ADDIS ABABA UNIVERSITY
SCHOOL OF GRADUATE STUDIES FACULTY OF INFORMATICS
DEPARTMENT OF INFORMATION SCIENCE

EXPLORING THE POTENTIAL OF E-COMMERCE IN MARKETING AGRICULTURAL PRODUCTS IN ETHIOPIA

By
Lemlem Hagos Hailu

June 2005

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BY
LEMLEM HAGOS

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BY
LEMLEM HAGOS

Name and Signature of Members of the Examining Board

Dr. B. L. Desai, Chairman, Examining Board

Prof. B.R. Krishna Rao, Advisor

Dr. Kumudha Raimond, Examiner

Chairman, Faculty	Signature	Date 13/07/05
Chairman, Graduate Council	Signature	Date

ABSTRACT

Ethiopia is predominantly an agrarian country. The main revenue of the country is from Agriculture and its by-products (viz. coffee having genesis here is one of the main exported product from the country).

However, like any other developing countries, Ethiopia has not exploited the full potential of ICT in marketing its agricultural products, thereby, not receiving its deserved share from local and global markets.

The quality, quantity, and variety of perishable agricultural products can be improved and marketed faster if the new Internet Technology is brought into every nook and corner of the country.

This thesis is an attempt to bring awareness of electronic marketing and its related advantages in selling and buying agricultural products.

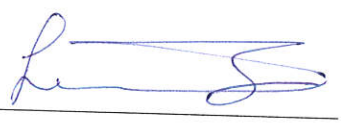
To create a better market outlet for agricultural products, Cooperatives for Marketing Agricultural Products should make use of the Internet.

Here, "***Ethio Cyber Market***" web site is developed which facilitates any producer or buyer to transact their agricultural products. For this, a CashCard is developed that can be used for money transaction.

This e-Commerce can be a ***reality*** if the ETC spreads its wings throughout the country by its optic fiber and Broadband network.

DECLARATION

I the undersigned declare that this thesis is my original work and has not been presented in any other university, and that all sources of material used for the thesis have been duly acknowledged.

Lemlem Hagos Hailu 

Advisor: Prof Bandaru Rama Krishna Rao_____

DEDICATION

To my brother, Assefa Hagos

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CHAPTER ONE

INTRODUCTION

1.1. BACKGROUND

Human endeavor to win obstacles of life and improve the standard of living has kept us competitive. In this competitive world, effective utilization of *Information Communication Technology* (ICT) is making a difference, creating the economic divide.

The advent of new ICT is contributing to the rapid transformation of the world into a 'global market place'. These technologies although by and large a Western phenomenon, are rapidly penetrating even the most remote countries in the South. ICT is revolutionizing the way in which societies interact, conduct their business, compete in the international market, and set their national economic and human development agendas. Increasingly, social, economic, and political progress is linked with the ability of countries to make informed decisions and knowledge-based choices (Morales-Gomez, 1998).

1.1.1. Marketing Agricultural Products in Ethiopia

Agricultural products are marketed in Ethiopia traditionally; the producer and the customers deal in local markets. The choice of product type, quality and pricing is determined by the demand and supply in the locality.

Producers' and retailers' prices are collected, summarized as monthly and annual average prices of products available in different parts of the country, by Ethiopian Central Statistics Authority (CSA), which is published monthly. The CSA's report is the only means of knowing about products available in the market nation wide (CSA, Nov. 2004).

The report provides average retail prices of goods and services by selected market place

together with regional average prices. Due to lack of space to accommodate all town market places, towns are categorized into 11 groups as:

Group 1: consists of selected market places for Tigray and Afar regional states, namely Endasilase, Endabaguna, Adwa, Axum, Adigrat, Wukro, Maichew, Mekele, Ayisata, Dubti, Melkawerer, and Awash Sebat Kilo.

Group 2 consists of selected market places for Amhara Regioual state, namely Chuahit, Goudar, Esete, Debre-tabor, Kobo Woldiya, Kombolch, Dessie Shewa-Robit, Debre-Birhan.

Group 3 consists of selected market places for Amhara Relgional state namely, Mota, Debre-Markos, Adete, Bahir-Dar, Sekota, Made-Work, Dangla, Chagni, Kemise, and Bati.

Group 4 consists of selected market places for Oromiya Regional state namely, Ghimbi, Dembi-Dolo, Shambu, Nekemte, Bedele, Metu, Jimma, Agaro, Ambo, Weliso, Ejere, & Fiche.

Group 5 consists of selected market place for Oromia Region State, namely: Nazareth, Shashemene, Diksise, Assella, Assebe-Teferi, Bedessa, Alemaya, Boreda, Adabe, Hagere-Mariam and Negele Borena.

Group 6 consists of selected Market places for Somalie and Benishangul Gumuz Regional States namely, shinele, Arere, Jig Jiga, Hartshek, Dollo, Moyele, Mamboole, Merder Sebat, Assosa, Bambasi, Kemashi, and Agelo Meti.

Group 7 consists of selected market places for SNNP Regional State, namely Welkite, Butazira, Hosahna, shone, Harere selam, Dilla and Yirgocheffe.

Group 8 consists of selected market places for SNNP Regional State namely, Wolayita Sodo, Tepi, Bonga, Chana, Arbaminch & Sawia.

Group 9 consists of selected market places for SNNP Regional State namely, Shewa Bonch, Mizan Teferi, Deri, Amaro Kelle, Sayama, Karat, Gidole, Waka, Besta, Chere, Lasoka, & Amlaya.

Group 10 consists of selected market places for city of Addis Ababa Admin namely, Merkato, Kera, Zenebe Work, Akako, Gergi, Saris, Kotebe, Ferensay Legasion Shola/Yeka, Kotebe, Addisu Gebeya, Eefoyta Gebeya,

Group 11 consists of selected market places for Gambella Regional state, Harar people Regional state and Dire Dawa Administration Council namely: Gambela, Shebo Kiro, Akashi, Harari Town, Dire Dawa and Melkajebdu.

The retail price survey covers the collection of major agricultural and industrial goods including food, drink, constituents, tobacco, clothing, footwear, building materials, farm equipment, etc. Hence, about 400 items, above 140,000 price quotations are covered by the monthly survey.

The retail prices of goods and services are collected from major outlets in selected urban market places by enumerators with the use of kitchen balance and measuring tape. Retail prices of goods and services are collected from traders as well. However, prices are also obtained from consumers at the time of purchase. For each item a maximum of three price quotations are collected from three retailers on the same day.

CSA producers' prices of Agricultural products are also categorized at zone level into six groups.

Part I consists of monthly and annual average producers' prices of Tigray killil at zone level (Mirabawi, Tigray, Mehakelawi, Tigray, Misrakawi Tirayand Debubabi Tigray zones) and Afar Killil and its two zones (Zone 1 and Zone 2).

Part II consists of monthly and annual average producers' prices in Amhara Killil by zone (semen Gondar, Debub Gondar, Semen Wollo, Misrak Gojam, Mirab Gojam Wag Hemra, Awi and Oromiya zones).

Part III consists of monthly and annual average producers' prices in Oromiya killil (Mirab Wellega, Misrak Wellega, Illubabur, Jimma, Mirab shewa, Semen Shewa, Misrak Shewa, Arssi, Mirab Harerge, Balle and Borena zones).

Part IV consists of monthly and annual average producers' prices in Somali killil and three of its zones (Shimile, Jigjiga, and Liben), and Benishargul- Gumuz Killil and its three zones (Metekel, Asosa, and Kamashi zones).

Part V (a) consists of monthly and annual average producers' prices of Southern Nations, Nationalities and Peoples (SNNP) killil (Gurage, Hodiya, Kembata, Alaba Tembaro, Sidama, Gedeo, WolaYita, Debub Omo zones and Shaka, Kafa and Gomgafa weredas).

Part V (b) consists of monthly and annual average producers' prices of SNNP killil (Bench-Maji, Yem special weresa, Amara special wereda, Burji special wereda, Konso special wereda,

Dirashe special wereda, Dawro special wereda, Basketo special wereda and Konta special wereda)

Part VI consists of monthly and annual average producers' prices of Gambela killil (zone 1 and zone 2), Harari killil, Addis Ababa (zone 3 and zone 6), Dire Dawa and national average.

The studies on producers' prices show the levels of disparities between prices at different parts of Ethiopia.

The retailers' and producers' prices are notified on monthly basis to create awareness about the items and their prices via radio and bulletin. This is a good move towards creating nation wide image of the market. However, waiting for a month to get the next market information is costly, especially in this information era, where we could make use of the Internet to exchange market information promptly, in seconds. Merchants and processors also get market information through brokers who, in turn get the information through telephones and postal means. This still has the pitfall in reliability and timeliness. The other mechanism of getting market information is through cooperatives which can keep product and customer profiles and try to bridge the produces and the customers via telephone and postal services.

The above-mentioned ways of getting market information are not efficient that there can be unnecessary stocks and transportation of a product waiting for appropriate market. This could lead to degradation of the product because of lack of market at one part of the country, and its scarcity at another end of the country. One way of alleviating such problems is posting products and prices on the Internet, by e marketing.

1.1.2. What is e-Commerce?

Electronic commerce or *e-commerce* is a general concept covering any form of business transaction of information exchange executed using information and communication technologies. E-Commerce includes electronic trading of goods, services and electronic materials. (Esprit, 1997)

Electronic commerce_relates to a variety of business dealings conducted online. They include service providers selling services, and retail businesses selling items to customers. They also include auctioneers who create marketplaces for bidding and sell goods, and business to business (B2B) commerce. E-Commerce systems can be classified by application types as electronic markets, electronic data interchange, and internet commerce (Whiteley, 2000).

1.1.2.1. Electronic Markets

The principal function of an electronic market is to facilitate the search for the required product or service. An electronic market is making use of ICT to present a range of offerings available in a market segment so that the purchaser can compare the prices and qualities of offerings and make a purchase decision.

An effective electronic market increases the efficiency of the market, it reduces the search cost for the buyer and make it more likely that the buyer continue the search until the best buy is found (Been, 1995).

The electronic market can bring together product, price and service information from many or most suppliers of a particular class of goods or a specific trade sector. Easy access to information on a range of competing product offerings reduces the search cost of finding the supplier that best meets the purchase requirement (Whiteley, 2000).

1.1.2.2. Electronic Data Interchange (EDI)

EDI provides efficient transactions of recurrent trade exchanges between commercial organizations. EDI is part of just in time manufacture and quick response supply. EDI is the inter-

company computer-to-computer communication of business transactions in a standard format that permits the receiver to perform the intended transaction. EDI is most commonly applied in the execution and settlement phases of the trade cycle. In the execution of a simple trade exchange, the customer's order can be sent by EDI and the delivery notification from the supplier can also be electronic. For settlement, the supplier can use EDI to send the invoice and the customer can finish the trade cycle with an electronic funds transfer via the bank and an EDI payment notification to the supplier (Whiteley, 2000).

1.1.2.3. Internet Commerce

The Internet and similar network facilities can be used for advertising goods and services and transacting one-off deals. This form of e-Commerce may give its customers credit facilities but it is typified by the 'cash' trade cycle.

Instead of shopping in the traditional way, such as going to an actual retail outlet, using telephone shopping or mail order catalogues, online shopping allows companies and consumers to make their business transactions over networked computers. Online shopping could be defined as the buying and selling of goods over the Internet. Just about anything can be purchased over the Internet. Examples of items consumers can buy are computers, cars, clothing, airline tickets, food and pharmaceuticals. The most popular products purchased online were flowers, computer hardware and software, books, consumer electronics, music and videos, toys, and wines (Summers, 2003). In this study, the focus is on marketing of agricultural products online.

1.1.3. Online Shopping Process

Customers can buy goods from a company by logging onto their website. On the website, online retailers provide customers with pictures and descriptions of their products. Online shopping sites such as Amazon.com even provide customer reviews of their books in additions to the book descriptions. Customers must provide credit card information and fill in required format and then submit the form. Then, the modem sends out these details to a financial institution. If they have

available funds, the transaction is approved almost instantaneously. The customer will then receive their goods within a specified time frame.

Credit card is undoubtedly the dominant method of payment used to shop online. since there is no credit card system in Ethiopia, other alternatives such as payment on delivery for B2C and invoice payment for B2B can be used(Secrets of e-Commerce, 2000).

