980mm, respectively. Agriculture is the dominant economy, which contributes 57% of GDP that is about 36% from crop, 17% from livestock and 4% from forestry (BOFED 2004). Although, there are improvements following the reform in terms of competition and efficiency, still markets are inefficient (Weldehans, 2000).

Since 1991, there has been a significant improvement in the provision of social service and access to infrastructure although still fall far below the level needed to bring meaningful rural development, (Gebremedhine, 2004 as cited in Antenh, 2009). There has been a remarkable improvement in access to education, transport, credit and extension services compared to pre-1991 situation. Credit institutions like Dedbit credit and saving, multipurpose cooperatives, saving & credit cooperatives, and different NGOs are trying to provided credit for households in the region. The low rate of utilization indicates the need for critical investigation of demand side problem. Three extension agents with a background of agriculture are assigned in each Tabia (sub district) but they lack knowledge of market extension, and only about 11% households had a direct contact with extension agents seeking for advice, (Gebremedhine 2004 as cited in Anteneh, 2009).

This study focuses on the performance of cereal Mekelle market. Mekelle is selected because it is the biggest and center of marketing of the region.

3.1.2 Mekelle zone

Mekelle, the capital city of Tigray is established in 1872 by Emperor Yohanns the 4^{th} as a capital of the country. It is located at 13^{o} &32$^{'}$ north and 39^{o} &28$^{'}$ east from 2150-2300 meters above sea levels with an area of flat and rolling of 19200 hectares. According to CSA (2008), the population of Mekelle is 215,546 (104758 male and 110,788 female) with 40% of its residences below poverty line and with unemployment rate of 13.1%. It has an average temperature of 24.1^{o}c and annual rainfall of 618.3 millimeter, the administration is sub divided into 7 local administrations (BOFED Mekelle zone, 2008).

According to the statistical journal of the finance & economic development of Mekelle zone of 2000 E.cal the city has a total of 20,441 licensed traders and a total of 473 different cooperatives, which have 16832 members and capital of birr 887,760. The total investment is around 792 projects with a capital of birr 8,624,991,176 but the share of agriculture is very low that is only 64 projects with capital of birr 267,973,060. The zone encompasses 9 rural villages with 600 household heads & 2,163 hectares, which their lively hood is based on agriculture.

The city has 5 agricultural output market places, 11 banks (3 states and 8 private), 9 insurance (1 state & 8 private) and 1private micro finance. It has a total road length of 270 km, (45 km asphalt, 109km gravel, 7km cobblestone, 109km unclassified and earthen road) which makes the road density 1.63km/1000population or 1.77 km/km^2, 91% & 55.5% of the urban dweller house holds are electrified & access to water supply, 17 health institutions, 124 schools (41 governments & 83 private), 5 post branches and 160,320 fixed and 41,837 mobiles.

Figure 2: Administration Map of Mekelle City

3.2 Methodology of the Research

3.2.1 Methodology Used

This particular research, cereal market performance is undertaken in Mekelle city. It uses both quantitative and qualitative methods since it provides the advantage of overcoming the limitations associated with them. According to Kumar (2005), the difference between them is that qualitative method generates information which can be best described as narratives and may provide more in depth information for explanation, whereas, the quantitative method of research generates numerical data and figurative evidences that can be generalized across the population.

3.2.2 Source and Gathering Tools of Data

The study uses both primary and secondary data to gather relevant information. The primary data is collected from the sample respondents that are traders, farmers and consumers through interview and experts through questionnaire. The open and closed ended methods of collecting information instruments are found to be better for market performance data collection; hence the researcher uses both open and close ended methods of data collection. The interview schedule has been translated to the local language that is Tigrigna to make communication easy. The data collection is held using 12 enumerators and the researcher.

Secondary data has been collected also from government reports, records, and journals. In order to supplement the primary and secondary data, focus group discussion was held..

3.2.3. Sample Size and Method of Sampling

Mekelle cereal market is purposive selected because it is the largest market and the central marketing activities in the region. For this study, the populations are traders, farmers, consumers and experts.

As Cooper and schindler (2001), stated that the sample size, which is even slightly greater than 30, is considered large enough to draw statistical inferences about a population, therefore, the sample size is 50 traders, 50 consumers, 100 farmers (50 from the market places and 50 from the 5 weredas of the southern zone) and 25 experts at wereda, zonal and regional levels, therefore the sample size is a total of 225. The sampling method is as follows.

The 50 sample respondents of traders are chosen by the simple random sampling method randomly from all the 5 local cereal markets in the city that is 100% representation based on the probability proportion to size (PPS). The interview is held on 4 consecutive market days at, before & after peak periods, to make the data fair.

Because there is no list of consumers coming to the market, the 50 sample respondents of consumers are chosen by the systematic random sampling method that is one in every tenth of the consumers coming to the market before the peak period, at the peak period & after the peak period for consecutive 4 market days, from all the 5 local cereal markets that is 100% representation.

The 100 sample respondents of the cereal farmers are taken by systematic random sampling method that is 50 farmer respondents from the weredas Alaje, Endamehoni, Ofla, Raya Azebo

and Alamata by systematic random sampling method 10 from each wereda from one tabia (sub district), this is because the population is assumed to be homogeneous and the other 50 respondents from the 5 markets 10 each by convenience using the same method explain above for consumers.

The 25 respondent experts are 3 from each selected weredas, 4 from Mekelle zone and 6 from the region in different bureaus assigned as marketing expert.

Table 1: Sample Size of the trader respondents

Name of the cereal markets	Traders	
	No of traders	Samples taken by PPS
1. Edaga Seni	61	15
2 Edaga Kebele 17	58	14
3. Edaga Adi Haki	45	11
4. Edaga Adi Hawsi	34	8
5. Edaga Kedam	8	2
Total	206	50

Source: Own computation

3.2.4. Method of Data Analysis

To analyze the collected data and answer the research questions both quantitative and qualitative statistics are used, but more descriptive statistics methods such as percentages, means, standard deviations, the measures of the structure conduct performance (S-C-P) model, such as: concentration ratio, market integration, marketing margin, farmers share, and the like are used. In addition correlation and multiple regressions analysis is employed using the SPSS software version 16 to analyze the influence of the independent variables on the dependent variable that is profit per quintal.

1) Concentration ratio (CR)

It is computed using the 4 major sellers in the 3 years that is from 1999 to 2001 E.cal.

$$C = \sum_{i=1}^{m} S_i \qquad i = 1,2,\ldots..,m$$

Where C represents concentration ratio

Si represents market share of i^{th} largest firms in this research and

m is number of largest firms for which the ratio is computed.

The statistical package for social science (SPSS) software program version 16 is used to compute the statistics such as multiple regression model and correlation analyses.

2) Market integration

Testing framework for market integration involves such as price spread analysis, Price correlation analysis and Co integration analysis but for the present research the price spread analysis is chosen as a large body of empirical research in agricultural marketing addresses the issue of market integration, which is approached usually through testing for price transmission between trading markets (Elleni, 2001).

Two spatial differentiated markets for a homogenous commodity are integrated if the price differential between them does not exceed the transaction (transfer) cost of trading.

That is $(pi-pj) \leq Tij$

Where pi is commodity price at market i

Pj is commodity price at market j

Tij is the transaction cost incurred in moving the commodity.

3) Marketing margin, profit and farmers share is computed as follows:

Computing the total gross marketing margin (TGMM) is always related to the final price paid by the end buyer and is expressed as percentage (Mendoza, 1995).

TGMM = (End buyer price - first seller price / End buyer price) X100

The producer's margin is calculated as:

PGMM = 100 % - TGMM

Where, PGMM is the producer's share in consumer price

4) Price trend analyses

The price trend analysis is done across 4 crops of Mekelle market and across markets of 3 crops using the price data from November 2004 to November 2009 and from May 2006 to November 2009 (due to data unavailability) for across crops and across markets, respectively. And lastly correlation and multiple linear regressions are employed using SPSS software version 16.

3.6 operational definitions of variables

The dependent variable

Market performance: It is one of the elements in the evaluation of how markets operate as part of the structure-conduct-performance model. The structure of a market that is the number of buyers and sellers can lead to various forms of behaviors (conduct) that can lead to higher prices and profits that is the economic performance. It is the impact of structure and conduct on product prices, costs, and the volume and quality of output. If the market structure resembles monopoly (one seller, few substitute products and barrier to entry) rather than pure competition, then one can expect poor market performance.

Independent variables

1 Education (X1)

Education of the household head is defined as the number of years one has completed formal school at the time of interview. It is a continuous variable measured in years and is assumed to have positive influence to market performance.

2 Competitions (X2)

It is the achievement of consumer satisfaction better than other similar firms both in price and product. It is the system of over throwing competing firms. It is a dummy variable taking a value of 1 if there is free competition and 2 if no in the market and is expected to have positive influence to the market performance.

3 Homogeneity of a product (X3)

It is the similarity of products in content, quality, form & characteristics. It is a dummy variable taking a value of 1 if there is homogeneity and 2 if no similarity and is expected to have positive influence.

4 Integrations (X 4)

It is the degree of interconnectedness/ moving together/ of different markets. It is a continuous variable and measured by the difference of price of similar products in different markets comparing with the cost of birr of transaction cost and it is assumed to have positive influence.

5 Number of firms in the market (X5).

It is the number of participant of buyers and sellers in the exchange of the market at a specific particular time. It is a discrete variable taking a value of 1 if the number of the actors is increasing and 2 if not and it is assumed to have positive influence in the system.

6 Cost (X6)

It is the purchasing price of different inputs for the purpose of production and marketing. It is a continuous variable measured in birr and it is expected to have negative influence.

7 Price (X7)

It is the value of the product on monetary basis on a specific period of time. It is a continuous variable measured in birr and the high price is assumed to have negative influence to market performance.

8 Profit margins (X8).

It is the difference between selling price and cost of different actors. It is a continuous variable measured in percentage and the high profit margin is assumed to have negative impact to the market performance.

9 Barriers to entry (X9)

It is the preventing of firms to enter to the market purposely or by indirectly. It is a dummy variable taking a value of 1 if there is and 2 otherwise and it is assumed to have negative impact to the market performance.

10 Barriers to exit (X10)

It is the preventing of firms to exit from the market purposely or by indirect mechanisms. It is a dummy variable taking a value of 1 if there is and 2 otherwise and it is assumed to have negative impact to the market performance.

11 Truthful product claims (X11).

It is the demanding of actors to a product based on the actual value or importance of a product. It is a dummy variable taking a value of 1 if there is a rational claim and 2 otherwise and it is expected to have positive impact to the market performance.

12 Collusions (X12)

It is the illegal unity of firms to control a market. It is a dummy variable taking a value of 1 if there is and 2 otherwise and it is assumed to have negative impact to the market performance.

13 Market power/concentration ratios (X13).

It is the degree of individual firm's controlling position on the market. It is the proportion of total sales in a market accounted for by the sales of the largest 4 to 8 firms. It is a continuous variable measured in percentages and the high concentration ratio is expected to have negative impact to the market performance.

14 Unfair trade practices (X14).

It is the mal practices done in the market process. It is a dummy variable taking a value of 1 if there is and 2 otherwise and is assumed to have negative impact to the market performance.

15 Infrastructures (X15).

Are the supporting physical things/materials/ to the market system. They are dummy variables taking a value of 1 if there are and 2 otherwise and it is assumed to have positive influences to the market performance.

16 Market information (X16)

It is one function of marketing, which deals with the supply of current and reliable price, quantity demanded, quantity produced, quality demanded and other necessary data. This is a dummy variable taking a value of 1 if there is access and 2 otherwise. It is expected that market information is positively related to market performance. Marketing decisions are based on market information. If there is information asymmetry there will not be competitive markets.

