ADDIS ABABA UNIVERSITY

SCHOOL OF GRADUATE STUDIES

FACULTY OF INFORMATICS

DEPARTMENT OF INFORMATION SCIENCE

DESIGNING AND IMPLEMENTATION OF E-BUSINESS MODEL FOR ETHIOPIAN IMPORT AND EXPORT ENTERPRISES: A CASE STUDY WITH ELICO

A Thesis Submitted to the Department of Information Science as a Partial Fulfillment of the Requirements for the Degree of Masters of Science in Information Science

By:

Natnael Girma

October 2009

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3. _____ _____

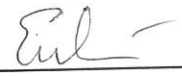
4. _____ _____

DECLARATION

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

NATNAEL GIRMA

This thesis has been submitted for examination with my approval as an advisor.



Dr. Dejene Ejigu

Addis Ababa, Ethiopia

October, 2009

DEDICATION

To my beloved sister, Elizabeth Girma

ACKNOWLEDGMENT

First and foremost I would like to thank the Almighty God for His help throughout the days in my studies. Without His help and guidance nothing would have been a reality.

I would like to express my gratitude to my advisor, Dr. Dejene Ejigu, who was willing to share his busy time and provided me with helpful comments that enabled me to produce this document. My thanks also go to Ato Ephrem Belihu, the MIS department Head of ELICO, and Ato Getachew Solomon, a staff of ELICO, who were voluntary to respond to my interview questions during the data collection.

Last but not least, it is my pleasure to pass special thanks to my beloved sister, mother and my friends, who were by my side and provided me love and encouragement. They were also remembering me in their prayers.

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Acronyms

B2B: Business to Business

B2C: Business to Customer

BM: Business Model

C2C: Customer to Customer

CRM: Customer Relationship Management

DTD: Document type Data

ELICO: Ethiopia Leather Industry Company

eBM: electronic Business Model

eBMF: electronic Business Model Framework

eBML: electronic Business Modeling Languages

eBMO: electronic Business Model Ontology

ebXML: electronic business eXtensible Markup Language

EDI: Electronic Data Interchange

ERP: Enterprises Resource Planning

ICT: Information Communication Technology

IS: Information System

ISP: Internet Service Provider

IT: Information Technology

SCM: Supply Chain Management

UML: Unified Modeling Language

UNCTAD: United Nations Conference and Trade and Development

WWW: World Wide Web

XML: eXtensible Markup Language

Abstract

Over the past years, deploying Information Technology in business activity has evolved to become the predominant element in business development and improvement process. An E-Business Model is a blueprint of a business strategy and the foundation for the implementation of e-business information systems. This research was conducted to investigate the business process cycle and to propose an E-Business model for Ethiopian Import and Export Enterprises; the case with ELICO, a private owned leather export industry in Ethiopia.

Reforming old business into electronic business is no longer an alternative, it is an imperative. Especially in developing countries, including Ethiopia, it is a challenging task to integrate ICT with business. Most Import and Export firms have no proper E-Business model that enables them to integrate ICT in their business. The study employed semi-structured interview to study the business process cycle and identify important components to design the E-business model.

Finally, an E-Business model for ELICO has been proposed. eBML was used as a tool to develop the model based on E-Business modeling framework. This enables ELICO to deploy ICT and e-business information systems applications. The study forwards conclusion on designing E-Business model as an import stage in the development of information system for every business and recommendations on future studies.

Keywords: E-Business Model, Ethiopia, Import and Export, ELICO

CHAPTER ONE

INTRODUCTION

1.1 Background

The revolution in Information Communication Technology has profound implications for economic and social development. It has pervaded every aspect of human life whether it is health, economies, governance, entertainment etc. (Shanker, 2008). Information technologies including, internet-based Information systems, are playing a vital and expanding role in business. Information technology can help all kinds of businesses improve the efficiency and effectiveness of their business processes, managerial decision making, and workgroup collaboration and thus strengthen their positions in a rapidly changing marketplace (O'Brien, 2001).

The integration of information and communications technology (ICT) in business has revolutionized relationships within organizations and those between and among organizations and individuals. Specifically, the use of ICT in business has enhanced productivity, encouraged greater customer participation, and enabled mass customization, besides reducing costs (Andam, 2003).