1.1.4. Why Online Shopping?

Online shopping is important because it offers buyers convenience that has never before been achievable. The technology that is now available allow customers to shop on the internet 24 hours a day and seven days a week, without having to leave their homes or offices. Shoppers are provided with an abundance of merchant sites where almost any goods on earth can be bought. Consumers can also compare prices from a variety of different retailers with greater ease, compared to physically going to shops in a built shopping centre to check prices.

1.1.5. Benefits of Online Shopping for Buyers

Online shopping benefits customers because it allows citizens from around the world to gain more information about a company and its products. Potential customers can browse online catalogues without having to leave their homes or offices. Faster connection speeds available from work, compared to shoppers' home computers, were attributed to the popularity of online shopping from work (Linstedt, 2002).

In addition, a customer can find a wider variety of goods displayed on a company's web site compared to the amount of goods that the company can fit or print in a catalogue. The Internet offers variety that is simply impossible in traditional stores (Postrel, 2004).

Customers who shop online are also not limited by global time differences and can shop online when it is convenient for them, not during set hours which many built shops adhere to. Online shopping also allows buyers to customize their products, as well as benefit from cheaper prices.

As buyers are purchasing directly from the supplier, it eliminates the need for retailers and distributors who often add to the cost of the product (Postrel, 2004).

Buyers also have better access to product review and rating systems. These services allow potential buyers to read product evaluations and comments made by other consumers who have previously purchased the product. It also gives customers the power to make more informed choices. Customers can also save a surprising amount of time by shopping online. Research indicated that online Christmas shopping is at least four times faster than pounding around the shopping precinct, and for experienced online shoppers, who know where to go, the time saving is even greater - for them it's typically six times faster than a trip to the traditional shopping destinations (Presswire, 2003).

Finally, a greater number of online retailers now have the technology which let their customers monitor the goods they have ordered with greater ease. Those buyers can use a company's online Global Positioning System (GPS) tracking service to check on the location of their goods via the company's online store. This service offers customers added convenience as it eliminates the need for buyers to have to contact the company directly.

1.1.6. Benefits of Online Shopping for Sellers

The main benefit of online shopping for sellers is that it allows them to reduce costs with regard to employing staff and the numerous overheads. Some companies may reduce costs further by not printing catalogues and solely allow their customers to visit the website for product pictures and descriptions.

The current technology also allows sellers to track customers' product preferences, with their permission, and alert these customers of new products they may be waiting for or could be interested in. Whether the customers actually make purchases or not, this can benefit the sellers because they are regularly contacting their customers and keeping in touch with them business wise. This may help the business increase their visibility in the marketplace and assist buyers to remember the company. As a result, customers may be more inclined to buy from that company when they decide to make their actual purchase. Raisch (2001) also believed the importance of

customer relationship when he/she asserted that the ability to interact with customers at any moment creates the opportunity to gain more wallet share and increase brand loyalty.

At present, companies also have the means to monitor their online stores in order to achieve maximum sales. Web analysis help online retailers to discover how shoppers are using their websites, and can even indicate which websites the customers are perusing before and after looking at the company's own website. The online electronic retailer CompUSA.com identified that their "product compare" feature needed to be more easily accessible to customers by employing web analysis.

1.1.7. Customer Concerns

According to Reda (2004), many people are still hesitating about shopping online. Richardson advocated her trust for online shopping when she claimed, the truth is that it's probably safer than handing your card to a waiter you've never seen before (Richardson, 1998).

Many online retailers employ a number of security measures, including cryptography and authentication to help keep online transactions as safe as possible. Ghosh (2001) states that cryptography can provide authentication and integrity for electronic transmissions if properly implemented. Personal Identification Numbers (PIN) and passwords are the most widespread types of authentication.

Security being a key issue, privacy concerns have also become a number one concern for the customers. To further ease customer apprehension, many online retailers provide privacy statements which state their stance on sharing customer information with other businesses. Many companies stated that they did not share customer details. In addition to this, online retailers also employ cryptography to ensure that computer hackers cannot easily obtain any stored personal information that companies keep regarding their customers (Ghosh, 2001).

Customer's trust is the critical variable. The more a customer trusts a site, the higher the price the site can charge for what it sells.

Some customers were also concerned about their lack of involvement with online purchases. Being unable to handle and inspect goods personally was a major drawback. Products such as clothes, which customers often needed to try on, posed a hassle for online buyers. Although clothing measurements were often provided, many shoppers would not know their own measurements. Internet shoppers also found that furniture was difficult to buy as they were unable to test them for comfort. Online retailers often attempt to alleviate these concerns and encourage sales by offering refund policies.

1.2 STATEMENT OF THE PROBLEM

In this information age where information communication technology is changing the mode of life of societies of the world, people of the under-developed countries are not as beneficiary of the web as the other side of the world. In this regard, there is a need to do a research to make use of the existing technology in solving nationwide problems. One such problem is **the lack of market network to facilitate buying and selling of agricultural products optimally.**

Since there is no web based market network Nationwide, the producers of agricultural products are forced to sell their products at a price available at the nearby market. Prices of the same product could vary drastically in different locations of Ethiopia leading to unpredictable loss in the side of the poor peasant. The absence of online shopping of agricultural products keeps the producer tied to traditional life, humble, unmotivated to produce better quality products; and loose profits.

Agriculture being the backbone of Ethiopian economy, it is worth doing a research that could increase market outlet to the citizen in general, to the producers of agricultural products in particular, as a mechanism of improving the living standard of citizens.

This research will therefore address the following problems:

1. The need to minimize warehousing cost and value degradation of agricultural products versus lack of the means to assess the demand of those products in other parts of the nation

2. Unnecessary transportation of agricultural products that are not sold right away, due to lack of knowledge of market demand nation wide

3. Lack of rewarding market to the peasants in proportion to the effort they invest in the production process

4. The need to buy quality agricultural products versus the lack of means of comparing the quality of products available in the nation

5. The need to sell agricultural products in the best price versus lack of comparing the need of the market nation wide

6. The need to deal with credit based trading versus the absence of credit card system

1.3 JUSTIFICATION OF THE STUDY

To become real partners and beneficiaries of the ICT revolution, developing countries need not only be able to make meaningful use of the technologies but also contribute to their form and content. Developing countries cannot afford to be left on the sideline and watch the rest of the world enter into a new development paradigm dominated by information and knowledge. (Morales-Gomez, 1998)

Ethiopia has joined the Internet Society since January 1997, which covered Addis Ababa and as of 2001, eight regions Mekelle, Dessie, DreDawa, Shashemene, Nekemte, BahirDar, Nazreth and Jimma are being used as focal points to interconnect the rural part of the country to the globe. The benefits of Internet Connectivity to Ethiopia were dealt with by Fanta (1996), Kibruyisfa (1997) and Yalew (1998) in their theses for the fulfillment of the requirement for the degree of Master of Science in Information Science.

Fanta's study was conducted before the introduction of the Internet in Ethiopia and focused on the opportunities of the Internet and its connectivity conditions. Kibruyisfa's study illustrated on

how to make tourism information in Ethiopia available on the Internet. Yalew' study focused on potentials of the Internet for Import/Export business in Ethiopia. Fanta and Kibruyisfa used the PADISnet electronic communication users as a user base for their study. Yalew based his survey on the actual users of the Internet. This present study differs from the three in two ways. First, the survey is based on integrated information from farmers' cooperatives, trading agents and Ethiopian Telecommunications Corporation. Second, the study focuses on the potential of using the Internet in marketing agricultural products in Ethiopia.

The agricultural society in Ethiopia can benefit from the Internet only if e-Commerce could be set up in marketing agricultural products in Ethiopia. And this calls for a research to be conducted in exploring the potential of the Internet in broadening the market outlets for agricultural products.

1.4 OBJECTIVE OF THE STUDY

1.4.1 General Objective

The objective of this study is to explore the potential of e-commerce in Ethiopia in a vision to create a market outlet to agricultural products.

1.4.2 Specific Objectives

In order to meet the aforementioned general objective the following specific objectives are set:

1. Review the Current status of the Internet connectivity conditions in Ethiopia
2. Assess the existence of an already established e-Commerce in marketing agricultural products in Ethiopia, and evaluate if any, so as to build a better one.
3. Assess the challenges and opportunities of using e-Commerce in Ethiopia.
4. Identify the various business related resources available on the Internet

5. To build an e-market model for agricultural products in Ethiopia.

6. Develop a prototype for the e-market sought.

1.5 SIGNIFICANCE OF THE STUDY

The main concern of this study is to indicate how far the marketing of agricultural products can be improved through the use of the Internet. Therefore, the study is expected to benefit the agricultural community especially the farmers' cooperatives in increasing their awareness on the potential of the Internet and the strategies they have to formulate in order to effectively utilize the resources of the current technology.

Federal Cooperative Commission (FCC), whose main duties are to coordinate the various cooperatives and bring about changes in the living standard of the citizens of Ethiopia, is also anticipated to be the beneficiary of the result of the study.

The Promotion Department of the Ministry of Trade and Industry will also be the beneficiary of the study.

The study will also help in initiating the policy makers to define guidelines related to the requirements of launching e-commerce in the country.

1.6 RESEARCH METHODOLOGY

In order to achieve the aforementioned objectives, qualitative methodology is used. Accordingly, key people in relation to the research are interviewed in depth.

The interviewees were categorized into two sets. The first set relates to the commerce directly and this includes Chamber of Commerce, Ministry of Trade and Industry, and Federal Cooperative Commission. The second set is used to assess the level of telecommunications infrastructure and Internet connectivity. In this connection, officials in the Internet Center of the Ethiopian Telecommunications Corporation (ETC) were interviewed. The results of the discussion are elaborated in the findings and discussion section.

Document Analysis

Document analysis was also used as one of the instruments in this study. In order to obtain sufficient information on the status of the telecommunication networks and Internet connectivity in the country as well as the status of trade in Ethiopia, different documents were reviewed from different sources including the Ministry of Trade and Industry, Ethiopian Chamber of Commerce, Addis Ababa Chamber of Commerce, and the Ethiopian Telecommunications Corporation.

1.7 LITERATURE REVIEW

Literature form different sources including books, journals, and research reports were reviewed in order to acquire broader knowledge in the domain of the research.

1.8 SCOPE AND LIMITATION OF THE STUDY

Since the objective of the study is to explore the potential of using e-commerce in marketing agricultural products in Ethiopia, the main subject of the study were the farmers' cooperatives which can use the Internet. Thus it does not include those farmers that are not members of the cooperatives.

1.9 ORGANIZATION OF THE THESIS

This study is organized into five chapters. The first chapter consists of the background of the problem and justification for conducting the research. The objective behind the study was also discussed. In the second and third chapters, review of literature related to the study was dealt with as exhaustively as possible. The fourth chapter deals with the methods for exploring the potential of e-Commerce in marketing agricultural products in Ethiopia and tools used for developing a prototype that models a Cyber Market. Here, the findings were also discussed. In Chapter five conclusions and recommendations are put forward.

CHAPTER TWO

MARKETING AGRICULTURAL PRODUCTS IN ETHIOPIA AND COOPERATIVES EXPERIENCE

2.1 COUNTRY BACKGROUND

Ethiopia Covers a total of 1,119,683 sq km and has 67 million inhabitant 85 percent of whom live in rural areas. Ethiopia's main economic sector is agriculture, which provides employment for about 90 percent of the population and accounts for about 50 percent of Gross Domestic Product (GDP) and 80 percent from the total export (Addis Chamber, 2005).

Out of the total area of 112.3 million hectares, 56% of the land is ideal for the growth of diverse food and cash crops. Out of the total land area only about 14% of it is currently under cultivation. In addition, the potential gross irrigable area is estimated to be 3.5 million hectares of land out of which less than 5% is currently under use.

Ethiopia is the biggest livestock producer in Africa and 25th worldwide, possessing 35 million head of cattle, 18 million goats and 24 million sheep. And Livestock is crucial for the Ethiopian economy. It accounts for some 20 percent of the total GDP and employs about 31 percent of the agricultural labor force.

2.2 THE ECONOMIC STRUCTURE[1]

The Ethiopian economy is dominated by agriculture that accounts for about 50 per cent of total GDP and 85 percent of export and total employment. The country's export is highly dependent on

[1] Addis Chamber (2005)

a single crop, **coffee**, generating nearly 53 per cent of the foreign exchange earnings in 2000. Manufacturing, Mining, Trade, Tourism, Construction and Services that have a combined share of about 50 per cent of GDP supplement agriculture.