17 Investments (X17).

It is the amount of resources allocated in research & developments. This is a dummy variable taking a value of 1 if there is allocation to investment and 2 otherwise. It is assumed that investment on research & development is positively related to market performance.

18 Consumer satisfactions (X18)

It is the fulfillment of both needs & wants of the consumers on products. It is a dummy variable taking a value of 1 if there is satisfaction of consumers and 2 otherwise. The existence of satisfaction is expected to have a positive relation.

19 Innovations (X19).

It is the new way of doing some thing successfully in practice. It is a dummy variable taking a value of 1 if there is an innovation and 2 otherwise and it is assumed to have positive impact to the market performance.

CHAPTER IV: RESULTS AND DISCUSSION

4.0 Introduction

This chapter analyzes the results and discussions of the sample farmers, consumers, traders, experts and secondary data about the socio- economic characteristics of the respondents, market structure, conduct and performance, role of cooperatives in the output market and major marketing constrains of the cereal markets in Mekelle. The analysis involves both qualitative and quantitative data analysis techniques.

4.1 Socio-economic Characteristics:

In this part socio economic characteristic of farmers, consumers and traders are discussed. The analysis is carried out item by item. The responses of the traders, farmers and consumers are explained using percentages (%).

4.1.1 Age Structure

Table 2: Age of the respondents

Market actors	Age group of the respondent									
	≤30		31 - 45		46 - 60		>60		total	
	no	%	no	%	no	%	no	%	no	%
traders	1	2	16	32	25	50	8	16	50	100
consumers	7	14	20	40	23	46	-	-	50	100
farmers	25	25	39	39	27	27	9	9	100	100
total	33	16.5	75	37.5	75	37.5	17	8.5	200	100

Source: own computation

Table 2 shows that, the highest age groups of the actors are within the age groups from 31-45 that is 37.5 per cent and from 46-60, which is again 37.5 % generally 75 % are within these age groups (31-60). To look the actors separately, 86 % of consumers, 82 % of traders and 66% of farmers are with in these groups (from 31 to 60 years). The other two age groups, those under the age of 30 and above 60 years are low that is 16.5% and 8.5% for below 30 age groups and

above 60 age groups respectively. We can observe also that the percentage of above 60 years old in traders is high (16 percent) when compared with the other actors, which has negative impact on the market performance since most of them are illiterate and their marketing system is generally traditional.

4.1.2 Sex composition

Table3: Sex of the household head respondents

	Female		Male		total
	no	Percent	no	Percent	
traders	18	36	32	64	50
consumers	19	38	31	62	50
Farmers	33	33	67	67	100
total	70	35	130	65	200

Source: own computation

As we can see from table 3 the average sex composition of female is 35 % this is a bit higher than the average of the region, this is because the representation of females when compared to male in the market place is higher.

4.1.3 Education Status

Table 4: Educational status of the respondents

	Educational status of the household head respondents											
	Illiterate		Read and Write		1 - 4		5- 8		9-10		Certificate & above	
	no	%	no	%	no	%	no	%	no	%	no	%
Traders	7	14	9	18	10	20	13	26	9	18	2	4
consumer	9	18	14	28	8	16	11	22	5	10	3	6
Farmers	25	25	32	32	20	20	13	13	7	7	3	3
Total	41	20.5	55	27.5	38	19	37	18.5	21	10.5	8	4

Source: own computation

Table 4 indicates that 20.5 per cent of the total respondents are illiterate, and majority of the

literate that is 27.5% are read and write only. We can observe that certificate and above are very few that is only 4%. We can see that also the percentage of illiterate is higher in farmers, which may have negative influence in production and marketing activities.

4.1.4 Marital status

Table5: Marital status of the respondents

	Marital status of the respondent								
	Married		Single		Divorce		Widowed		
	no	%	no	%	no	%	no	%	total
traders	33	66	1	2	14	28	2	4	50
consumers	29	58	6	12	13	26	2	4	50
Farmers	61	61	8	8	24	24	7	7	100
Total	123	61.5	15	7.5	51	25.5	11	5.5	200

Source: own computation

Table 5 shows that the majority of the sample respondents (61.5 per cent) are married and 25.5 % are divorced, which has its implication on social affairs. The marital status of single and widowed is few (7.5 and 5.5 per cent respectively).

4.1.5. Family size

Table 6: Average family size of household head respondents

	Traders	Consumers	Farmers	Total
Family size	5.02	4.56	5.17	4.99

Source: own computation

As it can be observed from table 6, the average family size is about 4.99, which is a bit higher with that of the 4.6 Tigray average family sizes (CSA, 2008). This may be due to the time gape of the studies or data imperfection. The family size of consumer respondents is lower than that of the other respondents; this is because the participation of single and young consumers in the market area is comparably high.

4.1.6 Economic activities

Table7: Input usage and extension services of farmers

activities	Yes	percent	No	percent
1 fertilizer usage	62	62	38	38
2 improved seed usage	22	22	78	78
3 production extension	74	74	26	26
4 market extension service	10	10	90	90

Source: own computation

Table 8: Credit need, access and sources

Items	Traders		Farmers	
	N	%	N	%
1 Do you need credit?	24	48	91	91
2 Do you have access?	18	75	89	89
3 Source of the credit				
Government	6	33.4	-	-
Private institutions /micro finance	8	44.5	67	75.3
Family	2	11	3	3.4
Traders	1	5.5	2	2.2
Cooperatives	-	-	12	13.5
Others	1	5.5	5	5.6

Source: own computation

We can see from tables 7 and 8 that the average input usage is low and the improved seed usage is even worst, which will have negative impact in the productivity, production and supply. The table 7 shows also that the production related extension service is better (74%), which is similar to Ayalew (2009), which is 72% while the marketing related extension service is almost none that is only 10%. Table 8 shows that credit access (89%) is not a major problem, but it is higher than of Ayalew (2009), which is 70%, this may be because of the improvement of the supply of credit or the wereda differences. Table 8 also illustrates that the major source of credit is micro finance, which is 69% followed by cooperatives that is 12%. In addition table 8 indicates that the need of credit of farmers (91%) is much higher than traders (48%) this shows that capital shortage is more serious in farmers. So needs attention.

4.2. Market structure, Conduct and Performance Paradigm of Cereal Markets

In this part market structure, conduct and performance of Mekelle cereal markets are discussed. Many researchers have applied the "structure-conduct-performance"(S-C-P) paradigm in studying the performance of a market.

The paradigm is used as a guide line to identify the different aspects of the problem in marketing (lutz, 1994). As a method for analysis the SCP paradigm postulates that a causal relation, starting from the structure, which determines the conduct, then together determines the performance of the market (Bain, 1968).

4.2.1 Market Structure

Market structure is about the number of buyers and sellers, the degree of product differentiation, and the ease of entry of new firms into an industry (Branson and Norvell, 1983). According to Clodius & Mueller (1961) it is the characteristics of the organization, which seem to influence strategically the nature of the competition and pricing. According to Gebremeskel et.al. (1998), Wolday and Eleni (2003) and Pender et. al. (2004), the market system should be evaluated with; the market concentration ratio/ the number of participants and their size distribution/, the relative ease or difficulty for market participants to enter or exit from the market, / Barrier to entry such as license procedures, capital shortage, know how shortage, policy and the degree of transparency/ and the like.

Table 9: Structure related questions

The questions	Traders		Consumers		Farmers		Total	
	yes	%	yes	%	yes	%	yes	%
1. Barriers to entry	15	30	11	22	22	22	48	24
2. Barriers to exit	4	8	5	10	17	17	26	13
3. Is the number of traders increasing?	44	88	40	80	77	77	161	80.5
4.Are there dominant traders ?	14	28	16	32	10	10	39	19.5
5.Is there homogeneity of cereals?	15	30	20	40	65	65	100	50
6.Access to all weather roads	34	68	-	-	20	20	54	36
7. Transport problem	17	34	-	-	40	40	58	38.6
8. Is there supply problem?	17	34	16	32	30	30	62	31
9. Is there demand problem?	15	30	30	60	15	15	60	30
10. Is there perfect information flow?	31	62	20	40	15	15	66	33
11.Willingness to pay for information	28	56	-	-	25	25	53	35.3
12. Is there truthful product claim	32	64	28	56	40	40	95	47.5
13.Demand and supply base marketing	30	60	24	48	54	54	108	54

Source: own computation

Table 9 predicts that the demand and supply problems in average are 30% & 31%, respectively, which shows that the supply problem is greater than the demand problem even though it varies according to the actors that is demand problem is 60%, 30% and 15% and supply problem is 32%, 34% and 30% for consumers, traders and farmers, respectively. The result illustrates also that demand is serious problem of consumers followed by traders but the supply problem is almost similar to all the actors.

Table10: How many cereal traders are there?

	traders		consumers		farmers		total	
	No	%	No	%	No	%	No	%
too many	4	8	8	16	6	6	22	11
Many	19	38	27	54	43	43	96	48
Average	27	54	15	30	42	42	73	36.5
Few	-	-	-	-	9	9	9	4.5
Total	50	100	50	100	100	100	200	100

Source: own computation

Tables 9 and 10, indicates that there are no barriers to entry and exit, there are many traders and their number is increasing, no major domination of few traders, and there is a truthful product claim which influences the conduct positively but there are also infrastructural problems, information asymmetry, problems of transparency, supply and demand problems, homogeneity problems and lack of standards and grades, which influences the market performance negatively. Therefore, it can be concluded that the market is not perfect competitive because of the information asymmetry, lack of standards and grades, problem of transparency demand and supply problems.

4.2.1.1 Market structure results using the S-C-P paradigm method

4.2.1.1.1 Degree of market concentration

The most commonly used method of evaluation is the market concentration index, which measures the percent of traded volume accounted for by a given number of sellers. Degree of market concentration is usually used to show the extent of market control of the largest 4 to 8 firms in the market and to illustrate the degree to which the market is competitive. The researcher has used the 4 largest firm methods, following Gebermeskel at el. (1998). The concentration ratio is calculated by taking 3 years average annual sales that is from 1999-2001 Ethiopian calendar of the sample traders'. High concentration leads to monopolistic behavior which leads to high mark up and abnormal (excess) profits.

Table 11: The four firm concentration ratio

Cereals	CR4
Wheat	22.31 % ,so competitive
Tef	19.12 % so, competitive
Sorghum	20.3 %,so competitive
Others	16.73 % so, competitive
All cereals	13.9%,so competitive

Source: own computation

Applying the market structure criteria suggested by Kohls and Uhl (1985), which states that a concentration ratio less than or equal to 33 % is generally indicative of competitive market structure, 33-50% weak oligopoly and greater than 50% strong oligopoly, Mekelle cereal market is not concentrated, in other word it is competitive market or very weak oligopoly market. The result of this new research is a bit lower that of Ayalew (2009) findings that is CR of 32.9%, 31.02% and 31.94% for wheat, tef and all cereals respectively and higher from than that of Gebremeskel (1998) findings that is CR of tef 8%, for sorghum 7.84% all grains 20.35%. The reasons may be the increase of number of traders or the variation of data given to different researchers.

4.2.1.1.2 Degree of market information and transparency

Transparency can be evaluated using perfect information flow, sources of information, proper standards and grades, measuring tools accuracy, unfair practices and the like. Therefore, here it is discussed about the variables flow of information, source of information, willingness to pay for information, standards and grades, and measurement accuracy.