The World Wide Web technology changes the traditional landscape of the business environment from that of being a Marketplace to one that is more of a Marketspace. This marketspace is information and communication-based

electronic exchange environment occupied by sophisticated computer and telecommunication technologies and digitized offerings (Singh, 2008).

According to Andam (2003), in the emerging global economy, e-commerce and e-business have increasingly become a necessary component of business strategy and a strong catalyst for economic development. The Internet and related technologies and applications are revolutionizing the way business are operated and people work, and how information technology supports business operations and end user work activities (O'Brien, 2001).

According to O'Brien (2001), the rapid growth of the Internet, intranets, extranets, and other interconnected global networks of the 1990s have dramatically changed the capabilities of information systems in business at the beginning of the twenty-first century. The proliferation of the Internet has given rise to E-Commerce and E-Business (*Barlow et al., 2007*).

E-Business and E-Commerce are different terms, which are sometimes used interchangeably. According to O'Brien (2001) E-business, in addition to encompassing E-commerce, includes both front end and back end processes. O'Brien (2001) implies that E-business is not just about E-commerce transactions; it's about redefining old business models, with the aid of technology, to maximize customer value. E-business strategy is more complex than E-commerce strategy and more focused on internal process such as production, inventory management, human resource, product development, risk management, finance, and knowledge management (Bartels, 2000).

E-business exploits many technologies such as the Internet, intranets, extranets, e-mail, electronic data interchange (EDI), Enterprise Resource Planning (ERP), document management systems and portals: and so on (*Barlow et al., 2007*).

Application of E-business can be classified in three main areas: communication and collaboration, electronic commerce, and internal business systems. These applications entirely depend on the Internet, intranet, extranet, and other types of enterprises interogranizational telecommunication networks (O'Brien, 2001).

According to O'Brien (2001), Enterprises communication and collaboration applications support communication, coordination, and collaboration among the members of business teams and workgroups. For example, employees and external consultants on a project team may use the Internet, intranets, and extranets to support electronic mail, videoconferencing, electronic discussion groups, and project websites to communicate and collaborate on business projects (Ibid.). O'Brien (2001) states that Electronic commerce applications support the buying and selling of products, services, and information over the Internet and extranets.

Internal business applications of an internetworked E-business enterprises support a company's internal business processes and operations. For example, employees may use an intranet enterprises information portal to access benefits information on a human resources department server (Ibid.).

According to Singh (2005) some of the potential benefits associated with E-businesses are:

- **Global accessibility and sales reach:** The online community is on around the world 24 hours a day seven days a week. All e-business is potentially worldwide in scope. There are no national or territorial boundaries on the internet.
- **Strengthening *business relationships***: The Internet is structured to facilitate two-way communications that is ideal for bridging the spatial gap between an organization and its customers.
- **Reduced costs**: This feature has been realized and well understood by the organizations of the 21st century. The blossoming and adoption of the Internet has seen businesses realize enormous cost savings by moving a myriad of services online. From customer service centers, to online tracking of packages, to online brokerages, the list is endless.
- **Expand market reach:** This is one of the major advantages of doing business online. A little company now has the ability to reach markets far beyond its traditional vicinity while also gaining access to markets beyond its current customer base.

There is tremendous potential for e-commerce in the commodities and agriculture exports business. In particular, the ability for coffee and tea exporters to communicate and participate in international auctions will not only enhance their revenues but it will allow them to react quickly to price

movements on the international market. Ethiopia has been late with connectivity and access but e-commerce is in progress relative to other African countries. Even with an inferior IT infrastructure, companies in Addis Ababa are able to operate profitable online businesses. EthioGift is a profitable online gift shop based in Addis Ababa enabling Ethiopians in the diasporas to buy and deliver traditional gifts to their families in Ethiopia (Lake, 2000 and Akoh, 2001).