The industrial sector, which contributed about 12 per cent of GDP, supplies important consumer goods both to the domestic and international markets. The main manufacturing products are textiles, food stuffs, tobacco, beverages, cement, leather and leather products, wood, metallic and non-metallic products. The main manufacturing export products include leather and leather products and frozen meat.

Even though the mining sector currently contributes less than one per cent to GDP, there are proven reserves of industrial minerals and precious metals such as gold, platinum, tantalum, iron ore, marble, potash and natural gas which can economically be exploited. On the other hand, the service sector makes up about 38 per cent of GDP and its significant contribution stems from the relatively large investment expended on the sector, notably on health related and social services, tourism and travel-related services, construction and related engineering services and financial services.

2.2.1 Economic Liberalization

The new Market Oriented Policy of 1992 led to a number of policy measure and reforms, which have changed the structure of the economy and encouraged immense economic development and growth. The reforms included inter-alias: the liberalization of trade policy, privatization of public sector enterprises, financial sector reforms, and deregulation of prices and exchange rate controls. Since 1992, Ethiopia has cautiously devalued its currency (the Birr) and toward a market determined exchange rate system through the use of periodic foreign exchange auction. In line with market oriented economic policy, the investment regime has also been liberalized through a series of Government proclamations.

2.2.2 Agriculture

Ethiopia is an agricultural based economy. It generates over one-half of the country's GDP, over 80 per cent of export earnings and employs 80 per cent of the labor force. Agricultural production is predominantly in the hands of small farmers, working individuals, small holding mainly for household consumption. The Government has made agriculture its primary priority, and to this end developed and implemented strategy of Agricultural Development Led-Industrialization (ADLI).

The Agricultural Development Led-Industrialization embraces the export-led development's strategy as an engine of growth, incorporates a parallel and co-ordinate development of agriculture and industry. The strategy has two layers, an outer layer, an export led growth and an inner core Agricultural development led-industrialization. The export contribution will come through the supply of commodities for direct export and through industrial value added. The inner core will come in two ways. First, by establishing a deliberate reliance of industry on domestic agriculture as inputs to agro-business of various types. Second, it is intended to improve smallholder productivity thus reducing employment pressures and acting as an increased source of demand for local industrial goods.

Endowed with wide-ranging agro-ecological zones and diversified resources, Ethiopia produces all types of cereals, fiber crops, oil seeds, coffee, tea, fruits and vegetables. Considerable opportunities exist for new private investment in the production and processing of the agricultural crops and resources.

2.2.2.1 Coffee

Being the origin of coffee Arabica, Ethiopia has immense potential to offer the world market a wide variety of flavours of organically produced, washed and sun-dried coffee. Flavours range from the fruity flavour of Ghimbi to the winery flavour of Limu to the cheesy flavour of Illubabor to the mocha flavours of Yirga Cheffe and Harar. Today coffee

consumers worldwide are appreciating the value of organic coffee's natural aroma and flavour. More than 90 percent of the coffee harvested in Ethiopia is organically grown.

The inherently superior quality of Ethiopian highland Arabica coffee is unmatched, particularly in flavour and aroma. Ethiopia also produces several types of coffee, the water-soluble extracts of which can be used for hot beverages, iced drinks, and ice creams and in the confectionary industry.

2.2.2.2 Leather and Leather Products

Ethiopia offers a wide range of processed and semi-processed hides and skins to the world market. Some of the products, such as Ethiopian highland sheepskin (which has gained an international reputation for making gloves), are known for their quality and natural characteristics. Ethiopian hide and skin exports include pickled sheep skin, wet blue sheep skin, crust sheep skin, wet blue goat skin, crust goat skin, crust cow hides, finished garment leather, finished glove leather, lining/upper leather, suede leather, full grain leather, embossed leather and patent leather. The export of finished leather and leather products (such as leather garments, footwear, gloves, bags and other leather articles) is also highly promising.

2.2.2.3 Livestock and Meat

With the largest livestock population in Africa, Ethiopia has an ample supply base for the export of live animals and meat. Livestock husbandry is mostly carried out under natural grazing, making the meat and meat products obtained from the animals very tasty and nutritionally healthy for human consumption. Ethiopia's main exports of live animals and meat products include steers and yearlings; lowland sheep and goats; fresh and chilled lamb and mutton carcass; fresh and chilled goat carcass; fresh and chilled veal carcass and beef four quarter; fresh and chilled boneless veal and beef; frozen lamb, mutton and goat carcass and veal and beef special cuts.

2.2.2.4 Textile Fabrics and Garments

The textile industry is the largest manufacturing industry in the country. There are more than fourteen major state-owned and private textile and garment factories. The industry employs about 30,000 workers and represents 36% of the entire manufacturing industry. The main textile products manufactured in the country cotton and nylon fabrics, acrylic yarn, woolen and waste cotton blankets and sewing thread. The domestic potential of cotton production as basic raw material is far more than the demand of the currently installed spinning capacity and the availability of cheap labor is one of the major parameters for considering this industrial sector as one of the strategic industries for export development.

2.2.2.5 Oil Seeds and Pulses

Ethiopian oilseeds and pulses are known for their flavor and nutritional value as they are mostly produced organically, for instance, the Ethiopian white sesame seed is used as a reference for grading in international markets. Ethiopia's major oilseed and pulse exports include sesame seeds, nigger seeds, linseeds, sunflower seeds, groundnuts, rapeseeds, castor oil seeds, pumpkin seeds, haricot beans, pea beans, horse beans and chickpeas. Saudi Arabia, Yemen, Israel, EU countries, and some Asian and neighboring Africa countries constitute the major markets of Ethiopia's oilseeds and pulse exports.

2.2.2.6 Fruits, Vegetables and Flowers

With a favorable climate, abundant labor, land and water resources, most regions of the country are suitable for the production of a wide range of tropical and sub-tropical fruits, vegetables and flowers. The major vegetable export products include potatoes, green beans, okra, melon, white and red onions, shallots, cabbage, leeks, beetroot, carrots, green chillies, tomatoes and lettuce. The main exportable fruits include oranges, mandarin grapefruit, mangos, guavas, lemons and limes, while cut flower exports include statice, alliums, roses and carnations.

2.2.2.7 Tea

The quality of tea mainly depends on climatic conditions, the type of soil upon which the plant grows and the method of processing. In Ethiopia, tea is mostly grown in the highland dense forest regions where the land is fertile and thus the use of fertilizer is very minimal. Moreover, the availability of abundant and cheap labor in the country has made the use of manual weeding, instead of chemical weeding, possible. Because of this mostly organic cultivation, Ethiopia tea is increasingly sought for its aroma and natural flavors.

2.2.2.8 Natural Gum

Ethiopia is endowed with distinct climatic conditions that enable it to grow diverse plant species, which are for industrial and pharmaceutical purposes. Acacia, commiphora and boswellia are examples of one group of plant species that grows in the arid and semi-arid areas yielding gum. The increasing consumption of convenience foods has enhanced the growth of gum production and use over the past several years. As in most other sectors of the additive industry, increasing health consciousness has tended to fuel the demand for thickeners of natural origin. The major gum products produced mainly for export are gum lobanum derived from boswellia; gum myrrh and oppoponex derived from commiphora and gum Arabic derived from acacia species. Apart from their pharmaceutical applications, these products have a wide-range of industrial uses in such areas as beverages, candies, chewing gum, confectionaries, dairy products, gelatines, nut products, puddings and canned vegetables. Typical applications for gum products include: adhesive thickeners; thickeners, stabilizers, flavor, fixatives and emulsifying agents in food products; clarification in beverages; release agents for rubber products and formulations in cosmetics.

2.2.3 Mineral Products

There are diverse mineral deposits in various parts of the country than can meet export standards. Mineral currently being exported include gold, platinum, marble, granite and tantalum. Export of these minerals is on a very limited scale relative to their immense export potential. Other metallic and non-metallic substances that have also been identified in the country include copper, lead, zinc, silver, gypsum, limestone, quartz and pyrite. Most Ethiopian mineral products are exportable to markets in East and Southern Africa and in Asia and Oceania. Due to freight costs, Ethiopian exports have an advantage in these regions of the world over established exports from Europe and North America. Ethiopia has also recently entered into the export of high quality dimensional stones (i.e., different types of unprocessed blocks, as well as processed marble, granite and limestone suitable for both internal and external uses.

2.2.4 Export Trade

A great part of the total export earning is accounted for by the agricultural sector in the form of raw or semi-processed commodities. The export sector is based mainly on agricultural products such as coffee, hides and skins, oil seeds and pulses.

The contribution of international trade to the growth and development depends on the performance and capability of the export sector of a given economy. Ethiopia's external trade statistics exhibits a familiar developing county pattern of exports consisting of entirely primary, mainly agricultural products (Yalew, 1997).

2.2.5 Import Trade

Ethiopia's import commodities fall under five major categories, namely: food items, textiles, machinery and transport equipment, manufactured articles, and petroleum products.

2.2.6 Investment

In the line with market-oriented economic policy, the investment regime has also been liberalized through a series of Government proclamations. Since 1992, the investment code has been revised twice to ensure a wider coverage of the sectors and activities that foreign investors are allowed to participate in. the latest revision has broadened the sectoral coverage to include telecommunications and power sectors. The Ethiopian Investment Authority (EIA), which is an autonomous Government body, serves as a one-stop-shop for issuing investment licenses and investment facilitations.

2.3 PROMISING NATIONAL INFRASTRUCTURE AND TRADE FACILITIES

2.3.1 Automated System for Federal Cooperative Commission (FCC)

FCC has set up a plan to develop and implement Cooperative Market Information System (CMIS) the objective of which is the establish a country wide cooperative market information system that links FCC, Regional Cooperative Bureau (RCB) and Cooperatives at Woreda level, that enables us to identify and penetrate the potential domestic and international market for timely collection and dissemination of market information (FCC, 2004). The CMIS is waiting for the wereda net for its implementation.

2.3.2 Ethiopian Telecommunications Corporation Expansion Plan[2]

Ethiopian Telecommunications Corporation in its plan to expand the interconnectivity of all parts of Ethiopia has started installation of optical fiber highway and the broadband technology being

[2] Tele Negarit, 2004, 40(2) pp.48-49

introduced provides improved services as compared to the current DDN network. Broadband is a means of providing bundled services on the same network with better quality, availability, reduced payment, and flexibility to satisfy customer requirements.

ETC has also planned to lay down 10,000 kilometers of optic fiber network, 4000 kilo meters of which is done, throughout the country and to link up with the submarine cables at Djibouti also on optic fiber.[3]

In line with the introduction of Broadband Internet and installation of Optical Fiber Highway, three main projects, School Net, WoredaNet and AgriNet, are underway.

School Net – is a nationwide network planned to interconnect 450 secondary vocational and higher education institutes, and has already started functioning.
WeredaNet – is a project is sought to connect about 600 woredas (districts), 11 regional government offices in Ethiopia to each other and with the Federal Government headquarters in Addis Ababa. Ethiopian Telecommunications Corporation supervises the project. As Ato Dawit, explanation the woreda net will get completed up to August 2005. The woreda net is possible because of the introduction of broadband and VSAT that makes remote and geographically inconvenient areas reachable.
AgriNet- AgriNet is the third planned project that will potentially link more than 30 research and operational agricultural centers together.

2.3.3 The Disaster Prevention and Preparedness Commission (DPPC)'s Early Warning System (EWS)

The disaster prevention and preparedness commission also used to be called the Ethiopia Relief and Rehabilitation Commission will be a potential user of the **Ethio Cyber Market**. Due to repeated drought attacks faced by the country, the government decided to give additional and broader mandates and established the DPPC. One of the major activities of the commission is to

[3] Source: Eng Dawit Getachew, Internet Operations Manager, ETC

provide early warning services in relation to natural disasters. Based on this responsibility, the DPPC maintains an early warning system (EWS), an information system that provides accurate and timely information on factors affecting food security to enable policy makers take informed decision on emergency relief planning (NAIS, 1999)

Agricultural data is one key type of information required by EWS. According to (NAIS, 1999), EWS is highly dependent on the availability and accuracy of data in the following major area.

- **Agro-meteorology** - information on rainfall conditions and presentation of data from remote sensing.

- **Crop Monitoring** - qualitative information on crops including land preparation planting, crop conditions input supplies extent of crop damage; quantitative data on crop production and information on emergency needs of agricultural sector intervention.