Table12: Degree of market information and transparency

	Traders		Farmers		Consumers	
	No	%	No	%	No	%
1 Perfect information flow- Yes answers	31	62	20	40	15	15
2 sources of market information						
Traders	14	28	7	7	9	18
Friends and family	9	18	25	25	12	24
Brokers	9	18	-	-	-	-
Government office	2	4	12	12	10	20
Self observation	13	26	26	26	10	20
Media	3	6	16	16	5	10
Farmers	0	0	14	14	4	8
3 use of Standard and grades, yes answers	19	38	33	33	12	24
4 Measurements accuracy, yes answers	35	70	37	37	22	44
5 Willingness to pay for information	28	56	25	25	-	-
6 Do you know prices in advance	35	70	23	23	15	30

Source: own computation

Table 12 shows that only 33% of the actors (62%, 40%, and 15% of respondent traders, consumers and farmers respectively) answers positively to the question of perfect information flow. The different responses of the actors show that there is information asymmetry among the actors, which makes farmers and consumers to be disadvantageous.

The new finding of information access of farmers (15%) is lower than that of Ayalew (2009),

result of timely and accurate information access of farmers (42%) the reasons may be because of the source of respondent differences that is the former study uses only one wereda while the new research uses 5 additional weredas. The study also finds that the majority source of information of farmers is the actors' personal observations (26%), which is lower Yassin (2008), findings, which says that farmers are highly dependent on their personal observation (57%). In addition, the willingness to pay for information is 56% and 25 % of traders and farmers, respectively; the result of the traders' willingness to pay is lower than Ayalew (2009), finding, which is 90% this may be due to the access improvement, the former study includes Quiha trades while the latter doesn't and data inaccuracy. In addition the study shows that there is absence of proper use of standards and grades, unfair trade practices and the inaccuracy of tools used in the exchange, which affect the market performance negatively. Generally, the study shows that there is transparency problem in the market, which implies that the market is not perfect.

4.2.1.1.3 Barrier to entry to and exit from the markets

Barrier to entry such as license, capital shortage, know how shortage, policy and the degree of transparency are discussed.

Table13: Amount of the cereal traders

	Traders		Consumers		Farmers		Total	
	No	%	No	%	No	%	No	%
too many	8	16	8	16	6	6	22	11
Many	26	52	27	54	43	43	96	48
Average	16	32	15	30	42	42	73	36.5
Few	-	-	-	-	9	9	9	4.5
Total	50	100	50	100	100	100	200	100

Source: own computation

As table 13 reveals, the answer to the question to the amount of cereal traders in the city is 48% many and 36.5% average and the answer to the questions is there any barriers to entry and exit from the cereal market (Table 9) also pinpoints that 76% and 87% no barrier to entry and exit, respectively. The numbers of cereal traders in the city are currently about 206 and 80.5%

respondents confirm that the number of the cereal traders is increasing. Therefore, this shows that there are no much entry and exit problems in the cereal markets, taking the number of buyers & sellers. The results are almost similar to the findings of Elleni (2001, Asfaw and Layne (1998); Gebremeskel,et al. (1998), and Ayalew, (2009), which pointed out that the evidence of entry to show the presence of increased competitiveness.

Table14: Experience and know how of actors

Variables		The market actor			
		Traders		Farmers	
		No	%	No	%
1 For how long have you been in this business?	Less than 6	1	2	0	0
	6 up to 10	10	20	8	8
	11 up to 20	25	50	30	30
	Above 20	14	28	62	62
	Total	50	100	100	100
2 Do you have knowledge problem?	Yes answers	30	60	40	40
3 education status	illiterate	7	14	25	25
	Read and write only	9	18	32	32
	1-4 grade	10	20	20	20
	5-8 grade	13	23	13	13
	9-10 grade	9	18	7	7
	Certificate and above	2	4	3	3

Source: own computation

We can understand from table 14 that majority/78 %/ of cereal traders has experiences of greater than 10 years that is 50% of them are having 11 to 20 years experience and 28 % more than 20 years and the farmer's experience (62%) is even greater than that of the traders (28%) that is 62 % of them have experience of 21 years and above while none below 6 years. We can also observe that there appears relatively high variation of experience with in the sample traders that is a minimum of 4 years and a maximum of 30 years with an average of 16.5 years experience this is similar with Ayalew (2009), that is 15 years average experience; this may explain that

there is no barrier to entry with respect to experiences. The table shows also that 14%, 18%, 20% of traders and 25%, 32%, 20% of farmers are illiterate, read and write, 1-4 respectively that illustrates both the traders and farmers are having problems in acquiring knowledge but the degree of the problem is higher in farmers.

Table15: Amount of working capital in birr and credit need and access

1. Working capital of traders	No	%
Less than 10,000	13	26
10,000- 30,000	8	16
30,001-50,000	10	20
50,001-100,000	14	28
Greater than 100,001	5	10
Total	50	100
2 credit		
2.1 credit need of traders	24	48
2.2 credit need of farmers	91	91
2.3. credit access of traders	18	75
2.4credit access of farmers	89	97.8

Source: own computation

Table 15 shows that, 26%,16%, 20%, 28% and 10% of the sample traders has less than 10000, between 10001-30000, 30001-50000, 50001-100000 and above100,001 working capital in birr, respectively, which shows traders had different working capital that is from the lowest 4000 up to the higher birr 260,000. The table also indicates that credit access is not much problem and the need of credit of farmers is much higher than traders, which illustrates that capital shortage is more serious in farmers and the culture of saving of farmers is not improving much. Therefore, these data reveal that capital is not a major barrier constraint in the sample actors of traders and farmers.

From the tables above it can be concluded that although entry and exit is open to all actors, the number of the actors is not few and their number is increasing over time, no experience problems and no much problem of credit access, but due to the of knowledge difference between

actors, the difference in credit needs (the degree of the problem and need of credit is higher in farmers) in addition with the difference of access to capital, knowledge, and infrastructures, that the market is less competitive and is imperfect when evaluated from the point of view of market structure variables. The result is almost similar to the findings of Elleni (2001, Asfaw and Layne (1998); Gebremeskel,et al.(1998), and Ayalew (2009), which similarly they conclude the existence of market imperfection due to the difference of actors access of capital, knowledge, and infrastructures.

4.2.2 Market Conduct of the cereal market

It refers to the behavior of firms or the strategy they use with respect to, for example, pricing, buying, selling, etc, which may take the form of informal cooperation or collusion. Here conduct is analyzed in terms of price decisions made, competitions, collusion, allotments to research and developments and related strategies

Table16: Conduct related questions

The questions	traders		consumers		farmers		total	
	yes	%	yes	%	yes	%	yes	no
1 Collusion among traders	4	8	9	18	18	18	31	16.5
2 Unfair trade practices	22	44	35	70	64	64	121	60.5
3 Transparency in the market	32	64	25	50	49	49	106	53
4 Innovation practices	7	14	5	10	14	14	26	13
5 Demand & supply based price	29	58	24	48	54	54	107	53.5
6 Grade & standard base marketing	19	38	12	24	26	26	57	28.5
7 Price trend of cereals	50	10	50	100	100	0	200	100
8 Price difference across periods	21	42	17	34	53	53	106	53
9 Competition among traders	24	48	20	40	43	43	94	47
10 Are the measuring tools perfect?	35	70	22	44	37	37	94	47
11 Profit margin of actors	40	80	35	70	95	95	170	85
12 Investment allotments	20	40	11	22	19	19	50	25

Source: own computation

Table 16 indicates that there is weak collusion among traders/16.5%/, low competition/47%/, poor investment allotment on the market /25 %/, weak standard and grading based marketing/ 28.5%, which is almost similar to (Yassin, 2008) findings of farmers 27% who confirms that they do not use proper but traditional grading, presence of serious unfair trade practices (60%) and imperfect measuring tools, which is confirmed by 53% of the respondents.

Table17:The Price Decisions

	Traders		consumers		Farmers		Total	
	No	%	No	%	No	%	No	%
Farmer	5	10	5	10	23	23	33	16.5
Consumer	6	12	5	10	9	9	20	10
Trader	13	26	13	26	23	23	49	24.5
The market	5	10	4	8	8	8	17	8.5
Bargaining	21	42	23	46	37	37	81	40.5

Source: own computation

Table 17 reveals that price is decided by negotiation that is 40.5% of the respondents confirm that price is decided by negotiations, followed by traders that is confirmed by 24.5% of the decision of price is set by traders. The actors' individual response concerning the price decision is, 42%, 46%, 37% traders, consumers, & farmers, respectively has confirmed that the decision is made by bargaining and 26%, 26%, 23% traders, consumers, & farmers, respectively confirmed that it is followed by traders. The finding of price decision is similar with that of Ayalew (2009) finding (52 % is decided by negotiations).

Generally the low competition, poor investment allotment, absence of proper standards and grades, and imperfect measuring tools indicate that the cereal market is not performing well.

4.2.3 Market Performance of the cereal markets of Mekelle City

Performance of a market is a reflection of the impact of structure and conduct on the produce price, cost and volume and quality of output (Cramers and Jensen, 1982). If the structure in the industry resembles monopoly rather than pure competition, then one expects poor market

performance.

Table18: Performance related questions

Items	Traders		Consumers		Farmers		Total	
	yes	%	yes	%	yes	%	yes	%
1 is cereal trading profitable	45	90	-	-	90	90	135	90
2 do you know your profit from production/ selling	46	92	-	-	17	17	63	42
3 satisfaction With the market	25	50	10	20	70	70	105	52.5

Source: own computation

Table 18 indicates that 90% respondents have confirmed that cereal trading is profitable and the satisfaction of actors is 63.3 % but differs in degree of their satisfaction that is 70%, 50% and 20% of farmers, traders and consumer, respectively.

Table19: the degree of cereal traders' profit?

Scale	traders		consumers		farmers		total	
	No	%	No	%	No	%	No	%
Very good	6	12	12	24	13	13	31	15.5
Good	23	46	25	50	78	78	126	63
Fair	16	32	13	26	9	9	38	19
Low	3	6	-	-	-	-	3	1.5
Very low	2	4	-	-	-	-	2	1
Total	50	100	50	100	100	100	200	100

Source: own computation

As table 19 indicates that the degree of traders profit orderly is 63%, 19%, 15.5%, 1.5%, and 1% good, fair, very good, low and very low, respectively, that is 97.5 % in total is fair and above and only 2.5 % is low and very low. This shows that the cereal market performance is good taking the traders' profit.

Table 20: Profit of market actors

	Minimum	Maximum	Mean
Profit of traders per quintal	15	28	20.56
Return of farmers per quintal	0	18.5	7.15

Source: own computation

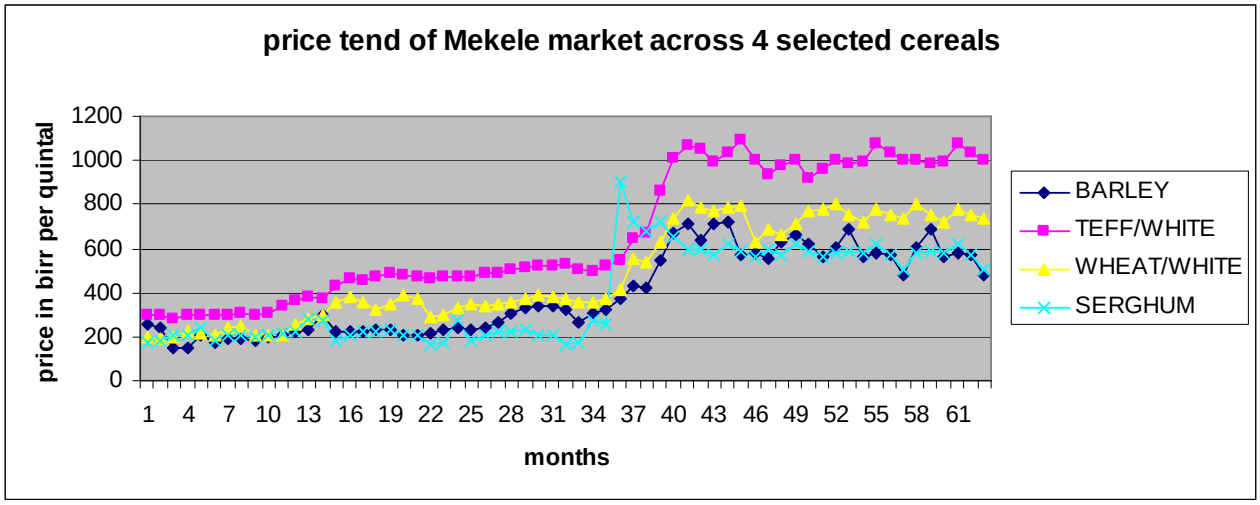
The table illustrates that the profit of traders is 20.56 birr per quintal while the return of farmers is 23.22 birr per tsimdi (0.25 of a hectare), which is computed (by the average productivity 3.24 quintals per tsimdi) to be birr 7.15 per quintal is very small when compared with that of traders' profit and even it is -2 birr for wheat and -4 birr for barley if it is computed incorporating opportunity cost. This together with that of the answers 85 % yes to the question is there profit margin difference between market actors shows that the performance of the market is poor.