Many Import and Export companies are developing Website to advert their items (Tadesse and G. Kidan, 2005). For example, Genuine Leather Craft is an Ethiopian seller of fashionable leather clothing. The concept is based on Ethiopian heritage and its unique leather working crafts. A visitor enters the site and can view men and women fashions. A catalogue with pictures and price are available on the site. Once the visitor has selected an item, they go through to the ordering section (Berhan, 2001 and Lake, 2000)

1.2 Research Problems and Justification

1.2.1 Motivation

Taking advantage of information and communication technologies (ICT) is an increasing challenge for developing countries. There is now growing evidence that enterprises benefit substantially from e-business. New technologies, and in particular the Internet, transforms economic sectors and allow them to be faster and better (UNCTAD, 2002).

Most often, making sure that investments in ICT are in harmony with the organization's business objectives proves to be more challenging than initially expected, especially in today's fast-changing, dynamic environment. ICT mission, objectives, and plans must support and be supported by the business mission, objectives and plans (Cumps et al., 2008).

What motivated the researcher is to enable firms in Ethiopia to integrate information communication technology with their business in order to make the firms competent without the limit of territories and boundaries. In addition, to elevate one step the traditional business attitudes to modern and global thinking. This enables firms to utilize the different advantages that Electronic business could create.

1.2.2 Justification of the Study

To utilize the benefits and starting an E-business for long term success takes the same careful planning, efficient management, and good customer relations that are required for any other offline enterprises. It is necessary to look insight into the way that E-business differs from the traditional business (ADBInstiutite, 2004).

The E-business models is necessary to build the connection between the business strategy and information technology systems which are really the base for e-business information system applications are being used as the interface between business strategy and information technology systems.

of XML's qualities such as interoperability and reusability. But XML is not limited to transaction purposes and can serve a wide range of other goals. It is a metalanguage, which means that it is a standardizing format for describing structured information. XML provides a means of including metadata in documents. This enables us to describing e-business models by e-business modeling languages (eBML) (Lagha et. al. 2001).

Osterwalder et. al. (2002) states that eBML is an eXtensible Markup Language (XML) for encoding the eBMF principles in a formal and re-usable way. eBML is an XML schema consisting of elements that represent the vocabulary of a model and the relationships between the elements. Case studies that are analyzed with the e-Business Model Ontology are assessed and described through an Extensible Markup Language (XML)-based description language that constitutes a sort of e-business model grammar (Osterwalder et. al., 2002).

According to Pigneur et. al. (2005), eBML does not represent a structure for the exchange of messages or documents, but focuses on e-business modeling. Rather than concentrating on e-business processes, like for example ebXML which enables to exchange business messages and documents, eBML is situated at a higher level of abstraction, the one of the e-business model (BM) of a firm. eBML will help us encode a BM of any given company. A BM expressed in eBML is an XML document that respects the constraints and the rules imposed by the e-business modeling framework eBMF (Pigneur et. al., 2005).

The eBML language shall help to encode new and existing e-business models (eBM) in order to assess, share, compare and exploit these models. An eBM encoded with eBML possesses all the advantages that an ordinary XML document has. It can easily be transformed into several different formats and documents (business plans, graphical representations, reports for financing, documents for knowledge sharing, etc.) in function of different needs (mergers & acquisitions, redesigning business models, planning e-business processes, ensuring acceptance by stakeholders, etc.). However, the formalization of the

eBMF could also have been done with other modeling tools such as, for example, the Unified Modeling Language UML (Lagha et. al. 2001).

The language eBML is an XML Document Type Definition (DTD) or an XML schema. It is composed of a number of concepts (called elements) that represent the vocabulary of a model and the relationships between the elements (principally hierarchical). Together they represent the construction rules of a model. The elementary elements are found on the lowest hierarchical level and contain a textual description of the concepts they represent. The content of each element is delimitated by an opening tag in the form of <element> and a closing tag in the form of </element> (Lagha et. al. 2001).