- **Livestock Monitoring** - information on posture, drinking water availability, animal health, herd movements, terms of trade and patterns of pastoralists' movement, and data on livestock production emergency needs for livestock rehabilitation intervention.

- **National Food Security Monitoring** - information on import and food aid requirements, commercial food and national stock holdings.

- **Price Data on Agricultural Product** - information on food and livestock price trends, local shortages, surpluses and potential for donor financed local purchases.

These and other developments show a bright future for the success of electronic markets if not shopping of items in general, agricultural products in particular, in Ethiopia.

2.4 PRODUCERS MARKETING THROUGH COOPERATIVES

The fundamental rational for group action among farmers with regard to the marketing of their products is their disparity in size and scope of activity as individual sellers compared with the buyers they face. Farmers are many in number yet relatively small in size compared to crop and livestock dealers, processors and distributors. Farmers have historically sought to overcome their deficiency in marketing power by organizing cooperative bargaining associations and marketing cooperatives to assemble greater volumes of graded products to meet buyers' specification and to deal with them on more equal terms (Torgerson, 2004)

Farmers have certain goals and objectives when embracing group action strategies for marketing; the main among these is income enhancement from their farm enterprise as well as possible increase in the volume of the farm itself as an operating business.

Second farmers seek more control over marketing conditions for their products rather than being forced with a take-it -or-leave-it proposition. They seek improved prices and other terms of trade for raw products marketed through their cooperative marketing businesses that will enable them to take their products further through the volume added chain to the ultimate consumers or buyers. Furthermore producers enjoy their independence as autonomous business units and can maintain their structure as independent business by cooperating with other similar production units.

Approaches to cooperative marketing evolved in two forms horizontal and vertical. Horizontal approaches involve assembly, transport and grading of raw commodities and livestock to shipping points where they were sold to buyers or processors (Torgerson, 2004). Commodity marketing cooperatives play an important role in market coordination and in the development of critical mass for negotiating price terms and supplying greater volumes to the market on an orderly basis vertical cooperative marketing involves processing of raw commodities into value added products such as cheese from milk, flour from grain etc.

Marketing efforts, both horizontal and vertical initially took place in locally organized cooperatives. It soon because apparent that local co-ops exhibited a deficiency in purchasing

strength and marketing capabilities that was not too different from those encountered by the farmers themselves as individual marketers. Linkage among local co-ops were, therefore formed at the regional level through a federated structure as a means of overcoming this deficiency regional co-ops were able to aggregate volumes of products for sale.

2.4.1 Cooperative Development in Ethiopia[4]

Cooperative is an autonomous association of persons united voluntarily to meet their common economic, social and cultural needs and aspirations through jointly owned and controlled enterprises.

Cooperatives development in Ethiopia started 40 years before, during the time of the Emperor and continues at the time of Derg using the socialist philosophy, which crippled cooperatives and the sprit of cooperation through lack of accountability and transparency. Now cooperatives are organized on the principle of voluntary membership in line with the international principles of cooperatives' organization and Proclamation No. 147/98.

The objective of FCC, established in May 2002 according to Proclamation No 274/2002 as autonomous government organ, to enable rural and urban working people to solve the economic and social problems and become self reliant by being organized in cooperatives depending on the local resources.

Cooperatives are essential in all areas of socio economic development. Primarily, they are vital in increasing agricultural production, agricultural marketing, capital mobilization and encouraging agricultural investment.

Various cooperative and their unions are emerging in Ethiopia and started contributing to the social and economic development of the country.

[4] FCC (2004) The First National Cooperatives Products and Services Exhibition and Bazaar Cooperatives for Sustainable Development

The agricultural marketing cooperatives are of two categories primary and union. According to Ato Addisu, market information manager of FCC there are currently about 400 primary and 68 unions.

Currently, the rural 'Woredas' where cooperatives are situated do not have Internet connection, however, because of the 'Woredanet' and AgriNet the interconnectivity of the 'Woredas' is inevitable is the near future.

Cooperatives for Marketing Agricultural Products are legal organizations that act on behalf of the farmers in selling agricultural products in better prices and dividing 70% of the profit among the members according to their contributions; the remaining 30% is invested for the supportive activities of the cooperatives. The organizations are well based and FCC is striving for increasing the number of members in each cooperatives. The dividend is usually distributed during holidays so that the dividend creates motive to others who are not joining the cooperatives to join, and to those who joined but contributed less, to contribute more. Accordingly the number of members in each cooperative and the number of cooperatives is increasing from time to time.

As Ato Addisu explained the concept of cooperatives had been negatively conserved in the regime of the 'Derg' and now effort is continuing to convince members come together and improve their living. To break the resistance, cooperative started to be more of marketing, i.e. to attract members through the profit they receive. The ultimate goal is, however, to enable farmers produce products of special interest in group and come up to more sustainable and better life.

Market information is gathered through traditional means of communication, using postal services and telephones. The market information communication would be improved if the potential of the Internet to facilitate timely information interchange were exploited.

2.5 MEASURING THE ECONOMIC IMPACT OF PRODUCER COOPERATIONS

Expanded processing of agricultural products in rural areas has been widely pursued as a strategy for cooperatively owned processing facilities provide a way for producers to integrate forward and capture potential profit from processing and marketing their products. Furthermore, adding value to farm products before they leave the area creates new employment opportunities and generates economic pin offs in rural areas that have experienced economic stagnation.

Consequently, the expansion of agricultural processing in rural areas usually receives broad based support from commodity groups, rural development interests and state political leaders (Walzer et al., 1999).

2.5.1 Concepts and Methods of Economic Impact Analysis

The purpose of economic impact analysis is to estimate the changes in an areas level of economic activity often measured by changes in employment, income, and value added by specific economic sectors the conceptual base for economic impact analysis is export base theory also economic base theory. A fundamental concept of economic base theory is that an area economy can be divided into two broad types of economic units, basic and non-basic sectors. The basic sector is defined as those firms that sell goods and services to markets outside the area. The revenue received by these firms for their exports of goods and services is termed as basic income. Non-basic sector sometimes referred to as local trade and service sector accounts for the areas economy for those firms that supply goods and services to customers within the area (Leistritz and Murdock, 1981).

A second key concept in export base theory is that the level of basic activity uniquely determines the level of non-basic activity in an area, and a given change in the level of basic activity will bring about a predictable change in the level of non-basic activity. This relationship is known as the multiplier effect. Thus, export base theory emphasizes external demand for the products of

the basic sector as the principal force determining change in the level of economic activity (Leistritz, 1998).

The basis for the multiplier effect is the interdependence of the basic and non-basic sectors in an economy. As the basic sector expands, it requires more inputs.

CHAPTER THREE

THE INTERNET, E-COMMERCE AND ETC'S POTENTIAL

3.1 APPLICATIONS OF THE INTERNET

3.1.1 Commercialization of the Internet

During its conception in 1969, the ARPA Net was purely the domain of government research agencies and academic institutions, and the network structure was government subsidized. At that time, the use of the Internet to promote the sale of goods and services was considered unethical, because people could not make money at the taxpayer's expense (Cook and Sellers, 1995).

Large corporations have been linked to the Internet since the 1980s; however, it was only their research and development department that would access the Internet, using it as a means to gain scientific and technical information from the government and the academic community (Maurer et al, 1995).

Corporate information system staff was the next to use the Internet, primarily the many USENET news groups that focus on computer hardware and software, whereby participants answer each other's technical questions. Soon thereafter computer product vendors, realizing that their products and those of their competitors were being discussed in the news groups, began to monitor the news groups as a means of gaining customer feedback, and participated in correcting false information (Maurer et al, 1995).

While ARPANET grew, similar networks were developing with a more business-oriented slant, although they did not have access to ARPA Net. Later on, many corporations joined by linking their computers, Local Area networks (LANS), and Wide Area Networks (WANS) to the Internet, adopting Transmission Control Protocol Internet Protocol (TCP/IP).

In 1990, corporations wishing to use the Internet faced a series of problems, because the National Science Foundation's Appropriate Use Policy (AUP), a document that listed the various permitted and forbidden activities, prohibited business use of the Internet (Moody, 1996).

Moody (1996) further states that it was in part due to this ban that a major alternative to the NSF's backbone was created. This was the Commercial Internet Exchange (CIX), set up to permit business use. The start up of the CIE heralded the beginning of the end to the NSF Appropriate Use Policy. With the tremendous growth in other commercial networks, the importance of the NSF Net diminished considerably to the point where the AUP was irrelevant anyway. In 1991, the NSF lifted the restriction on the commercial use.

Then after, the NSF Nets and the commercial nets were finally connected, and it is due to the presence of more and more of these businesses that the Internet is growing rapidly. In 1995, the NSF Net reverted back to the research project, leaving the Internet in commercial hands clearing the way for Electronic Commerce (Zakon, 1997).

Currently the largest and fastest growing segment of the Internet is business and the Commercial Domain Number has already overtaken the number of research and academic institutions.

Electronic commerce is any use of electronic networks and technology for commerce and other economic activity. This includes the use of electronic communication as the medium through which goods and services of economic value are designed, produced, advertised, catalogued and inventoried, purchased and accounts settled. Geographic location, abundance of capital or the ownership of retail outlets is irrelevant to this type of transaction (GII Commission, 1996).

According to GII Commission (1996), electronic commerce has the following benefits:

- Electronic commerce is an innovative force that will liberate industries and people from the limitations placed by physical elements, time and space on traditional economic activities.

which enable the delivery of pictures and sound as well as text, make it a great venue for gaining instant access to millions of people all over the globe.

Many companies are building online catalogues accessible to millions of people worldwide that can be instantly updated and customized. The user-friendly consumer oriented home pages of the WWW utilize the system of hyper links to simplify the task of navigating among offerings on the Internet. The present popularity of the WWW as a commercial medium is due to its ability to facilitate global sharing of information and resources and its potential to provide an efficient channel for advertising, marketing (Hoffman and Novak, 1997)

The cost of advertising on the Internet is a fraction of advertising in a newspaper, over the radio or television. Providing product specification online is heaper than conventional printing and publishing, and can be changed easily as the details change.

3.1.2.2 Sales and Distribution

Companies are doing actual product sales transactions on the Internet. If the product is convenient to Internet deliveries (as with software and publications), the actual product is delivered via the Internet. The Web potentially offers certain classes of providers' participation in a market in which distribution costs or cost-of-sales shrink to zero. This is most likely for firms in publishing, information and digital product categories (Hoffman and Novak, 1997).

Moreover, buyers and sellers can access and contact each other directly, potentially eliminating some of the marketing cost and constraints imposed by such interactions in the terrestrial world. This may also have the effect of shrinking the channel and making distribution much more efficient (mainly due to reduced overhead costs through such outcomes as uniformity, automation, and large scale integration of management processes). Time to complete business transactions may be reduced as well, thereby creating additional efficiencies for the company.

Web forms are the most convenient way for customers to place orders since they can simply tick the product or service they want and submit it online. Having forms with space, for credit card

details is the easiest way for customers to pay. Various registration schemes available to protect from Internet fraud increase confidence in security (Jones, 1996).

To do this, new customers fill a registration form, which automatically allocates them a customer number. They then telephone with the credit card details. Whenever they order they quote their customer number and the vender can automatically allocate the payment to a particular credit card number.

Another method is the use of Web browser software that provides for secure transactions of credit card and other confidential information. The Internet also makes after sales support more efficient. Vendors can distribute product documentation on the Web and provide support by e-mail. Business on the Web transfers more of the selling function to the customers, through online ordering and the use of fill-out-forms.

3.1.2.3 Access to Technological Information

Competitive advantage can be increased due to access to state-of-the-art information on products, materials, new ideas and even the situation of a given industry. Many corporations use the internet to engage in what some call "techno-watch" keeping a finger on the pulse of emerging and new technologies, and the market response to those technologies (Ellisworth, 1994).

3.1.2.4 Information on Trade Regulations and Technical Standards

Trade regulations are often capable of making or breaking an export/import opportunity. They may include tariffs and taxes, as well as a wide range of non-tariff barriers such as quantity limits, controls on use of foreign exchange, prior deposits, qualitative requirements and others. Access to this type of information is possible on the Internet.

3.1.2.5 Price Information

Any marketing business without price information is blind. Price information provides traders with primary basis for determining whether or not trading operations are economically viable. If not immediately viable, it allows them to set specific targets and to ascertain which cost-related measures are needed to meet those targets. Price information is readily available on the Internet for most commodities.