Performance of the agricultural commodity markets can be evaluated in various methods such as temporal price analysis, spatial price analysis, correlation analysis, producers share, gross margin analysis, net benefit in the commodity supply chain and the like. And the researcher uses price trends; concentration ratio, market integration, gross margin analysis and producers share, and the results are as follows:

4.2.3.1 Price trends

The response to the question about the price trend in the past 4-5 years that is 100 % increasing is also supported by the secondary data of 5 years, specially the last 2.5 years, which shows that there was high increments of prices. These indicate that the cereal markets have poor performance. The imperfect market conditions calls for the strengthening of cooperatives and increase the government participation in the market. The figures are:

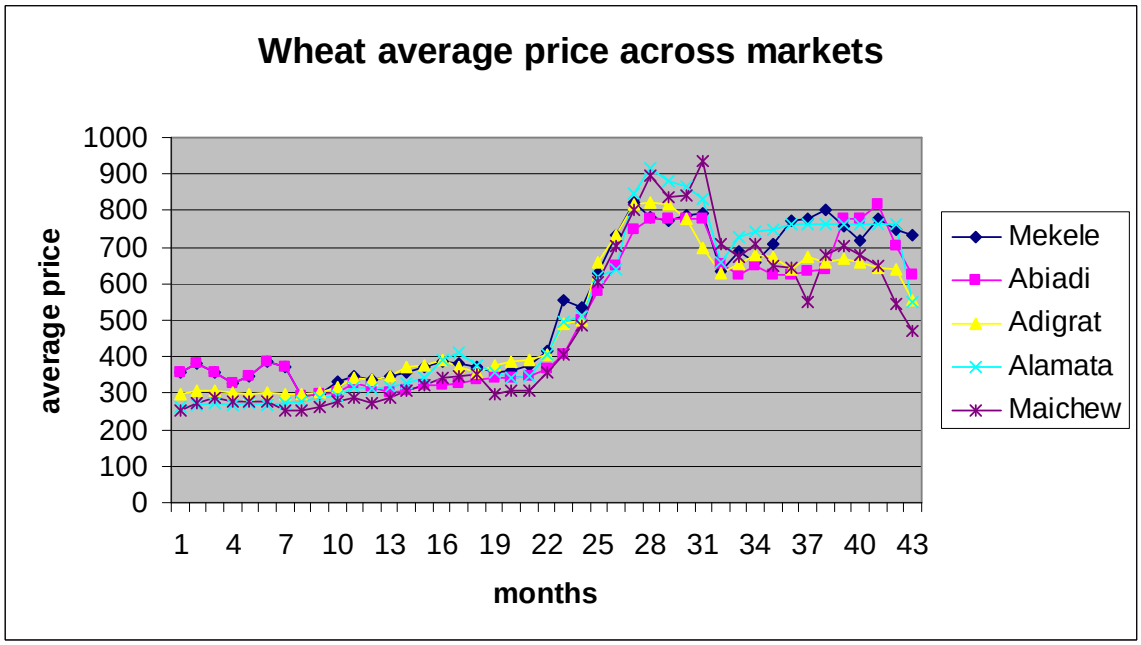
Figure3: Prices trend of Mekelle cereal markets across 4 selected cereals



Source: TAMPA and BOARD from November, 2004 - November 2009

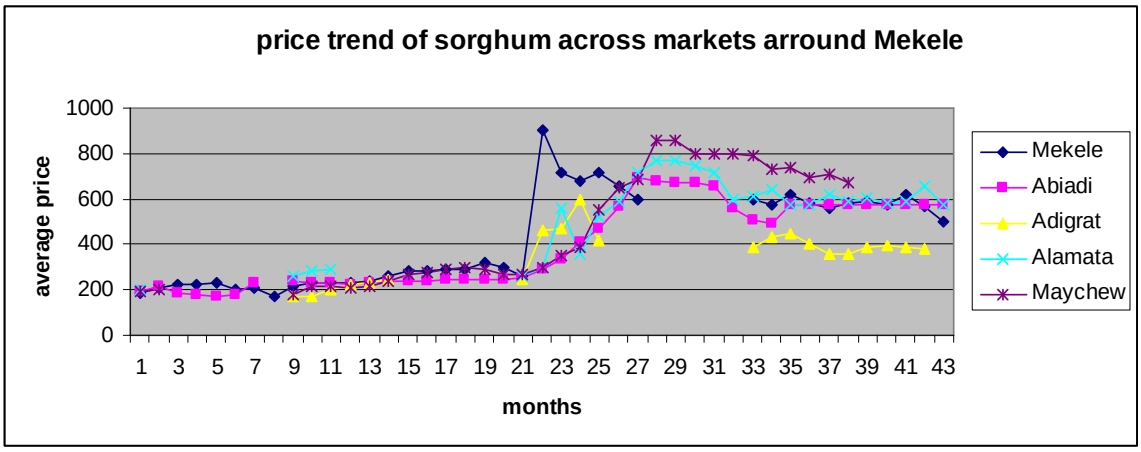
The graph shows that the price trend of the cereals market moves in a similar way; this shows that cereals have high substitution effect that is the price increase of tef made people to substitute it with others and the price of the substituted cereal increases too.

Figure 4: Price trends of wheat across selected 4 markets around Mekelle



Source: TAMPA from May, 2006-November, 2009

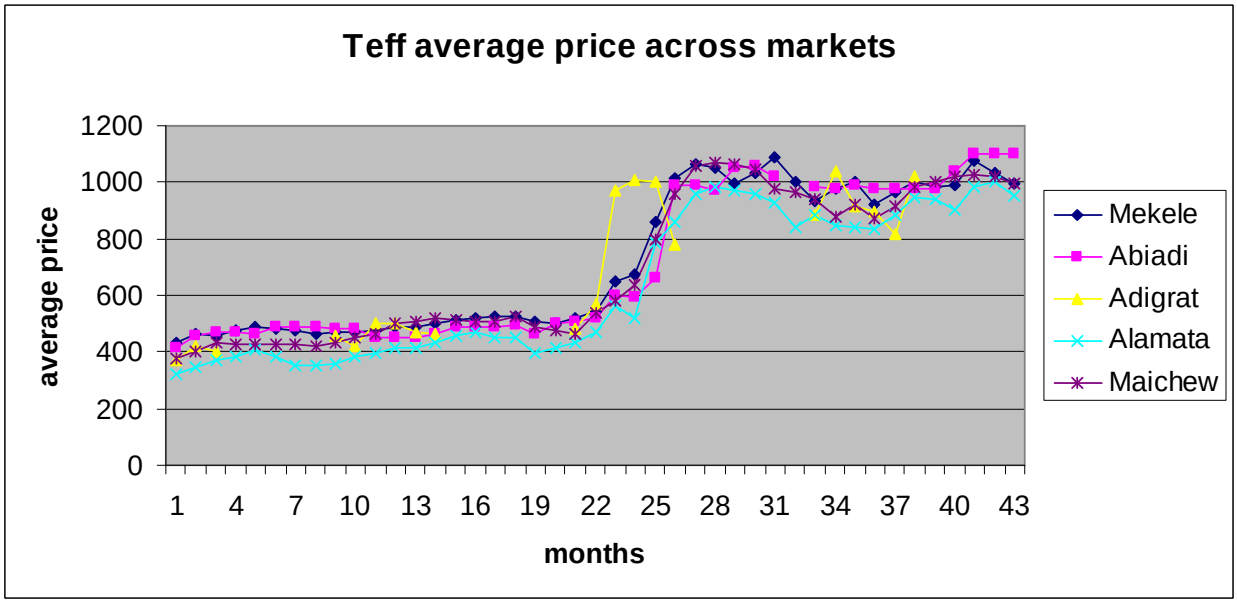
Figure 5: Price trends of sorghum across selected 4 markets around Mekelle



Source: TAMPA from May, 2006-November, 2009

The graph of wheat and sorghum price across markets around Mekelle shows that the price increments across the towns is similar and are integrated with the Mekelle market except for some months, which the price of sorghum of Adigrat seems not integrated this may be due to transport problems and information failures.

Figure 6: Price trends of tef across selected 4 markets around Mekelle



Source: TAMPA from May, 2006-November, 2009

The graph of tef price across the markets around Mekelle shows that the price trend across the

towns is similar and is integrated with the Mekelle market. But price of tef that of Adigrat seems very high at some months means not integrated this may be because of information, transport related problems and similar reasons. The graph also shows that the price of Alamta is lower than others, this may be because of Alamata is one of the highest producer of tef and the price of Mekelle is the highest of all this is because of transaction costs.

4.2.3.2. Degree of market concentration

The researcher has used the 4 largest firms' method followed Gebremeskel et al. (1998), the concentration ratio is computed by taking the sample traders 3 years average annual sold that is from 1999 to 2001 E.Cal. High concentration leads to monopolistic behavior which leads to high mark up and abnormal/excess/ profits.

The result of the concentration ratio as indicated in Table 11 it is only from 13.9 % to 22.31 %. Applying the market structure criteria suggested by Kohls and Uhl 1985, (less than or equal to 33 % weak oligopoly, 33-50% medium oligopoly and greater than 50% strong oligopoly), Mekelle cereal market is not concentrated, in other word it is competitive market or very weak oligopoly market. The finding of the new research is a bit higher than that of the findings of (Gebremeskel, 1998) that is CR of tef 8%, sorghum 7.84% all grains 20.35% and lower than that of (Ayalew, 2009) results that is 32.9%,31.02%31.94% for wheat, tef and all cereals respectively.

4.2.3.3 Market Integrations

Two spatial differentiated markets for a homogenous commodity are integrated if the price difference between them does not exceed the transaction (transfer) cost of moving. The most important factors influencing extent of market integration include infrastructure (transaction cost) and marketing policy. Favorable infrastructure and transaction cost structure promote market integration, where as the reverse reduces the integration.

The testing framework for market integration are price spread analysis, price correlation analysis and co - integration analysis but the researcher uses the price spread analysis for the reasons explained earlier. It is the difference of prices observed at different locations. Markets with price spread less than or equal to transaction costs/transfer costs/are supposed to be integrated other

wise no integration or is imperfect market.