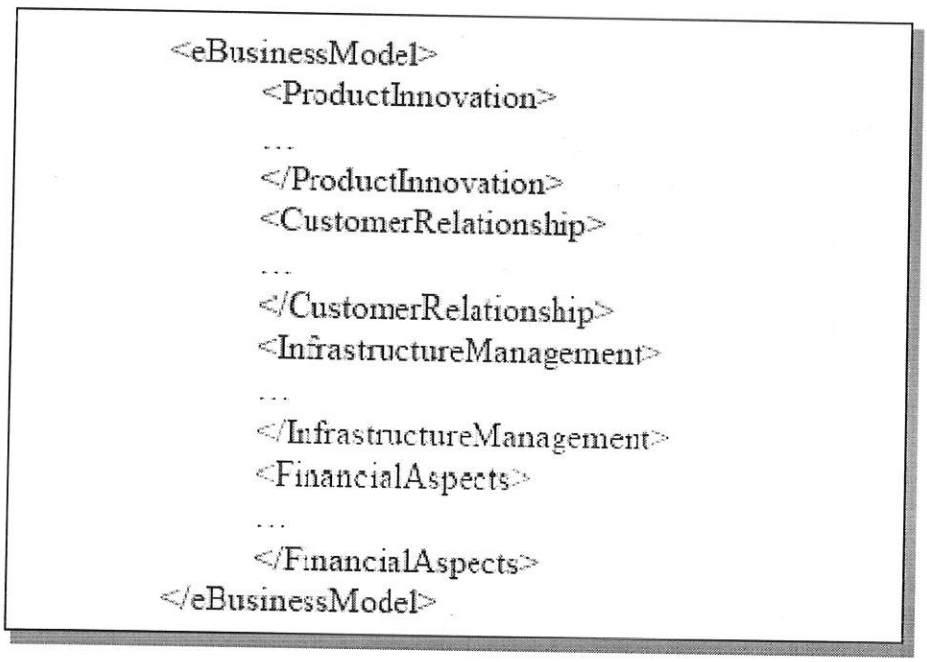

Figure 1: Main Elements of eBML (Source: Lagha et al., 2001)

An eBML document always starts with the tag of the root element <eBusinessModel> and ends with the tag </eBusinessModel>. The subtree contains the four main components of the eBMF which become the elements <ProductInnovation>, <CustomerRelationship>, <InfrastructureManagement> and <FinancialAspects>. These elements will contain their respective subtrees defined in the DTD of eBML (Lagha et. al. 2001).

CHAPTER THREE

LITERATURE REVIEW

The aim of this chapter is to present the theoretical underpinnings of Business Model and E-Business models that will be used for the designing process and to give a brief explanation for the readers about the subject. It includes the types of Business Model and the building blocks of Business models, definition and key concepts of E-Business Model, its relationship with E-Commerce, the Ontology for developing new E-Business model, and components of E-business model framework are included in this chapter. At last the author explains the challenges and opportunities that E-business can create in the society, and the Security issues.

3.1 Business model

The business model topic is very popular among business people today because in various industries we can see a proliferation of new and innovative business models (i.e. new ways of making money). In several industries new business models are threatening or even replacing established companies and conventional ways of doing business (Osterwalder, 2005).

The term business model has been widely used in managerial practice since the mid-90s. The growing interest in business models was mainly a result of the Internet, market convergence, and e-commerce. The impact from the

Internet on established markets, industry structures and value chains made it necessary to rethink traditional ways of doing business. At the same time the Internet opened opportunities to develop new and different business models (Pigneur, 2004).

According to Osterwalder (2009), business model became popular only in the late 90s, which is related to the rapid erosion of prices in the IT and telecom industry. Because it became so cheap to process, store and share information across business units and other companies all the way to the customer, many new ways of doing business became possible: Value chains were broken up and reconfigured; Innovative information-rich or -enriched products and services appeared; New distribution channels emerged; More customers were reached. He said that, ultimately this lead to globalization and increased competition, but, as described above, it also led to new ways of doing business. In other words, today there is a larger variety of how companies can make money: this means new in terms of what they do, how they do it and for whom they do it... (Ibid).

A business model is nothing else than the architecture of a firm and its network of partners for creating, marketing and delivering value and relationship capital to one or several segments of customers in order to generate profitable and sustainable revenue streams (Dubosson-Torbay et. al., 2001).

Pigneur (2004) explained an operational business model definition should encompass the following main issues:

1. **Value proposition**

Define the value proposition that is latent in the new technology. "What can our product offer that is new and unique compared to what's available on the market today?"

2. **Market segment**

Identify the market segment for whom this new product is useful and for what purpose will they use it. "Who are our customers?", "how much will they pay?", "what payment model will we use (leasing, flat rate, pre-paid, service fee with subsidized product, etc.)?"