3.1.2.6 Expert Advice and Help

There are many experts on the Internet who make their presence widely known and easily accessible. Very often one can get free advice and help with problems he/she might have from the same people who are paid highly for their consulting services to large organizations.

3.1.2.7 Cost Reduction in Business

Communication, distribution, advertising, marketing, customer support and sales all represent major business expenses. The Internet, however, provides an alternative to the traditional channels of performing these functions while significantly reducing expenses.

The Internet offers huge potential for organizations looking for opportunities to reengineer business processes all along the value chain, providing better ways of doing business at significantly reduced costs (Paxton and Baker, 1997).

Operational benefits of the Web use for industrial sellers are: reduced errors, time, and overhead costs in information processing; reduced costs to suppliers by electronically accessing online databases of bid opportunities, online abilities to submit bids, and online review of awards. In addition, creation of new markets and segments, increased generation of sales leads, easier entry into new markets, especially geographically remote markets, and faster time to market are facilitated. This is due to the ability to easily and cheaply reach potential customers and elimination of delays between the different steps of the business sub-process.

Sending brochures or annual reports around the world can cost thousands for printing and postage. Sending them via e-mail or allowing them to be downloaded to readers' PCs via the organization's web site can be done for a fraction of the cost, with the added benefits of significantly speeding up delivery time.

3.1.2.8 Low-cost Communication

Often, the first and most frequent business use of the Internet connectivity involves internal and external communications. E-mail is a low-cost method for maintaining regional, national and international communications. Messages can be exchanged in minutes as opposed to days or even months using regular mail.

E-mail has proved to be an effective solution to the problem of telephone tag. As Jones (1996) pointed out, "You don't have to hang on while the person comes to the phone, nor does your fax machine have to retry three times because the line is engaged, or the machine at the other end has run out of paper". E-mail can be sent from just about any where there is an Internet service or access, so businessmen or travelers can kept in touch with up to the minute details of the office or site.

3.1.2.9 Collaboration and Development

It is increasingly common for companies to form partnership and collaborative development efforts. Researchers and business executives alike have attested to the fact that a lot of their communications over the Internet are with others in their line of research of field of work (Shah, 1994). Communicating with peers allows people to share their ideas, problems and solutions amongst themselves. Quite often people find that others in their field have already tackled problems similar to their own. They can then get advice on their own situations and create a solution based upon this shared knowledge.

3.1.2.10 Product Analysis

Many users also do product analyses and comparisons and report their finding on the Internet. Very often, one can find another person who may be familiar with a product he is currently testing or about to purchase. So he can get first-hand reports on the functionality of such products before spending a good sum.

3.1.2.11 Market Analysis

The large base of Internet users is a prime area for the distribution of surveys for an analysis of the market for a new product or service idea. These surveys can reach a great many people with little effort on the part of the surveyors. Once a product is already marketed, one can examine the level of satisfaction that users have received from the product.

3.1.2.12 Trend Spotting

For a company, knowing how its current investments are doing is not enough. It also needs information on what will happen in the future. Generally, the Internet is the most useful source for gathering news and tracking economic indicators. If one wants to know about global economic trends the Internet is the best place to go.

The Internet can be used as vast, easily accessible library of information. Granted, some information will still be paid for, but the cost of locating and accessing the information available will be much lower, and the quantity of information accessed is likely to be higher as a result of the greater choice.

3.1.2.13 Recruit New Employees

The Internet has many job lists and resumes online for prospective employers. New resumes are constantly posted to the Usenet groups to inform the availability of new skills. Traditionally, the

way to find people for employment was by advertising in newspapers, recruiting from colleges and other institutions. While some news groups have caused controversy over offensive and illegal postings, the fact remains that companies offer news groups and people try to locate jobs through them.

3.1.2.14 Cost Effective Document Transfer

Transferring online documents through the Internet takes a very short period of time and this saves a lot of money over postal or courier services, which can also suffer late deliveries, loss or damage. If a document transfer fails on the Internet, you can always try again since the cost of the transfer is the same. Most, if not all, Internet access providers do not charge by the raw number of bytes transferred across their link unlike other commercial information services (Shah, 1994).

3.1.2.15 New Business Opportunities

Business opportunities on the Internet include the following among others:

- Suppliers looking for potential buyers of specific products
- Buyers looking for potential suppliers of specific products
- Manufacturers in search of technical assistance, appropriate technology and know-how in specific production lines

Availability of new ideas and to be able to seek opportunities is essential for business firms to stay flexible and innovative. Such sources of new ideas and opportunities are often freely accessible on the Internet.

3.1.3 Security and Legal Issues in Doing Business on the Internet

3.1.3.1 Security Issues

By its very nature the Internet is an open system and hackers or crackers may try to enter into company's internal network for mischievous or illegal purposes inadequate security is the biggest challenge to making the Internet a commercial market place. Because incidents of security breaches on the Internet are common, many businesses and consumers are uneasy about performing financial transactions online.

In theory, there is no difference in the risk associated with online transactions and those involved with mail order, telephone, or fax. In practice, however, much less is known about the amount and type of losses that might be encountered online, so organizations have taken a cautious approach to the new medium (Kennedy and Dietshc, 1995).

The Internet society estimates that about half of all the networks are not tied into the Internet, because their network administrators are too fearful of the security risks.

Internet security threats range from curious prowlers to well organized, well equipped intruders, who seek to gain access to private information or maliciously disrupt an organizations communications and computer systems. For an individual, the risk is relatively minor and some precautions may be all that is necessary. For organization, the risk of loss due to the invasion is significantly higher (Hodges, 1997).

Besides financial transactions, security is also needed for sensitive request for quotation, confidential bids, and collaboration on projects involving trade secrets. Data integrity is also another issue related to security. Data sent as part of a transaction should not be modifiable in transit.

Individuals and businesses are demanding communication networks through which information can flow in a free and secure manner. Secure worldwide communication is critically important as

intruders, criminals, competitors, and other unauthorized parties find increasingly sophisticated tools to violate the privacy and security of communication (GII commission, 1996).

Today, there are two basic approaches to secure electronic commerce. The first one focuses on securing individual severs and network sites. This access security is generally addressed by firewalls.

The second approach focuses on transaction security. Transaction security addresses the following issues:

- Authentication: makes both parties to be confident and know with whom they are talking;
- Message integrity: Prevents message contents not to be changed or tampered with; and
- Non-repudiation: Prevents companies from denying that they have sent or received a file.

Encryption methods insure transaction security. According to Backer (1991), data encryption is the process of convening a normal message (plain text) into a non-legible message (cipher text) that can not be read until it is decoded (decrypted) into the original plain text form. Encryption scrambles the data and makes it unreadable to any one who does not possess the key to decrypting.

While cryptography is an important tool to protect the confidentiality, integrity and availability of electronic information, including intellectual and other intangible property, cryptography can be used for illegal activities that may affect national security or public safety. Policy development must strike the proper balance among the needs of business, individuals, public safety and national security (GII Commission, 1996).

3.1.3.2 Legal Issues

Businesses communicate electronically to issue instructions and to make commitments with outside parties. Business messages between independent firms can have legal implications. According to Baker (1991), electronic transactions and contracts raise some issues including the following:

- Are they enforceable in the court?
- Can they be proven in the court?
- How must they be recorded for tax purpose?
- When does an electronic transaction become binding?
- Who is responsible if a transmission is a victim of industrial espionage?
- Who has responsibility in case of an audit?

So, the legal system of each country, and international trade agreements between nations, must be adjusted and reformed to accommodate such issues and the new concepts of law, to facilitate electronic commerce.

3.2 MARKETING ON THE INTERNET

3.2.1 Internet Marketing Techniques

The Internet allows for a continuum of marketing techniques ranging from strictly passive to very aggressive. The passive track comes down to viewing the web as a variation on television and the visitor as a variation on TV viewer passive internet marketing is called pull marketing, because it requires the user to pull the information from the site. The user must actively seek out the site each time a user chicks a link, the browser sends a request to the web server (a pull), asking for a specific page. The browser downloads the page and displays it on the users screen. (Awad, 2003)

In aggressive Internet marketing, the web site seeks out potential customers. This is called push technology, because the Website "pushes" the information outs the customer irrespective of his/her interest. The web server does not wait until the customer requests a page. Table 1 shows examples of pull and push activities[5].

[5] Source: Greenstein (2000), P.E- commerce, New York McGraw Hill, INC, 368 as cited in Awad 2003)

Pull to Push Continuum		
Passive	Moderate	Aggressive
Providers of information (web presence advertising)	• Specialized services to users requesting information • Offline advertising • Banner advertising • Targeted e-mail to past customers • Site registered with many search engines • Specialized e-mail to users requesting periodic information	• Spam mail • Chain mail

Table 1 Examples of pull and push activities

Not all products translate well on line and therefore may not need anything beyond the passive type-site.

According to Awad (2003) registering with search engines and directories is one way of attracting visitors getting information about specialized services to users who request it is usually done by e-mail offline advertising such as on radio, or television or in magazines and newspapers, although expensive necessary to promote a website. This is more push than pull marketing. Websites do not just attract business the moment they are on the Internet. It needs repetitive ads locally and nationally.

Online banner advertising is a service offered (for free by Internet marketing firms that install advertising banners on popular web sites (like search engines) with links to merchant's website. This is more costly than other methods, but more effective in attracting visitors.

Targeted e-mail to past customers is aggressive marketing because past visitors do not expect further contact with online merchants. This method is effective because it discontinues the

advertisements, if post visitors do not return to the site within a designated time period cookies are used to identify and track customer response to e-mail advertisements.

The most aggressive and abusive Internet marketing technique is spamming is sending out millions of e-mails to recipients who never asked for them. E-mails are sent to individuals and organization that have never visited the merchants' website

3.2.2 The e-Cycle of Internet Marketing

Like any business venture, internet marketing follows a life cycle that begins with planning followed by four Ps: product, pricing, place distribution or delivery and promotion (Awad, 2003).

3.2.2.1 The Business Plan

Business plan is a written document that identifies the business goals and how to achieve them. It can be as simple as laying out the things you want to do and matching them against other products on the market, the competition the constraints and the cash flow requirements. In virtually every case where an online business failed, it was either because of poor planning or poor management. A business plan is critical for Internet business.

The content of business plan varies with the type and size of the business but generally includes the following elements:

1. **Mission**: What is your business trying to achieve?
2. **Product**: what so that you are selling what makes it unique?
3. **Competition**: who are your competitors how well established are they?
4. **Target audience**: Are prospective customers likely to use the Internet at work or at home?
5. **Marketing**: How do you plan to reach your customers what advertising media do you plan to use
6. **Sales plan**: what sales methods (telemarketing agents) do you plan to employ?

7. **Operations**: What equipment, location and size facility are you planning to start with? What is the size and qualities of staff that will support the operation who are your suppliers how reliable are they? How many of them are on the Internet? What experience do they have? Do they deal with your competitors? How do customers reach you?
8. **Technology**: What hardware/software and other technology do you need? What ISPs are available? How reliable are they? What are their charges?

3.2.2.2 The Product Description

With regard to the product, the emphasis is on viability, quality, reliability, dependability, and integrity. This is especially important in Internet marketing where customers look for reputable merchants with quality products and competitive prices. Products may be physical goods or services. Identifying the unique features of either product is critical in Internet marketing.

3.2.2.3 The Pricing Strategy

Once the product is identified, the next step is to define how much to charge. Web based pricing strategies differ with the merchant, the market, and the type of the customer. For example, ParenthoodWeb.com (www.parenthood.com) offers a free service for visitors to develop a community. It is devoted to offering Web surfers with the best Web sites of interest to families and those about to become parents. Other sites such as those offered by the airlines, use frequent purchase plans to reinforce customer loyalty and encourage repeat purchase. Another approach exemplified by www.priceline.com asks the customer to offer a price that they would be willing to pay to fly to a given destination, stay a favorite hotel, rent a car, etc.

3.2.2.4 The Place

Electronic commerce facilitates the exchange of information between business and delivery companies to ensure prompt and timely delivery of physical goods to customers. More and more companies align their fulfillment phase with delivery companies like Federal Express so that

direct deliveries are made to the customer from the suppliers, bypassing the need to stock many items in a warehouse.