The analysis is entirely based on secondary price data from Tigray Agricultural Marketing Promotion Agency /TAMPA/ from May 2006-Novenber 2009 that is 43 months in Birr

Table 21: Price relationship of white Tef between Mekelle and markets around Mekelle

Name of Markets	1 price birr per quintal	2 transfer costs in birr	3 other Costs in birr	4 Mekelle price per quintal	5 Differences 5=4-1-2-3
1 Adigrat	686	13.5	8	723	15.5
2 AbiyAdi	705	22	8	723	-12 *
3 Maichew	697	19	8	723	-1 *
4 Alamata	634	22.5	8	723	58.5

Sources: TAMPA

Table 22: Price relationship of white wheat between Mekelle and markets around Mekelle

Name of Markets	1 price birr per quintal	2 transfers cost	3 other costs	4 Mekelle price per quintal	5 Differences 5=4-1-2-3
1 Adigrat	501	13.5	8	535	11.5
2 AbiyAdi	500	22	8	535	5*
3 Maichew	480	19	8	535	28
4 Alamata	519	22.5	8	535	-14.5*

Sources: TAMPA

Table 23: Price relationship of sorghum between Mekelle and markets around Mekelle

Name of Markets	1 price birr per quintal	2 transfers cost	3 other costs	4Mekelle price per quintal	5 Differences 5=4-1-2-3
1 Adigrat	352	13.5	8	414	40.5
2 AbiyAdi	396	22	8	414	-12*
3 Maichew	469	19	8	414	-72*
4 Alamata	539	22.5	8	414	-155*

Sources: TAMPA

The price of sorghum of Alamata (one of the major sorghum producing area of the region) and Maichew (nearest town to Alamata) seems unreal (very high with that of Mekelle) the reason can be due to unreal data and because of that Mekelle has other sources such as western Tigray and other regions but needs further study.

Table 24: Price relationship of barley between Mekelle and markets around Mekelle

Name of Markets	1 price birr per quintal	2 transfers cost	3 other costs	4Mekelle price per quintal	5 Differences 5=4-1-2-3
1 Adigrat	487	13.5	8	428	-119.5*
2 AbiyAdi	449	22	8	428	-51*
3 Maichew	452	19	8	428	-51*
4 Alamata	441	22.5	8	428	-43.5*

Sources: TAMPA

The price of barley of Mekelle seems unreal that is very low when compared with that of the price of the production area near towns Adigrat, Maichew and Abiadi this may be because of that barley is not a major food item in the city, data problem or related problems, which needs further study.

The source for transport cost is TAMPA 4 years average from December 2006 – December 2009 G.C, but for Abi Adi the sourced is from the private transport companies and for other costs own survey 2010.

Base on the data those price of Mekelle <= price of the markets around + transport cost + other costs indicates that most of them are integrated /*/.

The findings of the new study is similar with the study of Wolday (1994), done on the sample survey of 33 wholesalers, retailers, and farmer-traders, which finds that the grain markets at local and national level has become more integrated following the deregulation of the market (Negassa and Jayne, 1997) that finds cereal price spreads of wholesale price in major regional markets in Ethiopia that is 22 cases out of 24 maize, tef and white wheat have generally declined since the grain market liberalization in 1990.

4.2.3.4 Farmers share, gross margin and profit margin

One of the indicators of market performance is the reduction of costs and margins of the marketing chain and the over all increase of farmer's share. According to Agarwal (1998) the highest farmer's share, which approaches to 100 %, is a positive indicator of an efficient marketing system

The relative share of market participants is estimated using the farmer's share and the marketing margin analysis, which is calculated by the price variations at producers and consumers price.

TGMM = (consumers' price – farmers' price/ consumers' price) * 100

Farmers' gross marketing margin is the portion of the price paid by consumer that belongs to the farmer.

FGMM = consumers' price – gross marketing margin/ consumers' price * 100 or 100 %-TGMM

Gross marketing margin is the difference between the consumer price and farmer price.

Table 25: farmers share and profit margin based on the year 2008/2009 G.C

No	Components	Farmers		Farmer retailers		Retailer traders	
		Whea	barley	Wheat	barley	wheat	barley
1	Purchased price	-	-	575	561	575	561
2	Transport	3	3	5	5	3	3
	Packaging	2	2	2.5	2.5	4.5	4.5
	Load -	1	1	2	2	3.5	3.5
	Storage and loss	-	-	4	4	5	5
	others	571	559	5	5	8	8
	Total costs	577	565	18.5	18.5	24	24
3	Selling price	575	561	612	597	625	608
4	profits	-2	-4	18.5	17.5	26	23

Source: own computation

N.B 1.The farmer's price is taken as farmer retailers purchasing price

2. Consumers price is taken the trader retailer selling price

3. Opportunity cost of labor is calculated by birr 15(average daily wage of a labor) and 235 working days in a year (holidays, Sundays and other religion days are reduced).

The table indicates that the profit margin of wheat and barley is birr 26 and 23, 18.5 and 17.5, -2 and -4 per quintal for traders, farmer retailers and other farmers respectively. Based on the table TGMM is computed to be only 8% and 7.73 % for wheat and barley respectively, this shows that the farmers' share is high, 92% for wheat and 92.27% for barley and even more than that if it is calculated by the farmer retailers' price that is about 98% and 98.2% for wheat and barley respectively. As to Golleti and Elleni (1995), an issue of a great public interest concerns the share of the rural farmer in the consumer birr, approaching 100% is considered as a measure of welfare, any increase in the farmer's share of the retail price has been found to increase proportionate welfare gains. So the result of the study shows that the performance of Mekelle cereal market, considering farmers share is good.

4.3 Role of Tigray Cooperatives in the out put Marketing

Table 26: Cooperatives related questions

Questions	Traders		Consumers		Farmers	
	yes	%	yes	%	yes	%
Do you have information about cooperatives?	23	46	25	50	92	92
Are there cooperatives at your Kebele?	37	74	46	92	90	90
Are you member of any cooperative?	15	30	32	70	75	83.3
Is the price of cooperatives better?	8	53.3	29	91	69	92
Is the quality of cooperatives better?	3	20	8	25	30	40
Do you sell to cooperative?	0	0	0	0	32	43
Do you buy from cooperative?	2	4	30	94	68	91

Source: own computation

Table 26 indicates that the farmers' awareness of the concepts of cooperative is as high as 92%, the coverage of the institutions is also as high as 90%, and membership coverage in addition is 83.3%. The coverage of membership result of the new research is similar with the finding of Ayalew (2009), which is coverage of 85% but much higher than that of Yassin (2008), that states only 30.3% membership coverage this can be due to sample size and area of study coverage differences. In addition the table illustrates that the price of cooperatives is better than prices of others traders that is 92% of the respondents have ascertained that prices of cooperative are lower and 91% members buy from the cooperatives at least one item or time, these describes that cooperative movement in the study area is in a good condition but only 43 % of members sell their produce to the cooperatives at least some and the quality of the supply of the cooperatives is not much better than the others' supply(60%), which shows the weakness of the cooperatives to be tackled.

Generally we can conclude that there is good awareness of cooperative, coverage of the institutions, membership and the price of cooperatives is better than others that will have

positive impact to the development of the institutions but low participation of members and no much difference of quality of supplies of the cooperatives that will have negative influence, which needs focuses to the development of the cooperative movement.

4.3.1 Services given by the Cooperatives

The major services given to members and none members pointed out on the discussion with leaders and experts as well as from the secondary data collected are marketing services, supply of different inputs, provision of Credit and services such as storage, tractor, transport, milling and electric power services

1) Marketing Services: The core service for farmers in their production and marketing activities, which is the marketing services, is given to member and non member farmers. The major activities are on the table 27 below:

Table 27: Market participation of the cooperatives of Tigray

year	Grain purchased and sold		Services provided	consumer goods	Animal marketing	Supplied of natural resources
	quintals	Birr	Birr	Birr	Birr	Birr
1989	-	788,562	-	146,010	-	-
1990	108,964	11,666,348	52,665	3603793	24,241	435
1991	69,100	9,696,182	370,952	6406523	554,960	130,070
1992	85,924	15,615,966	363,631	7813971	681,803	514,024
1993	53,565	6,854,630	532,201	10,846,852	1,202,623	1,085,737
1994	8,000	1,108,532	112,668	3,700,489	185,460	2,093,086
1995	49,117	7,046,630	459,274	6,159,215	56,460	6,151,083
1996	46,582	18,967,692	560,869	11,255,905	775,356	5,302,900
1997	154,201	75,434,685	1,113,697	26525291	1,100,351	2,380,287
1998	63,384	25,048,748	1,620,154	25667901	1,223,820	2,807,453
1999	18,827	11,089,452	408,271	6,558,410	180,221	906,038
2000	107,353	80,920,758	1,339,481	41475088	2,579,186	11,665,422
2001	114,835	87,190,845	1,690,199	85939827	3,190,298	41,884,256
Total	879,853	351,429,031	8,624,061	235999239	11,754,777	74,920,790

Source: Tigray Bureau of Agriculture and Rural Development Marketing Department

As indicated in table 27 the cooperatives are participating in several marketing activities even though the amount of participation fluctuation from year to year and is very small when compared to the total transaction, especially in the agricultural output, which the lions share is expected to be that of the cooperatives share. The highest quintal purchased and sold that is 114835 quintal with birr of 87190845 is in the

year 2001, which shows the trend is improving even though fluctuating with the condition. The promising of the cooperative activities according the annual reports of the BOARD is the starting of business exchanging with each other and starting of exporting sesame that is Humera union has started processing and exporting sesame abroad starting from 1999 E. cal that is 5890, 11400 and 8740 quintals yearly.

Coming to the cereal market share of the cooperatives of Mekelle zone, as the researcher computes that the yearly average cereal sales of the private traders of the city is about 156888 quintal a year (that is average monthly sales 58.02*12 months*206 traders) and the cooperatives' average annual sales of 13,462.7 quintals. Therefore, the share of the cooperatives is only 8.6% even it is below that if other market participants' amount supplied of cereals such as EGTE and others is included. Generally participation of the cooperative is dominated by Enderta union other cooperatives participation is not significant; almost none that needs serious attention to increase the share of the cooperatives in the output market.

Table 28: Market participation of cooperatives in Mekelle

Year in E.cal	Tef	Wheat	Maize	Others	remark
1996	1379	-	-	-	Enderta union
1997	5863.3	-	-	-	Enderta union
1998	3515	-	-	-	Enderta union
1999	2744	-	-	-	Enderta union
2000	21756	-	-	-	Enderta union
2001	22665	3411	200	198	Enderta union (tef 20647) plus other 7 Mekelle city cooperatives
average	9653.7	3411	200	198	Total average 13462.7 quintals

Source: Enderta union and Mekelle city cooperatives

Table 28 shows that the participation of the cooperatives in the cereal market is very low (8.6%) and 78 % of it is only one cooperative's share that is Enderta union and the union also does not

participate out of tef marketing yet.

2 Supply of different inputs: Modern inputs have the lion's share in increasing productivity and production; accordingly the cooperatives are supplying different inputs such as improved seeds, fertilizers, pesticides, herbicides, tools, water pumps and the likes, which will have positive impact on production and marketing.

3 Provision of Credit: Credit is very important to farmers for both farming and marketing, knowing this the cooperative institutions is supplying credit timely and at better interest rate than the local informal lenders, which are locally called mehertsiti. Cooperatives in the study area cover about 12% out of the total credit given in the study area as confirmed by the respondents.

4 Storage, tractor, transport, milling and electric city services

The cooperatives are giving storage, milling, transport, tractor and electricity services, which needs focuses to be expanded.

4.3.2 Major Marketing problems of the cooperatives

The top 6 identified major problems of the cooperatives are:

1) Capacity, this is especially the managerial (leadership ability) aspect of the executives and experts at the grass root level.

2) The negative influences of the past cooperative experiences

3) The limited technical supports, especially, the market extension, law and audit services.