3.2.2.5 Promotion

Internet marketing is about promoting a product to get the attention of prospective customers. Internet marketing follows the AIDA (attention, interest, desire and action) guidelines for direct mail marketing. The main goal is to get the attention of the prospective visitor. Web site quality, ease of navigation, and personalization are important, because attention is the entry point or the front of the marketing process. Good graphics, attractive banners, and proper use of color are essential to draw visitors to the Web site

Once the site gets attention, the next step is to create interest in the product(s) displayed. Quick response time and ease of navigation make a difference in how quick a visitor is guided through the choice of products. Information crates interest in a site. Web page has to be updated constantly to provide excitement and keep visitors interested.

The interest could lead to build a desire for action. Interactivity through navigation generates a desire to continue of to click away. In most cases, the visitor clicks back and forth, reviewing and assessing every product before making a decision. This decision is the *action-* placing the order or the sale. This is as easily done as filling a form online. Once completed, the visitor clicks on a button to e-mail the form to the company for processing. Once received, the company initiates the fulfillment phase of the marketing process.

3.2.2.6 Personalization

Personalization is a technique that combines product and promotion for customers to receive information customized to their needs.

Opportunities Offered by a Web Site

As explained in Yalew (1998 Web Sites extend the following opportunities for marketing:

- Interactivity: Remote communication is increasing the possibilities for navigation and information exchange exponentially. Even simple hyper links can infuse an average Web Site with more information.
- Availability: A Web Site, an online market is a market place that never sleeps as long as the server is up. The items are therefore available for 24 hours a day, 7 days a week, year round.
- Global Reach: The Web makes online business accessible from anywhere in the world.
- Real Time Information: All other forms of mass media have a publication date or scheduled airtime for the distribution of new information. The Web is truly ideal in this respect, even small but useful changes can go online as they occur.

3.2.3 Electronic Payment Media

There are several types of electronic payment media already in use. Electronic payment media can be categorized into three depending on the information being transferred online: Trusted third party type, National fund transfer-related type and Digital cash or electronic money (Awad, 2003).

1. **Trusted third party type**. This type maintains all sensitive information. Banks for example maintain bank accounts and credit card numbers for customers, who may be both buyers and sellers. No financial transaction is done online and the information need not be encrypted as financial transactions are completely updated off-line.
2. **National fund transfer-related type.** This is MasterCard SET-based transaction. A customer submits his/her credit card to a merchant for payment. The merchant transmits the credit card number via a phone line to the issuing bank for confirmation. The issuing bank then adjust the customer's and the merchant's accounts accordingly. Because it is all online, the information transmitted is encrypted for security.
3. **Digital Cash or Electronic Money**. This type of transaction allows the transfer of money itself, which carries value. In this case serial numbers representing actual money are encrypted all the way to their destination and can then be converted into real money. It took

years for people to accept paper money; it will take time before people will accept a digital economy as a replacement for paper-based economy.

3.3 ETHIOPIAN TELECOMMUNICATIONS INFRASTRUCTURE

The Ethiopian Telecommunication is striving for the improvement of the existing network facilities and price so that it would satisfy the requirements to link Ethiopia to the globe.

3.3.1 The Existing Internet Connectivity Situation

Ethiopian Telecommunications Corporation (ETC) is the sole Internet Service Provider (ISP) in Ethiopia. The fact that we have only one ISP has posed a problem in coverage and quality of services of the Internet, especially to the rural part of the country. To alleviate the problem of connectivity, ETC has planned to install a network of optic fiber highway of 10000 kilometers long throughout the country and to link this up with the submarine cables at Djibouti also on optic fiber. 40% of the plan that extends in eight directions nationwide is now completed as ETC signed contractual agreement for the installation with three big companies: SIMENS, ALCATEL and CITCC in Nov. 2004.

The agreement with SIMENS covers 1860 km undertaking the project installation in three directions, that is, Addis Ababa – Dessie - Mekelle; Addis Ababa- Debre Markos - Bahir Dar-Gonder and Addis Ababa – Sulta Satellite station. The second contractual agreement, with the Italian – based ALCATEL covers 1680 km in three directions: Addis Ababa – Nazreth – Dire Dawa – Djibouti, Addis Ababa – Modjo – Zeway – Shashemene – Awasa and Addis Ababa – Butajira – Soddo –Shashemene. The third agreement, with China International Telecommunication Construction Corporation (CITCC) covers 670 km stretching from Addis Ababa to Jimma and from Addis Ababa to Nekemte crossing twenty large towns on its way.
ETC is expected to finalize the 4000 km optic fiber network infrastructure that insures transport of high quality voice, data and multi media services by June 2005.[6]

[6] Source: Eng. Dawit Getachew, Internet Operations Manager, ETC.

3.3.2 The Internet Price Reduction[8]

Because of the introduction of broadband multimedia and optic fiber, ETC managed to reduce the Internet tariff drastically. This facilitates the way for subscribers to use dial up, leased line or shared diesel Internet services for reasonable payments. The following table shows the price comparison:

	Previous Tariff (Birr)	Recent Tariff (Birr)
Subscription Fee	332.00	156.00
Monthly Fee	23.00	60.00
Utilization Fee	0.11 per min for 0 to 1800 min	Free for 0 to 900 min utilization
	0.08 per min for 1800 to 3600 min	0.07 per min during peak hours
	0.06 per min for more than 3600 min	0.04 per min off peak hours

Table 2 Tariff Comparisons Previous and Current for Dial up Internet

As shown in Table 2, the new installation fee offers a reduction of 176 Birr from the previous and a 122 Birr reduction in service charge for utilization up to 3600 min in a month.

The leased line service to which most governmental and non-governmental organizations are subscribers will be made more efficient as it has been integrated with the Broadband Internet. The price comparison between Digital Data Network (DDN) and Broadband Multimedia (BBM) in leased line can be exemplified with the 64 kbps bandwidth as shown in Table 3.

Leased Line	Network Technology	
	DDN	With BBM
Initial Subscription Fee	1,872.00	1,082.00
Monthly Fee	4,752.00	1,296.00

Table 3 Leased Line Price for 64 kbps Bandwidth

[8] Source: Ato Metasebya Belayneh, Business Development Manager, ETC

One reason that initiated ETC to reduce the price of the Internet is the plan to attract more subscribers. The Broadband Internet is planned to provide dial up services to 100,000 subscribers and leased line services to 3,000 subscribers. Statistics for Internet subscribers in 2003/04 shows there were not more than 15,000 dial up and leased line subscribers. Table 4 shows the number of Internet subscribers as reported in the annual statistical bulletin published by Project Management and Support Division, ETC.

	1996/97	1997/98	1998/99	1999/00	2000/01	2001/02	2002/03	2003/04
Dial up	1042	2068	2163	2461	4073	6740	9491	12091
Leased	-	-	-	-	-	-	53	64

Table 4 Number of Internet Subscribers[9].

[9] Source: Annual Statistical Bulletin (2003/04), ETC

CHAPTER FOUR

METHODS AND TOOLS USED

Exploratory research looks for hypotheses. Hypotheses are tentative answers to questions that serve as guides for most research projects. Emphasis is placed on finding hypothesis relative to new products or marketing practices that can be changed profitably.

4.1 DESIGN OF EXPLORATORY STUDIES

Formal design is conspicuous by its absence in exploratory studies. The imagination of the researcher is the key factor. However, three lines of attack may aid in finding hypotheses of value (Boyd et. al, 2004):

1) Study of secondary sources of information;
2) Survey of individuals who are apt to have ideas on the general subject; and
3) Analysis of selected cases

4.1.1 Secondary Data Study

The most economical way for researchers to find possible hypotheses is to take advantage of the work of others and utilize their own earlier efforts.

A survey of secondary data can be expedited if it is organized. Accordingly, secondary data from the Ethiopia telecommunications corporation, Ethiopia central statistics Authority (CSA), Ministry of Agriculture, Ministry of Trade and Industry, NBE, Federal Cooperative Commission

(FCC) and Addis Ababa Chamber of Commerce are consulted to identify the challenges and opportunities of making use of e-commerce in marketing agricultural products in Ethiopia.

According to the Central Statistics Authority, responsible for collecting data all over the country, data on retailers' prices and producers' prices of agricultural products are consulted. A monthly report on producers' prices is taken as sample data to build the agricultural products database that is to be used in the Cyber Market designed.

4.1.2 Survey of Individuals with Ideas

Various techniques have been developed to aid in collecting exploratory data from individuals that make up what is known as qualitative research. When applied to consumers, such research is generally aimed at finding the thoughts, feelings, and attitudes that influence consumer behavior. The techniques involve interviews with individuals and groups. Individual interviews may be in-depth interviews (often called one-to-one) or projective techniques by which respondents are asked to project themselves to a particular situation. Group interviews have come to be called focus group interviews (Boyd et. al, 2004).

4.1.2.1 In-depth Interviews

Instead of approaching respondents with a fixed list of questions, the in-depth interviews influence respondents to talk freely about the subject of interest. If some idea of interest is passed over quickly, the interviewer may seek additional information by probing. In-depth interview is becoming more prevalent in qualitative research (Boyd et. al, 2004).

Although no formal questionnaire is used in in-depth interviews, the interview has an outline in mind. The advantage of in-depth interview is the interviewer has a great deal of flexibility and can use his/her ingenuity to stimulate respondents to reveal more of their attitudes and motives. In-depth interviews take longer time than other interviews, this creates difficulty in securing respondents' cooperation and it increases cost (Boyd et. al, 2004).

Accordingly, in-depth interviews are conducted with Internet Operations Manager of the ETC, Market Information Manager of Addis Ababa Chamber of Commerce, and Market Information Manager of Federal Cooperative Commission to probe the existence and requirements of e-commerce with respect to marketing agricultural products.

4.1.2.2 Focus Group Interviews

Focus group usually consists of 6 to 12 people brought together to discuss a topic of interest. Many research organizations have elaborate facilities for such groups that permit the discussions to be tape recorded or video recorded and that permit marketing and advertising executives to watch the proceedings (Boyd et. al, 2004). Because of its cost, focus group interview was not used in this study.

4.2 WEB SITE DESIGN CONSIDERATIONS

In designing Web Sites, the primary goal is for visitors to experience the site as intended. A Web site is a part of an e-business strategy that should be designed and managed effectively. Design criteria include appearance, quality assurance, public exposure consistency, scalability, security, performance, navigation and interactivity, which are among the key factors to be considered (Award, 2003).

4.2.1 Appearance and Quality Design

Most site developers agree that mixing text with graphics adds interest to the site. The goal is to make the site easy to read, easy to navigate, and easy to understand. How attractive a site appears to a visitor has a lot to do with quality assurance. Quality assurance is a process used to check the readiness of a site before it is loaded on the Web.

4.2.2 Public Exposure

Public exposure includes site availability – uninterrupted service 24 hours a day, 7 day a week and year round.

4.2.3 Consistency

The key question under the consistency criteria is whether the web site and contents appear the same on all visitors' screen. Depending on the tools used to design the site and the browser, a site may appear restricted on Netscape but not on Microsoft Explorer, and vice versa. To prevent such happening, a web designer programming in HTML needs to fine tune the final draft of the site, or the site should advise the visitor as to the best browser to use before accessing the site.

4.2.4 Security

Protect a site from hackers to ensure secure trading online. The site should show only what the visitor wants to see. Web sites where access security is critical should run on a dedicated secure server. In banking, passwords are required to allow customers access to their bank accounts.

4.2.5 Performance

Security has a direct relationship to performance. From the end user's view, performance refers to how long a page takes to appear. Sites that are heavy on text often download instantly. Graphics takes time and can bring downloading to a halt. There is a 45 second timer on most search engines, if the site takes more than 45 seconds to download, it displays the message "can't find or can't access site."

4.2.6 Navigation and Interactivity

A web site must be logically linked and allow visitors to get to another page of interest and back home. Easily navigable site promote interactivity.

4.3 TOOLS USED

4.3.1 Database Tools

Relational Database management System, MS-Access 2002 is used as the back-end tool to build the table of varying contents on a server-client architecture because of its ease and sufficiency to support the required application.

Database for the agricultural products is designed that will be updated by the database administrator, who has the login privilege, and that will be accessed by customers who visit the site for an information or for purchase.

4.3.2 Web Application Development Tools

Ethio Cyber Market was designed to fulfill the aforementioned criteria of Web site development. It has two main categories of interfaces: interface for the administrator and another for the customers.