4) Capital shortage

5) Lack of timely and appropriate market information.

6) Lack of infrastructures, this is especially the all weather road connectivity and the storage problem in terms of capacity and quality of the stores.

4.4 The major constraints of cereal markets

Table 29; Cereal market problems identified by the market actors & experts

	Priority of problems and constraints	The market actors						Experts	
		Farmers		Traders		Consumers			
		rank	%	rank	%	rank	%	rank	%
1	Lack of real and timely information	3	10	4	8	8	4	8	6
2	Brokers influence on the process of marketing	18	1	9	4	8	4	16	2
3	Lack of incentives	11	4	6	6	14	2	10	5
4	Lack of proper contract agreement & enforcement	5	7	3	10	8	4	6	7
5	Know how	4	8	11	2	8	4	3	8
6	Prices problems	11	4	2	12	1	16	6	7
7	Shortage of capital/credit	13	3	9	4	14	2	8	6
8	multiple taxation and other fees	13	3	11	2	14	2	19	1
9	Low number of traders	13	3	11	2	14	2	16	2
10	Absence of proper competition	13	3	9	4	8	4	14	3
11	Infrastructure problems	1	13	1	18	5	6	1	10
12	Unlicensed trading	19	0	8	4	18	0	16	2
13	Supply shortage	5	7	6	6	2	12	3	8
14	Demand shortage	8	5	4	8	3	10	12	4
15	Absence of grade & s	8	5	11	2	5	6	10	5
16	Limited government support to markets	17	2	11	2	3	10	14	3
17	Market extension services	2	12	11	2	18	0	2	9
18	Low cooperative participation	7	6	17	0	4	8	3	8
	Total		100		100		100		100

Source: own computation

Table 29 indicates that the first major problem for traders (18%), farmers (13%) and experts (10%) is the infrastructure problem such as road, storage, transportation & communication and others, while the first problem for consumers/16%/ is the price related problems.

The second major problem for farmers and experts is lack of market extension (12% and 9%, respectively) but supply shortage (12%) and price related problems (12%) for consumers and traders respectively.

The third major problem is lack of proper and timely information/10%/ by farmers, low purchasing capacity and lack of government support by consumers(10%), lack of proper contract agreement and enforcements /10%/ by traders and lack of know how and low cooperative participation/8%/ by experts.

Generally, the major problems are summarized to be infrastructure problems (12%) the first, price related problems (10%) the second, supply problems (8%) the third and information, demand and contractual related problems (7% each) the fourth problem.

4.5 Quantitative analysis of the trader respondents

Here the quantitative variables of trader respondents are discussed.

4.5.1 **Descriptive statistics of the trader respondents**

The minimum, maximum, statistic mean, std.error and statistic std. deviation of the quantitative variables is presented as follows.

Table 30: Descriptive statistics of the trader respondents

	N	Minimum	Maximum	Mean		Std.Deviation
	Statistic	Statistic	Statistic	Statistic	Std. Error	Statistic
age	50	28	70	50.24	1.3	9.5
education	50	.00	12	5.52	.54	3.8
family size	50	1	8	5.02	.19	1.4
experience	50	4.	30	16.54	.93	6.6
initial capital in birr	50	100	30000	1890	623.5	4409
current capital in birr	50	4000	260000	58760	7465.6	52790
average monthly purchase	50	10	130	66.62	4.43	31.4
total monthly sales	50	8	110	58.02	3.82	26.9
cost per quintal	50	5	65	28.2	2.32	16.4
profit per quintal in birr	50	15	28	20.56	.424	2.9

Source: own computation

4.5.2 Correlation analysis

Correlation is one of the common forms of data analysis both because it can provide an analysis that stands on its own , also because it underlies many other analysis , can be a good way to support conclusions after primary analysis have been completed, Pearson's correlation coefficient is a measure of linear association between two variables. Two variables can be perfectly related, but if the relationship is not linear, Pearson's correlation coefficient is not an appropriate statistic for measuring their association. So needs to screen the data for outliers before calculating a correlation coefficient.

Table 31: Correlation analysis

variables	Traders profit of Tef Per quintal		Farmers return per tsimdi		Consumers satisfaction	
	correlation	sign	correlation	sign	correlation	sign
Age	-.075	.410	-.237	.359	-.054	.710
education	.710(**)	.000	.399	.113	.041	.775
family size	-.078	.299	-.042	.873	.047	.748
Experience	-.066	.134	-.170	.514	-	-
initial capital	-.279*	.049	-	-	-	-
current capital	-.584(**)	.000	-	-	-	-
Purchase amount	-.853(**)	.000	-.390	.235	.336*	.017
Sales amount	-.854(**)	.000	-.312	.239	-	-
cost per quintal	-.863(**)	.000	-.399**	.000	-	-
Income	-	-	-.388	.124	.479**	.000
Land holding	-	-	-.439	.078	-	-
production	-	-	.998**	.000	-	-
productivity	-	-	.226*	.024	-	-
Distance to near market	-	-	-.387	.124	-	-
Distance to wereda market	-	-	.558*	.020	-	-

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

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

Using (Amit choudhory, 2009) classification of correlation linear relation ship (from -0.5 to -1 or from 0.5 to 1 strong, from -0.3 to -0.5 or from 0.3 to .05 moderate, from -0.3 to -0.1 or from 0.1to 0.3 weak and from -0.1 to 0.1 non or very weak), Table 31 depicted that the variables education (.710), cost /-0.863/, sales /-0.854/ purchase /-0.853/ , current capital(.584)of traders, and production /0.998/ & distance to wereda market /0.558/ of farmers have strong significant linear relationship at less than 0.001 for all but at less than .005 for the variable distance to wereda market. We can see also that the variable education of traders and production & distance to wereda market of farmers have positive relationship, while the variables current capital, cost per quintal, monthly purchase and sales show negative relationship with the dependent variable /profit per quintal of tef/.

In addition the table indicates that cost/-.399/ per quintal of farmers and purchase/.336/ & income/.479/ of consumers illustrate moderate significant linear relation ship at less than 0.001 for cost and income but at less than 0.05 for the variable purchase. The relationship is negative for cost while positive for the variables purchase & income.

It is evident from the table also that the variables initial capital of traders/-0.279/, and productivity of farmers /0.226/, show weak significant relationship at less than 0.05. It can be observed also that the variable cost influences the profit per quintal negatively while the variable productivity has positive impact.

4.5.3 The econometric model analysis and its result

Regression is a technique that can be used to investigate the effect of one or more predictor variables on an out come variable. It allows us to make statements about how well one or more independent variables will predict the value of dependent variable. This study intends to analyze the profit per quintal of traders, therefore, the functional relationship between the probability of profit per quintal and the independent variables is specified as:

$Y = b_o + b_1x_1 + b_2x_2 + \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots b_kx_k + \epsilon$

Where: Y is average profit per quintal of traders

b_o is Constant

$b_1, b_2, \ldots\ldots\ldots\ldots\ldots b_k$ are coefficients of the independent variables

$x_1, x_2\ldots\ldots\ldots\ldots x_k$ are the independent variables and

ϵ ----------error term

The parameter b_j represents the expected change in the dependent Y per unit change in X_j when all the remaining independent variables are assumed zero. Multiple linear regression models are often used as approximate function.

4.5.3.1Test for significance of the regression

In multiple regressions certain tests of hypothesis about the model parameter are useful in measuring model adequacy. The test for significance of regression is a test to determine if there is a linear relationship between the dependent (y) and the independent variables (x_i). Separate tests of the null hypothesis that individual coefficients are zero can be computed using t-test of the multiple linear regression models (Gujarati, 1988). This test can be used to see the statistical significance of each coefficient. An overall test of the null hypothesis that all the parameters associated with the explanatory variables in these models are equal to zero is an F-test based on the OLS estimation procedure. The Chi-square tests the null hypothesis that the coefficients for all terms in the current model except the constant are zero. The hypothesis is:

$H_{o:}\ b_1 = b_2 = \ldots\ldots..b_k = 0$

$H_{1:}\ b_j \neq 0$ for at least one j

Rejection of Ho in the above hypothesis implies that at least one of the independents contributes significantly to the model.

1) The Coefficients of Multiple Determinations

The multiple coefficient of determination represents the percentage of variability in Y that is explained by the estimated regression equation; however, a large value of R^2 does not necessarily mean that the regression model is a good one. Adding a regressor to the model will always increase R^2 regardless of whether or not the additional regressor contributes to the model.

The coefficient of multiple determinations R^2 is defined as

$R^2 = ESS/TSS$

Where $_R{}^2$ is the multiple coefficient of determination

ESS is the explained sum of square

TSS is the total sum of square

2) The multicollinarity test

A popular measure of multicollinarity between independent variables is the variance of inflation factor /VIF/ for continuous and the contingency coefficient /C/ for dummy variables.

VIF shows the variation of an estimator as inflated by the presence of multi co linearity (Gujirate, 1995) each selected continuous explanatory variables (X_i) is regressed on all the other continuous explanatory variables.

$VIF\ (Xj) = (1-Rj^2)^{-1}$ Or $1/1-Ri^2$

Where, R_j^2 is the multiple correlation coefficient (MCC) between explanatory variables, the larger the value of R_j^2 the higher the value of VIF (Xj) causing higher co linearity in the variable (Xj).

The highest the value of VIF the more difficult or collinear the variable Xi is. The multiple contingency coefficients (C) between explanatory variables is defined as

$C = \sqrt{x^2/N + x^2}$

Where; C is coefficient of contingency

x^2 is chi-square random variable

N is total sample size.

The decision rule for VIF and C states that values greater than 10 and 0.75 respectively shows that there is problem of multi co linearity.

4.5.3.2 Analysis of Regression results

The independent variables are checked for their statistical significance and the result out of the 19 variables, 16 are found to be statistically significantly influence profit per quintal (those having significance value less than 0.05) that is 10 discrete variables (sex, number of traders, demand and supply, homogeneity of the commodity, competitions, standardization and grading, willingness to pay for information, buy from cooperatives, profitability, and credit access) and 6 continuous variables (education, initial capital, current capital, purchase, sales and cost).

Then the statistically significant variables are entered together to the model and only the variables cost, education and initial capital from continuous variables and all the discrete variables are found to be statistically significant.

Table 32: Regression result

	Unstandardized Coefficients		Standardized Coefficients		
	B	Std. Error	Beta	t	Sig.
(Constant)	26.125	2.332		11.204	.000
education of the household head	.161	.063	.205	2.546	.015
what is your average cost per quintal	-.061	.021	-.331	-2.953	.005
do you buy from cooperatives	-2.253	.734	-.180	-3.068	.004
is there demand and supply base pricing	1.276	.526	.211	2.424	.020
is there homogeneity of a product in the market	-.822	.419	-.129	-1.962	.035
what was your initial capital in birr?	-9.12E-005	.000	-.134	-1.988	.045

Dependent Variable: profit per quintal /tef/

The variables again are checked for multi co linearity by the variance of inflation factor (VIF) for continuous variables and the contingency coefficients for dummy variables. Then those continuous variables < than 10 and dummy variables < than 0.75 are entered to the model and the result of the variables that are expected to determine profit per quintal are the variables cost, education, buying from cooperatives, demand and supply, and homogeneity of cereals then entered to the model and the result is as follows in the tables below.

Table 33: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	F	Sig.
1	0.937(a)	0.878	0.864	1.10367	63.497	.000

a Predictors: (Constant), is there homogeneity of a product, buy from cooperatives, is there demand and supply base marketing, education of the household head, average cost per quintal

b Dependent Variable: what is your profit per quintal?