The administrator page authenticates the administrator for updating and maintaining the database. User Interfaces are built to enable the users to access the content of the database, Ethio Cyber Market online. The front-end tool used to design the Graphical User Interface (GUI) was HTML. The server used was Internet Information Services (IIS). Attractive pages are designed to draw attention of the visitor and reach decision of buying. Active server page (ASP.NET) was used on the server side to manage dynamic webpage.

4.3.3 The Prototype Web Page (Ethio Cyber Market)

The main objective of Ethio Cyber Market is to promote marketing agricultural products all over Ethiopia online. The web site was designed to meet the market information needs of customers in relation to agricultural products.

The web page provides visitors with navigational structure that divides the window into frames. This includes a frame displaying a list of agricultural products (Cereals, Vegetables, Fruits, Pulses, Spices, Livestock, Oil Seeds, and Hides/Skin), and another that displays Home, About

Us, Contact Us, Subscription, Operation Policy, Import/Export, Joint Venture, Product Profile and Others.

The components of Ethio Cyber Market are described briefly as follows:

Home

http://www.ethiocybermarket.com

The home page, which is the entry to Ethio Cyber Market, displays brief description of Ethio Cyber Market. It has hot links to About Us and Contact Us at the bottom of the page. Visitors should use Internet Explorer for better view of the page. This is because of the fact that there are some components that are not supported by Netscape Navigator.

Agricultural Products

The agricultural products listed on top of the Web page are linked to product identification forms and order form. In the product identification form, the combo box enables the customer to select the name, grade and location of an item. The corresponding price must be automatically displayed. This helps the customer to compare prices and grade of a product of varying origin (location).

For instance, to purchase 'Teff', Wheat, Barely, Maize or any other cereals, the user clicks on the Cereals link, which in turn links to cereals identification form and order form. The user then selects the name of the cereal from the name combo box, Wheat, its grade, White and its location from the location combo box, Arssi. Then the price of a kilogram of *white wheat from Arssi* will be displayed in text box under Price. The user can try for the same item name and grade in another location and compare the prices.

Once the user decides to buy an agricultural product, he/she shall click the Subscribe link to register for Ethio Cyber Market. The subscription form contains full information of the customer together with a CashCardNo that the customer enters. The owner of the CashCardNo is authenticated via a secret question that he/she selects and corresponding answer entered.

An algorithm was developed to generate a 10-digit number that identifies each CashCard uniquely. CashCard is cash equivalent and sold in retail shops like ETC's mobile card. The customer buys and holds one unique CashCardNo the value of which is updated offline.

A subscribed customer can fill and submit the order form. The order form contains name and full address of the customer for deliver purpose and for the purpose of building customer profile. As the customer enters his/her CashCardNo, he/she will be prompted with the secret question that was entered during registration. The customer is then expected to enter the answer to verify the CashCardNo. Once the right CashCardNo is submitted, the value of the CashCard is checked for its purchasing capability for the ordered item, then either purchase is effected and delivery arranged or the customer is notified to update the value of his/her CashCard.

About Us

This link provides information about Ethio Cyber Market and its main tasks, namely buying and selling agricultural products, breeding and fattening.

Contact Us

This link contains the address of the Webmaster so that customers can forward their comments and questions.

Operations Policy

Operations policy page describes the policy in connection with delivery time and discount.

Import/Export

This page contains links to main items involved in Import and Export business.

Joint Venture

This page calls for trade related companies for partnership together with contractual agreements.

Product Profile

This link is linked to quotations of non-agricultural products such as Gold and Silver.

Others

Others contain links to non-commercial issues including News, Education, Health, Sport, Entertainment, to make visitors stay more in our site.

Some snapshot pages are shown in the Figures 1-8.

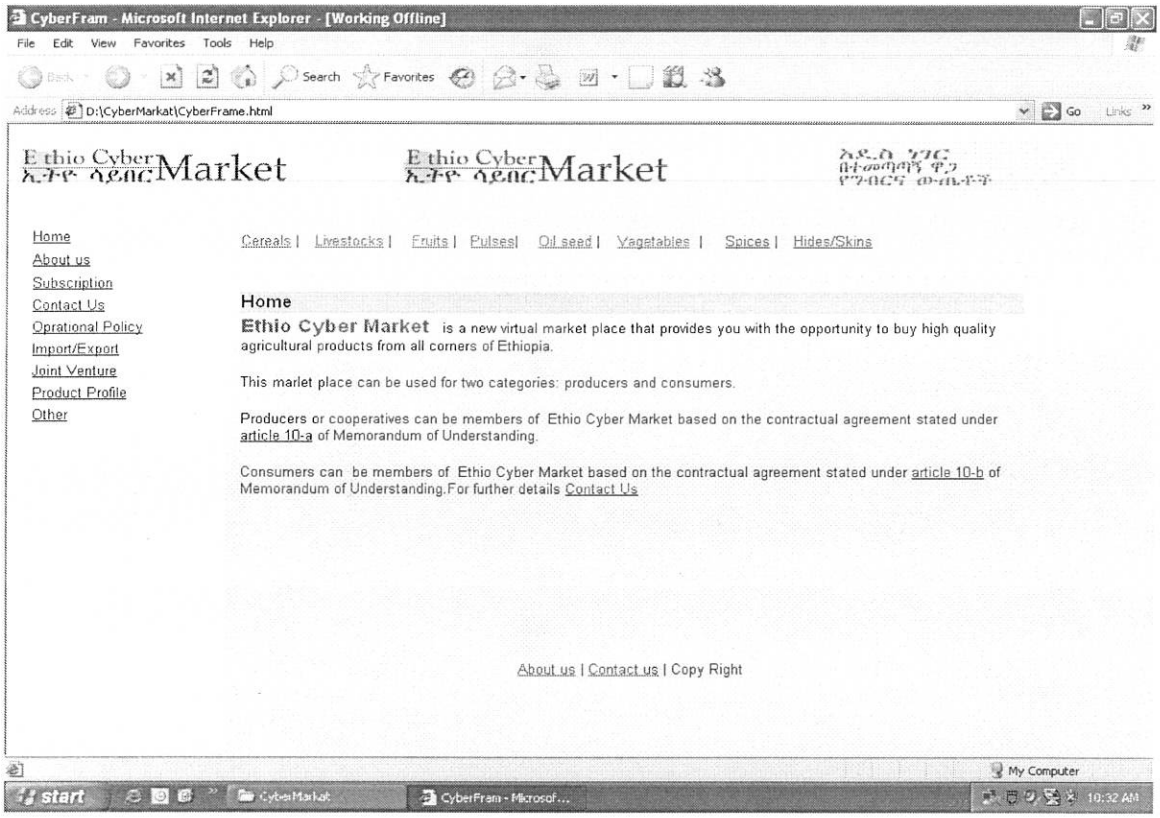

Figure 1 Home Page of Ethio Cyber Market

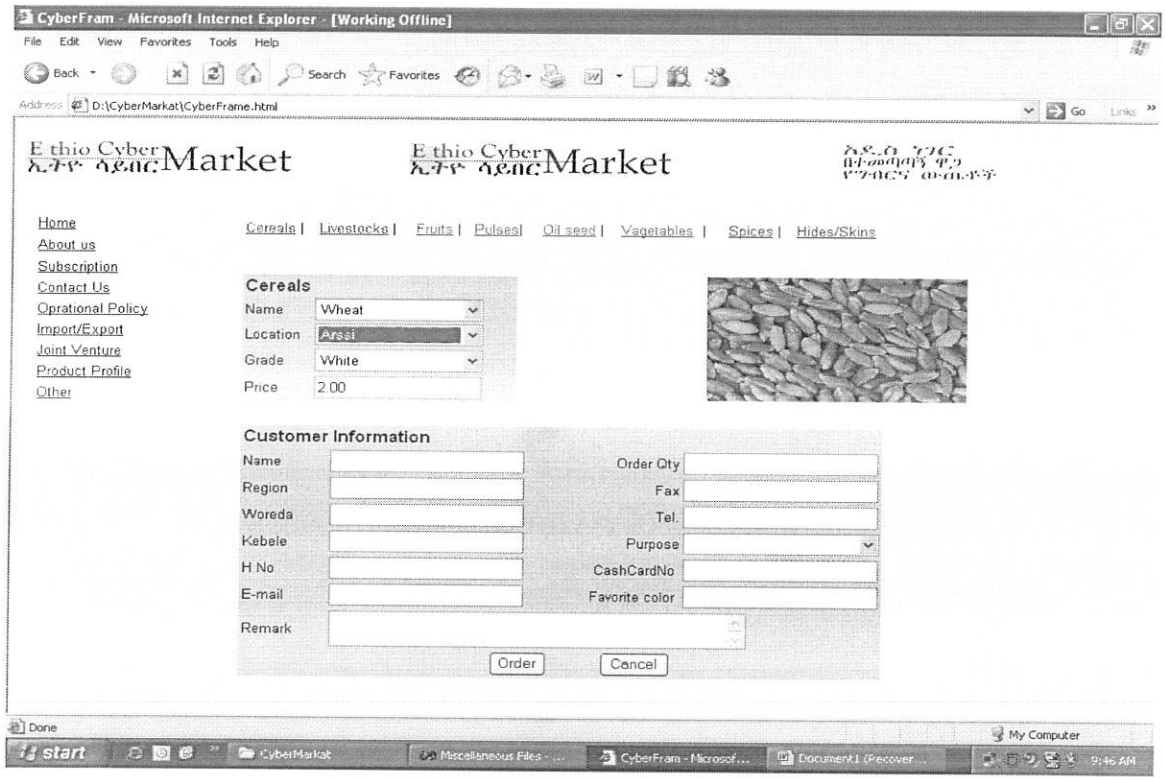

Figure 2 Order Form for Cereals in Ethio Cyber Market

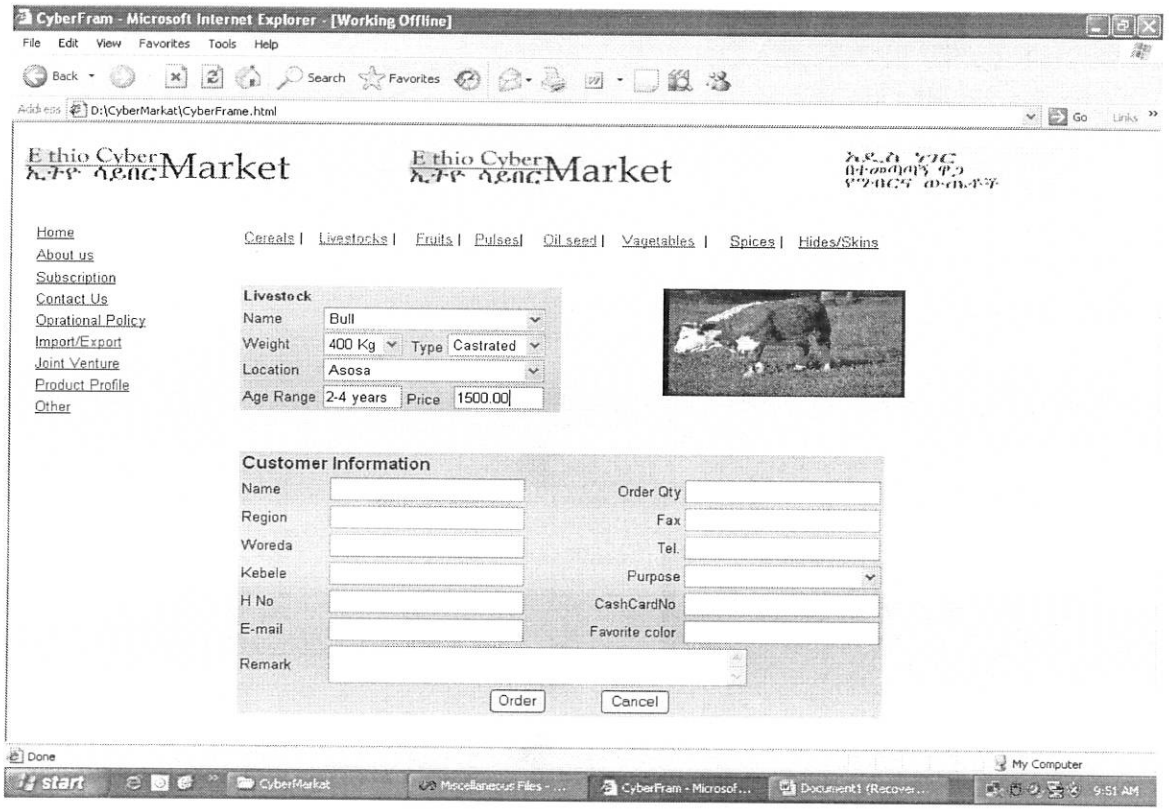

Figure 3 Order Form for Livestock in Ethio Cyber Market

Figure 4 Order Form for Fruits in Ethio Cyber Market

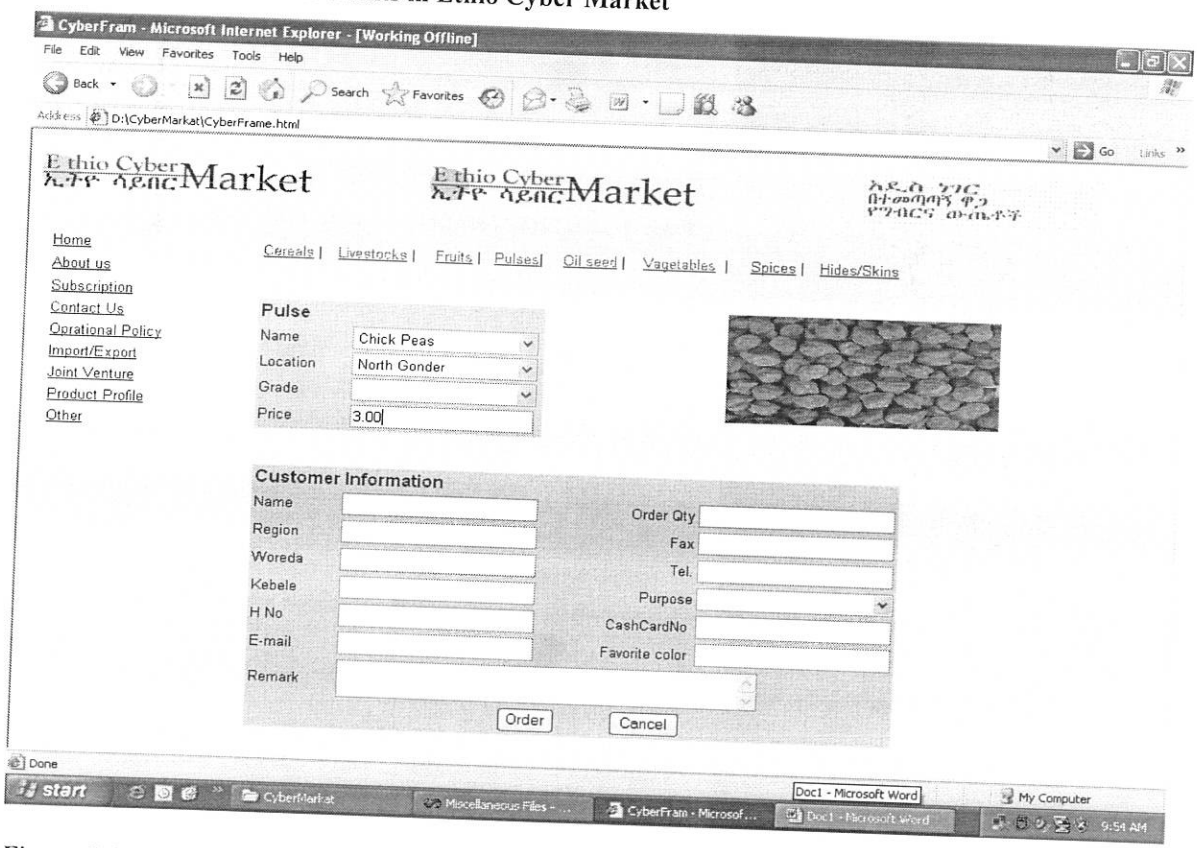

Figure 5 Order Form for Pulses in Ethio Cyber Market

The reason behind the non-existence of e-commerce in marketing agricultural products was attributed mainly to lack of awareness, insufficient Internet connectivity covering the entire country, absence of e-card, and absence of interconnectivity of banks that can facilitate online transaction.

As shown in Table 3 and Table 4, however, the introduction of Broadband Internet has reduced the price. For the leased line Internet for instance, current monthly and installation payments are reduced to 27% and 58%, respectively, as compared to the DDN based payments. Similarly, the dial up cost reduction is found to be 57% monthly cost up to 3600 minutes utilization, and 47% installation cost as compared to the previous DDN supported Internet. The reduction in cost is a green light for launching e-commerce in Ethiopia.

Furthermore, the efforts for networking all over 600 districts ('Woredas') of Ethiopia with a 10,000 km of optic fiber (40% of which is over) is another promising move towards utilizing e-commerce in marketing agricultural products.

It was found that there was no electronic payment used for online transaction in Ethiopia. The 10-digit CashCard designed in this work is aiming at eliminating the problem.

Cooperatives for Marketing Agricultural Products have to use the available technology, Broadband Internet so that better market information interchange could be realized. Ethio Cyber Market will be one option to exploit the opportunities in the currently introduced Broadband technology and optic fiber infrastructure. Cooperatives for Marketing Agricultural Products will therefore be number one users of Ethio Cyber Market.

Now the physical telecommunications infrastructure is improving in terms of connectivity, speed, reliability, and price. However, much more need be done in electronic transaction infrastructure and related legal issues. Furthermore, trainings and awareness creation need to continue to support e-business oriented ventures.

Ethio Cyber Market can be used as a demonstration project to lead to initiate policy makers and entrepreneurs to come together and forward their comments for improved full-fledged e-market development.

CHAPTER FIVE

CONCLUSION AND RECOMMENDATIONS

5.1 CONCLUSION

Lack of market information and market for agricultural products is adding to the poverty of developing countries in general, Ethiopia in particular. Because of inefficient market information interchange, agricultural products produced in surplus at one end of the country could not get better market at the other end where those same products could be scarce. Not knowing the demand of those products, the producers are forced to sell only in the local market where the supply, not the demand is attractive. This leads producers to loose the value of their effort and get discouraged.

The first effort in this study was to assess the existence of e-Commerce in marketing agricultural products in Ethiopia. In relation to this issue, the researcher has conducted in in-depth interviews with Market Information Manager of Addis Ababa Chamber of Commerce, Market Information Manager of Federal Cooperative Commission and officials in the Ministry of Trade and Industry; and came up with the fact that we are not making use of e-commerce in Ethiopia.

The reason behind the non- existence of e-commerce in marketing agricultural products was attributed mainly due to lack of awareness, insufficient Internet connectivity covering the entire country, absence of e-card, absence of interconnectivity of banks that can facilitate online transaction, in addition to the social and cultural barriers.

Thus, producers of agricultural products get better market through Agricultural Products Marketing Cooperative, traditionally. The cooperatives are working on behalf of the producers where they search for markets outside through telephone, postal communication and brokers. The postal communication is limited in speed, and only those that are known will be contacted. The

telephone communication for market information is also more costly and lacks visual inspection of products

To supplement cooperatives' effort in market search for agricultural products, using the potential of the Internet is one big opportunity.

Even though the physical telecommunications' infrastructure is improving in terms of connectivity, speed, reliability and price, to launch a full-fledged e-market which creates market outlets for agricultural products, much more need be done in electronic transaction infrastructure and related legal issues. Furthermore, trainings and awareness creation need to continue to support e-business oriented ventures. In this connection a prototype, **Ethio Cyber Market**, is developed as a starting point to move to a full-fledged electronic market.

The 10-digit CashCardNo, designed to be unique for every customer, serves as electronic cash for purchasing online in Ethio Cyber Market. The owner of the CashCard is authenticated through secret question known only by the owner and Ethio Cyber Market.

The prototype is tested off line and found to be effective in breaking the information gap between the producers and buyers.

Ethio Cyber Market can be used as a demonstration project to lead to initiate policy makers and entrepreneurs to come together and forward their comments for improved full-fledged e-market development.

Practical implementation of full-fledged e-commerce also requires collaboration among traders, bankers, e-cash companies, transportation companies, and insurance companies.

5.2 RECOMMENDATIONS

The following recommendations are worth mentioning to launch e-commerce in marketing agricultural products in Ethiopia:

1. The Ethiopian government should formulate policies that enable Cooperatives for marketing Agricultural Products to coordinate with insurance companies, International banks, and transportation companies to make use of the potential of the Internet in marketing Agricultural Products practicable in Ethiopia as well as in the globe, in import/export so that agricultural products could gain competitive market and bring about development to the Nation

2. Ethiopian government should formulate explicit information policy in relation with electronic money and improved Internet service provision to facilitate e-commerce.

3. The government shall pay special attention to the development of telecommunications infrastructure and ICT literacy to make e-commerce a reality.

4. The Ethiopian Government shall revise the possibility of having private ISP in addition to ETC so that competition would lead to better telecommunications services.

5. Ethio Cyber Market could be further developed in local language for local users.

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APPENDIX I

QUESTIONS USED IN THE INTERVIEW

Dear sir/Madam,

I am a second year postgraduate student in the Department of Information Science, Faculty of Informatics, Addis Ababa University. For the fulfillment of my graduate study, the Thesis I am working on requires you to provide me genuine information as per your knowledge. Accordingly, I request you to mail me the answers to the following questions.

Part I Questions for Ethiopian Telecommunications Corporation (ETC)

I. General Information

1. Name of your Company: Ethiopian Telecommunications Corporation
2. Address _____ Tel _____
3. Branch or Division _____
4. Your Name _____
5. Job Title _____

II. Specific Questions

1. Is there statistical data that could tell us the rate of Internet connectivity in Ethiopia? Yes/No

2. If yes, where can I collect the statistical data?

   _____

   _____

   _____

iii. **Type of connection.** What is the type of connection (Dial up/Leased) in respective regions and sub regions so far connected?

iv. **Data transfer rate**

v. **Pricing.** What is the pricing rate with respect to each type of connection?

5. What plan does ETC have towards interconnecting regions and sub regions of Ethiopia? What is the estimated time for the woredas to get connected to the Internet?

6. What are the challenges in the effort to make the regions and sub regions beneficiaries of the Internet?

7. How far is the optic fiber installation project succeeding?

8. What new plans are there in connection with improving the quality of service of the Internet?

Part II Questions for Federal Cooperative Commission (FCC)

General Information

1. Name of your Company: Federal Cooperative Commission (FCC)
2. Address _____ Tel _____
3. Branch or Division _____
4. Your Name _____
5. Job Title _____

III. Specific questions

1. When was FCC established? _____
2. What are the initiatives for the establishment of FCC?

_____

_____

_____

_____

3. What are the duties and responsibilities of FCC in general and Farmers' cooperative in particular?

_____

_____

_____

_____

_____

_____

4. What are the requirements for a farmer to join the Farmers' Cooperative?

_____

_____

5. How is FCC communicating with Cooperatives in the regions?

6. What changes has Farmers' cooperative brought so far?

7. How far do the farmers trust cooperative to work for the profitability and productivity of the farmers?

8. What benefits can a farmer, who joined farmers' cooperative, get as compared to the one who is working individually?

9. How are agricultural products being traded in Ethiopia?

10. How are cooperatives facilitating the market outlet for agricultural products?

11. How are cooperatives facilitating credit services to the peasant? And at what percentage of interest?

12. What does the cooperative plan to improve the network for marketing agricultural products?

13. Which agricultural products are of high demand and how are the procured from the farmers?

14. How do the cooperatives store grains and livestock? What storage facilities do they have?

4. What are the opportunities that can be used in developing e- Commerce in Ethiopia, in general and for marketing agricultural products in particular?

5. What are the challenges that could hinder the development of e-commerce in Ethiopia?

Thank you,

Lemlem Hagos

APPENDIX II

PERSONS INTERVIEWED

1. Ato Addisu Mihrete	Market Information Manager, Federal Cooperative Commission
2. Ato Metasebya Belayneh	Business Development Manager, Ethiopian Telecommunications Corporation (ETC)
3. Ato Tamrat Abebe	Customer Billing Project Program Manager, ETC
4. Ato Daniel Tsegaye	Trade Information Expert, Ethiopian Chamber of Commerce.
5. Ato Yesuf Ademnur	Trade Information Department Head, Addis Ababa Chamber of Commerce
6. Eng Dawit Getachew	Internet Operations Manager, ETC
7. Dr. Leulseged Alem	Information Technology and Development Manager, Ethiopian Science and Technology Commission
8. W/ro Medferiashwork Mekete	Central Customer Service Support Division Manager, ETC