Table 34: result of multiple linear regression coefficients

	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	26.459	1.918		13.798	.000
education	.120	.057	.153	2.111	.041
cost per quintal	-.078	.016	-.426	-4.780	.000
Buying from cooperatives	-2.335	.746	-.187	-3.129	.003
Demand & supply base pricing	1.479	.445	.244	3.326	.002
homogeneity of cereals	-1.133	.423	-.178	-2.681	.010

Dependent Variable: profit per quintal of tef

Finally the research has used the step wise method to see the degree of the variables influence on the dependent variable and the result of the predictive capacity of the variables cost per quintal, buying from cooperatives, demand and supply, the homogeneity of the cereals and education level of the household head influences the variation in the profit per quintal taking the adjusted R^2 is 74%, 6.1%, 2.8%, 2.5% and 1% respectively is as follows in the table.

Table 35: Model Summary of the stepwise model

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	F	sig
1	.863	.745	.740	1.52883	140.387	.000
2	.900	.809	.801	1.33638	99.776	.000
3	.916	.840	.829	1.23943	80.211	.000
4	.931	.866	.854	1.14526	72.677	.000
5	.937	.878	.864	1.10367	63.497	.000

1) Predictors: (Constant), cost per quintal

2) Predictors: (Constant), cost per quintal, buying from cooperatives

3) Predictors: (Constant), cost per quintal, buying from cooperatives, demand and supply

4) Predictors: (Constant), cost per quintal, buying from cooperatives, demand and supply, homogeneity

5) Predictors: (Constant), cost, buying from cooperatives, demand and supply, homogeneity, education

There fore the equation for profit per quintal (P) will be as follows

P = 26.459 - 0.078c + 2.335 coop + 1.479 ds - 1.133 h + 0.120 ed + 1.1

Where; c is cost per quintal, coop is buying from cooperatives, ds is demand and supply, h is homogeneity of the cereals, and ed is education level of the household head.

4.5.3.3 The results of the explanatory variables, which statistically and significantly influence the profit per quintal.

1. Education status: - was assumed to have positive influence on the profit per quintal, and as expected the regression coefficient of the variable shows statistically significance positive influence at less than 0.05 that is when education increases by a year the profit per quintal increases by birr 0.12. This is because knowledgeable traders can be cost sensitive, aware of promotional activities, costumer satisfaction and the like.

2. Cost:- costs was expected to have negative influence on the profit per quintal, and as assumed the regression coefficient of the variable shows statistically significance negative influence at less than 0 .001 that is when cost per quintal decreases a birr the profit per quintal increases by 0.078 birr and visa verse.

3. Homogeneity:- The variable homogeneity of cereals was assumed to have positive influence, but the regression coefficient of the variable shows that the variable has statistically significance negative influence at 0.05 significance level that is when the trader uses homogeneous cereals the profit per quintal decrease by 1.133 birr and visa verse, which seems controversy but it can be because of high cost of buying, the data problem of the respondents and shortage of demand (purchasing power) of the consumers and the like and it should be further studied.

4. Buying from cooperatives

The variable was expected to have positive influence and as expected the regression coefficient of the variable shows that the variable has statistically significance positive influence at less than 0.01 significance levels that is when the trader buys from cooperative the profit per quintal increases by 2.335 birr. This is can be because the price, quality, measuring tools and the like of cooperatives is better than others.

5. Demand and supply base marketing

The variable was assumed to have positive influence and as assumed the regression coefficient of the variable shows that the variable has statistically significance positive influence at less than 0.01 significance level that is when the trader uses demand and supply base marketing (pricing) the profit per quintal increases by 1.479 birr and visa verse.

CHAPTER V: CONCLUSION AND RECOMMENDATIONS

5.1. Conclusion

Here the major findings of the research are presented.

The structure related variables confirm that the market is well-structured and competitive to some variables, such as there are no much barriers to enter and exit, which is verified by 76% and 87% of the respondents, respectively, while some variables show the imperfection of the market such as: The research finds that perfect market information flow is still not satisfactory and the asymmetry of the information is very high among the actors, which makes the farmers and consumers more disadvantageous. In addition the willingness to pay for information differs (that is 70% and 25% of traders and farmers respectively), which explains that farmers are not still fully recognizing the advantage of real and timely information.

The study has confirmed that credit access is not a major problem that is 89 % farmer and 74% traders respondent have access to credit but still the need of credit of farmers is much higher (91%) than that of the traders (46%), which can shows that the saving culture of farmers is not improving much and indicates that the capital shortage is more serious in farmers. The low capital and the very high capital variation among traders show that the market is imperfect.

Taking the market structure criteria suggested by Kohls and Uhl (1985), the concentration ratio of the four major traders market share has shown that the cereal market to be competitive that is the market is characterized by a large number of traders or low market concentration level, which is market share of 22.31%, 19.12%, 20.3%, 16.73% and 13.9% for wheat, tef, sorghum, other cereals and all cereals in total, respectively. The research also finds that most of the cereal markets around Mekelle are integrated even thought some results seem exaggerated and needs further study. In addition the price trend analysis illustrated that the markets are integrated that is the price trend of cereals of the markets are almost similar but the price trend in general shows that price of cereals are increasing yearly, which indicates that the market is not performing well if it continues for longer time.

The research finds that the conduct related questions such as collusion among traders is not serious that is only 31% of the respondents says there is collusion that shows weak collusion but 53%, 75%, and 71.5% of the respondents have confirmed that there is no competition, no investment allotment on the market and no use of proper standards and grades based marketing.

In addition the paper reveals that price is decided (40.5%) by negotiation between actors, followed by traders (24.5%), which show that traders have better power on price setting than others that indicates the imperfection of the cereal market. However there is no single price for the cereals due to time, variety, quality, place, information, functioning of the market generally due to supply and demand variations. Based on the above statements it can be said that the

The research also finds that the satisfaction of actors greatly differs, which shows that the Mekelle cereal market is not performing well. The satisfaction of farmers is high when compared with the other actors this may be due to the price increments especially in the past 3-4 years that makes farmers more advantageous, which will have positive influence to production and marketing, while the opposite to consumers for the short run but can be advantageous in the long run since productivity and production increases that improves price and quality.

The study finds that awareness and coverage of cooperatives in the studied area are high, in addition membership of traders, consumers and farmers is 30%, 70% and 83.3% respectively and 53.3%, 91% and 92% for trades, consumers and farmers confirmed that price of cooperatives is better than others, but the participation of farmer members is low that is 43% and 91% for selling and buying in addition 80% of the traders, 75% of the consumers and 60% of the farmers respondents confirm that there is no much quality difference than that of others.

The identified major marketing problems are as follows:

Traders

The first and foremost traders problem is infrastructure problem (18%) such as road, storage, transportation, communication and the like, followed by price related problems (12%), lack of proper contract agreement and enforcements /10% /, lack of real and timely information together with demand shortage of consumer (8 % each), supply shortage and lack of incentives (6% each) and others together (32%)

Farmers

The major problems of farmers orderly are: the infrastructure problem the same as that of traders but 13%, followed by lack of market extension services (12%), lack of proper and timely information (10%), know how limitation (8%), lack of proper contract agreement and enforcement together with supply shortage (7% each), low cooperative participation (6%) and others (37%). The study, low participation of cooperatives indicates that farmers are not still accepting fully that the establishment of cooperatives above all is for the benefit of themselves.

Consumers

The high prices are the first problem of consumers (16%) followed by supply shortage (12%), low purchasing power capacity (10%), low cooperative participations (8%), absence of standard and grades together with infrastructure problems(6%each) and others(42%). The study, low cooperative participation as the 4 th problem illustrates that the establishment of cooperatives is accepted by consumers better than farmers and traders.

Experts

The major problems of marketing according the experts orderly are: infrastructure (10%), lack of marketing extension services (9%), low cooperative participation and limited know how (8% each), lack of proper contract agreement and enforcement and price related problems (7% each), lack of proper information flow and lack of credit or capital (6% each), absents of standard and grades (5%), others together (34%)

The major 6 marketing problems according the actors and experts respondents view together are generalized orderly to be infrastructure problems (12%) the first, price related problems (10%) the second, supply problems (8%) the third and information, demand and contractual related problems (7% each) the fourth problems.

5.2. Recommendations

The following could be recommended to improve the performance of the cereal market.

1. The Mekelle cereal market system is traditional and backward so needs modernizing it in the sense that the development and improvement of the 3 I_s (Infrastructure, Institutions and Incentives). The focus given by the region to the development of marketing such as establishment of separate marketing agency (TAMPA), market development departments at BOARD and cooperative promotion agency should be strengthen and capacitated further. Extend and strengthen the already started market information system of the region (dissemination of weakly price information through the local radio and using notice board and publishing biweekly magazine). Developing and improving infrastructures such as market shelters, modern storage, improving the road networking, expanding the irrigation scheme, improving communication and the like. Contractual base marketing should be promoted.

2. To increase the knowledge of actors through promotion of both adult education programs and extension services especially that of market related extension services should be given priority. The region's limited infrastructure development, together with the very fast population growth of the city makes the supply problem serious. Therefore, needs to improve the supply side by increasing the productivity and production of farming, which increases the amount to be supplied to the market and improving the marketing systems through improving the timely and real flow of information, decreasing costs, usage of standards & grades, developing trust, using contractual agreements, improving infrastructures and the like. It can be the main tool for the implementation of market lead agricultural development strategy and economic development policy of the government.

3. Increase the participation of cooperatives and government. As Minouti and Krishnamoorthy explained selling the farmers produce and buying different inputs through cooperatives can change the disadvantageous situation that arises from the disorganized nature of individual people. Therefore, cooperatives should be given enough technical and financial support. Cooperatives can serve as an important market out let especially for the small holder producers and consumers and are expected to play a major role in improving the living standard of the people and promote the economy. In addition they can be solution to the long marketing chain,

market failure, mal practices, to add value, to reduce costs, add satisfaction and generally to improve the system of both marketing & farming. The responsible offices should check the working performance of the measuring equipments. Government participation should increase to adjust the market failure and the like.

4. Financial constraint is still problem of farmers, so needs to promote and support the saving and credit cooperatives through training, credit supply, technical and administration support to handle the problem, which will have dual importance that is solving capital problem of the cooperatives and reducing food insecurity of the majority.

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Interview schedule for traders

Name of the market ----------

A. Personal

1 Gender ----------

2 Age --------years

3 Marital status: 1. Married. 2. Single. 3. Divorced 4. Widow

4. Education status: 0. Illiterate, 1. Read and write, 2. Grade1-4, 3. Grade 5-8, 4. Grade 9-10, 5. Certificate and above.

5. Family size: Total -------- Female-------Male-------

6 is your license a wholesaler or a retailer? ----------

7 When do you start the business in Ethiopian calendar? In ----------

8 How much was your initial capital in birr? Birr----------

9 How much is your current working capital at 2001 E.cal in birr? Birr ----------

B. Market structure related questions

1 Are there entry problems? Yes, No

2 Are there exit problems? Yes, No

3 Are there dominant traders in the market? Yes, No

4 How many grain traders are there? 1Too many, 2 Many, 3 average, 4 Few, 5 Very few

5 Do you have supply problem? Yes, No

6 Is there competition among traders? Yes, No

7 Is there perfect information flow? Yes, No

8 Are you willing to pay for information? Yes, No

9 Is there homogeneity of a product? Yes, No

10 Do you have an access to all weather roads? Yes, No

11 Do you have demand/ market problem? Yes, No

12. Are you willing to pay for information? Yes, No

C. Market conduct related questions

1. Is the price trend in the past 4-5 years increasing? Yes, No

2. Is there price variation based on demand & supply? Yes, No

3. Who decides the price in the market? 1. Farmers 2. Traders 3 Consumers 4 the market 5 Bargaining 6. Others

4. Is there grade and standard base marketing/pricing? Yes, No

5. Is there truthful product claim in the market? Yes, No

6. Is there collusion among traders? Yes, No

7. Are there unfair trade practices? Yes, No

8. Is there transparency in the marketing process? Yes, No

9. Is there investment & reinvestments to the market? Yes, No

10. How much is your average transaction cost per quintal in the marketing process in birr for different activities?

Loading--------Unloading---------Packaging----------transportation----------Sorting ------ assembling --------- storage--------others specify ----------

---

11 Is there perfection of measuring tools? Yes, No

D. Performance related questions

1 Is there profit margin difference between market actors? Yes, No

2 If yes who gets better?----------

3 What is your net profit from a quintal in birr?

4 What is the degree of benefit from the trade? Very good, good, fair, low, very low

5 The monthly average quantity purchase in type of cereals in quintals?

tef ----------, wheat----------barley----------sorghum---------- others----------

6 The average monthly quantity sold in cereal types in quintals

tef ----------, wheat----------barley----------sorghum---------- others----------

E. Cooperatives related questions

1 Do you have information about cooperative? Yes, No

2 Are cooperatives necessary? Yes, No

Why?----------

3 Are there cooperatives in your area? Yes, No

4 are you member of any cooperative? Yes, No

5 Why?----------

6 Do you buy from cooperatives? Yes, No

7 Do you sell to cooperatives? Yes, No

F. Others

1. Do you need credit? Yes, No

2. Is credit service access? Yes, No

3. Do you have transport problem? Yes, No

4. List the opportunities of cereal marketing?----------

---

5. What are the main problems of cereal marketing orderly? ----------

---

---

6. List the traders marketing problems orderly: supply, quality, demand, transportation, storage, grading, tax, information, cost, price, illegal traders, credit, contract enforcement; know how, communications and others specity----------

---

7. Any suggestion & comment about market developments----------

---

-- Thank you!!

Interview schedule for consumers

A Personal

1 Gender ----------

2 Age --------years

3 Marital statuses: 1. Married. 2. Single. 3. Divorced 4. Widowed

4 Education status: 0. Illiterate, 1. Read and write, 2. Grade1-4, 3. Grade 5-8, 4. Grade 9-10, 5. Certificate and above.

5 Family sizes: Total -------- Female-------Male-------

6 What is your monthly income in birr? Birr----------

7 how much is your monthly average purchase of cereals type in quintals

tef ----------, wheat----------barley----------sorghum---------- others--------

B Market structure related questions

1. Are there entry problems? Yes, No

2. Are there exit problems? Yes, No

3. Are there dominant traders in the market? Yes, No

4. How many grain traders are there? 1Too many, 2 Many, 3 average, 4 Few,

5 Very few

5. Do you have supply problem? Yes, No

6. Is there competition among traders? Yes, No

7. Is there perfect information flow? Yes, No

8. Is there homogeneity of a product? Yes, No

9. Is there grade and standard base marketing/pricing? Yes, No

C Market conduct related questions

1. Is there grade and standard base marketing/pricing? Yes, No

2 Is the price trend in the past 4-5 years increasing? Yes, No

3 Is there price variation based on demand & supply? Yes, No

4 who decides the price in the market? 1. Farmers 2. Traders 3 Consumers

4 The market 5. Bargaining 6. Others

5 Is there truthful product claim? Yes, No

6 Is there collusion among traders? Yes, No

7 Are there unfair trade practices? Yes, No

8 Is there transparency in the marketing process? Yes, No

9 Is there investment & reinvestments on the market? Yes, No

10. Is there perfection of measuring tools? Yes, No

D Performance related questions

1 Is there profit margin difference between market actors? Yes, No

2 If yes who gets better?----------

3 What is the degree of benefit from the trade? Very good, good, fair, low, very low

4 What is your degree of satisfaction in the marketing?1 very good, 2 good, 3 fair, 4 low 5 very low

E Cooperative related questions

1 Do you have information about cooperatives? Yes, No

2 Are cooperatives necessary? Yes, No

2 Are there cooperatives in your area? Yes, No

3 Are you member of the cooperatives? Yes, No

4 why?----------

6 Do you buy from cooperatives? Yes, No

7 If yes is the quality of the produce supplied better than others? Yes, No

8 If yes is the price of the produce supplied better than others? Yes, No

9 What is your comment to improve cooperatives?----------

E. Others

1. What are the opportunities of cereal marketing?----------

2. What are the main problems of cereal marketing orderly? ----------

3. List the marketing problems orderly: supply, quality, demand, transportation, storage, grading, tax, information, cost, price, illegal traders, credit, contract enforcement; know how, communications and others----------

4. Any suggestion & comment about market developments----------

---

Thank You!!

Interview schedule for Farmers

A Personal

1 Gender ----------

2 Age --------years

3 Marital status: 1. Married. 2. Single. 3. Divorced 4. Widow

4. Education status: 0. Illiterate, 1. Read and write, 2. Grade1-4, 3. Grade 5-8, 4. Grade 9-10, 5. Certificate and above

5. Family size: Total -------- Female-------Male-------

6. your average annual income in birr----------or in quintals -------tef,--------wheat -------barley--------sorghum----------lentils--------chickpea--------horse bean ---------- others specify----------

B Market structure related questions

1 Are there entry problems? Yes, No

2 Are there exit problems? Yes, No

3 How many grain traders are there? 1Too many, 2 Many, 3 average, 4 Few, 5 Very few

4 Do you have demand/ market problem? Yes, No

5 Are there dominant traders in the market? Yes, No

6 Is there competition among traders? Yes, No

7 Is there perfect information flow? Yes, No

8 Do you have an access to market extension services? Yes, No

9 Are you willing to pay for information? Yes, No

10 Do you have an access to market extension services? Yes, No

11 Is there homogeneity of a product? Yes, No

12 Is there grade and standard base marketing/pricing? Yes, No

13 Do you have an access to all weather roads? Yes, No

C Market conduct related questions

1. Is there grade and standard base marketing/pricing? Yes, No

2 Is the price trend of the past 4-5 years increasing? Yes, No

3 Is there price variation based on demand & supply? Yes, No

4 who sets the price? 1. Farmers 2. Traders 3 Consumers 4 The market

5. Bargaining 6. Others

5 Is there truthful product claim of buyers? Yes, No

6 Is there collusion among traders? Yes, No

7 Are there unfair trade practices? Yes, No

8 Is there transparency in the marketing process? Yes, No

9 Is there investment & reinvestments on the market? Yes, No

10. How much is your average transaction cost per quintal in the marketing process in birr for different activities?

Loading--------Unloading---------Packaging----------transportation----------Sorting ------ assembling --------- storage--------others specify ----------

11. Is there perfection of measuring tools? Yes, No

D Performance related questions

1 Is there profit margin difference between market actors? Yes, No

2 Who gets better?----------

3 Do you know your net profit from a quintal in birr? Yes, No

4 If yes how much birr per quintal?

5 What is your total production, marketed amount in quintals and selling price per quintal in birr

E Cooperatives related questions

crop	1999			2000			2001		
	Produced quintal	sold	Price Per quintal	produced	sold	Price Per quintal	produced	sold	Price Per quintal
Teff									
Wheat									
Barley									
Sorghum									
Others									
Total									

1 Do you have information about cooperatives? Yes, No

2 Are cooperatives necessary? Yes, No

3 Are there any cooperatives in your area? Yes, No

4 are you member of any cooperative? Yes, No

5 Why?----------

---

6 Do you buy from cooperatives? Yes, No

7 Why?----------

---

8 Do you sell to cooperatives? Yes, No

9 Why?----------

10 If yes is the quality of the produce supplied better than others? Yes, No

11 If yes is the price of the produce supplied better than others? Yes, No

12 In what activities do your cooperatives participate?----------

---

13 What is your comment to improve cooperatives?----------

E. Others

1. How much tsimidi of land do you have your own?

2. Do you use fertilizers? Yes, No

3. Do you use improved seeds? Yes, No

4. Total production and marketed amount in quintals and selling price per quintal in birr

5. Do you need credit? Yes, No

6. Is credit service access? Yes, No

7. How much is the distance to the nearest market in kilo meter?

8. 12 How much is the distance to the wereda market in kilo meter?

9. What are the opportunities of cereal marketing? ----------

---

10. What are the main problems of cereal marketing? ----------

---

11. List the marketing problems orderly: supply, quality, demand, transportation, storage, grading, tax, information, cost, price, credit, contract enforcement; know how, communications and others----------

12 Any suggestion & comment about market developments----------

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Thank you!!

Questionnaire for experts

A Personal

1. Sex ----------

2. Age --------years

3. Marital status: 1.Married, 2.Single, 3.Divorced, 4.Widowed

4. Education level: certificate, diploma, 1st degree, 2nd degree.

5. Family size: Female-------Male------- Total --------

B Marketing

1. Is there access to credit? Yes, No

2. What is the degree of access of the credit? 1. Very good, 2. Good, 3. Fair, 4. Low, 5. Very low

3. What are the problems of the credit service----------

---

4. What is the price trend of cereals in the past 5 years? Increasing, Decreasing, or the same

What are the main reasons ?----------

---

5. list the average marketing costs in your area in birr per quintal for different activities----------

---

---

6. Who sets the price in the market? Producer, trader, consumer, the market, bargaining

7. Do cooperatives participate in output marketing? Yes, No

Why?----------

If yes, list the participations----------

---

8. The total production, marketed amount and selling price per quintal in birr in your area

crop	1999			2000			2001		
	Produc edquin tals	sold	Price Per quintal	produc ed	sold	Price Per quintal	produced	sold	Price Per quintal
Teff									
Wheat									
Barley									
sorghum									
others									
total									

B Production

1. Average cost of production in your area birr per hectare

item	Teff	wheat	barley	corn	sorghum	others
plowing						
Seed						
fertilizers						
chemicals						
weeding						
harvesting						
threshing						
others						

2. Average productivity of cereals per hectare

1 Tef----------quintal 2 wheat---------quintal 3 maize----------quintal 4 barley----------quintal 5 sorghum----------quintal 6 finger millet------quintals 7 etc

3 How is the productivity and production of crops during the past 5 years? Increasing, Decreasing, or the Same

Why?----------

C. Structure and conduct related

1 Is there any entry problems to the market? Yes, No

If yes what are the major barriers? ----------

---

2 are there exit problems from the market? Yes, No

If yes what are the major barriers to exit? ----------

3 How many cereal traders are there? 1. Too many 2.Many 3. Average 4.Few

5. Very few

4 Is there competition among traders? Yes, No

Why?----------

5 Is there truthful product claim? Yes, No

6 Is there collusion among traders? Yes, No

7 are there unfair trade practices? Yes, No

If yes list the malpractices----------

8 Is there transparency in the process of exchange? Yes, No

9 Is there price variation based on demand & supply? Yes, No

10 Is there homogeneity of a product? Yes, No

If no what are the reasons ----------

11 Is there investment & reinvestments allocated to the market by the traders? Yes, No

12 Is there standard & grade base pricing? Yes, No

Why?----------

13 What locally grading system is used?----------

---

14 what are the market extension services given----------

---

15 Is there perfection of measuring tools? Yes, No

D. General

1 list the market problems of farmers----------

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2 list the market problems of traders----------

---

3 list the market problems of consumers----------

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4 list the problems of market orderly----------

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5 List the marketing problems orderly------supply, quality, demand, standards & grading, information, price, market distance, transportation , long chain, credit, infrastructures, competition, contract enforcements, unfair trade, illegal traders and others----------

6. what is your comment to improve the market system----------

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7 Any suggestion & comment necessary to the study not included----------

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Thank you!