3. **Firm organization and value chain**

What additional assets and functions will the firm need to provide this Product? "New distribution channels", "better customer support", "real Time data in the critical IT systems", "components of higher quality", etc.

4. **Cost structure and profit potential**

Estimate the cost structure and profit potential of producing the offering, given the value chain and price level we have chosen.

5. **Firm in value network**

How the firm is positioned in the network of other players in the industry. In relation to suppliers, resellers, other distribution channels, competitors, alliance partners, complementors, input vendors, etc. Is the

position viable or can another player in the value network block our business?

6. Competitive Strategy

Formulate how we should position our self in relation to other competing firms in the market. "How are we different to their offerings?"

Most related literature shows that in every business sector business model is the main building block of the organization and it is critical task. According to Pertrovic et. al. (2002), research paper, an operating business model is the organization's core Logic for creating value. Maxwell and Rankin (2007), state that a business model is one of the most fundamental requirements for successfully starting a business. They said a business model exists on three levels (Figure 2).

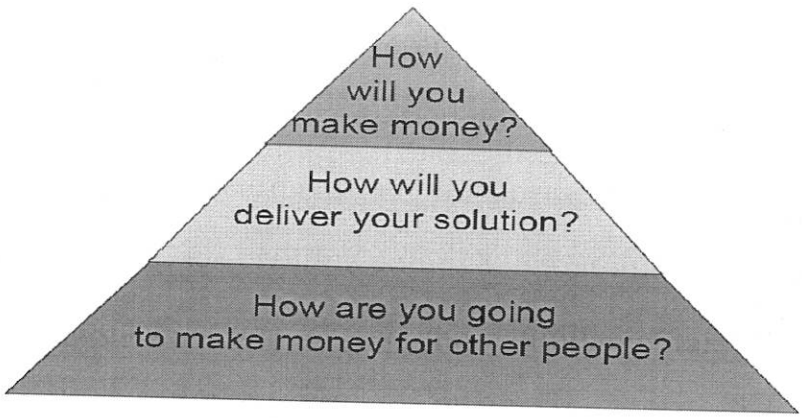

Figure 2: Levels of a Business Model (Source: Maxwell and Rankin, 2007)

According to Pertrovic et. al. (2002), business model is a model of business. A model on the other hand, is only an artificial representation of reality and a

model cannot be a complete and precise representation of reality—even for very simple social systems. He explained a business model is not a description of a complex social system itself with all its actors, relations and processes. Rather, it describes the logic of a 'business system' for creating value that lies behind the actual processes. Pertrovic et. al (2002) continued his discussion on the different tiers of business logic in Figure 3. They also said that the business model gives sense to the various business processes by describing why certain processes are designed the way they are. The business processes, on the other hand, have a dynamic relationship with the underlying information and communication system.

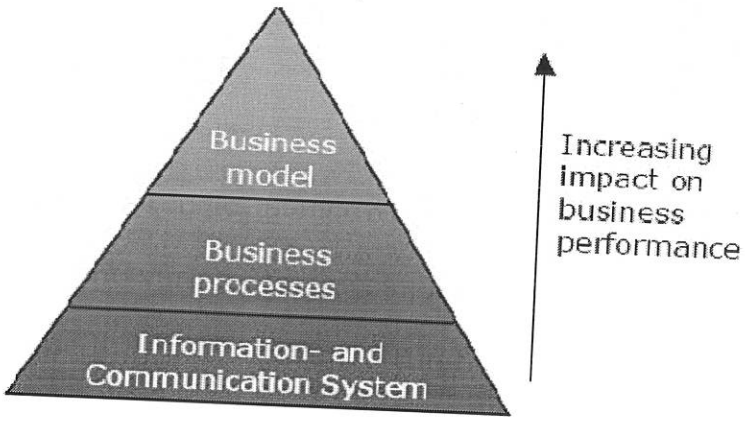

Figure 3: Hierarchical Structure of Business Logic (Source: Petrovic et al., 2002)

Certain new business models have just become viable through the potential deployment of modern ICT. Changes on a higher level, which have more impact on the business, always result in changes on the underlying tiers as well and that a business model can only be implemented successfully if the processes and the supporting ICTs fit (Pertrovic et. al., 2002).

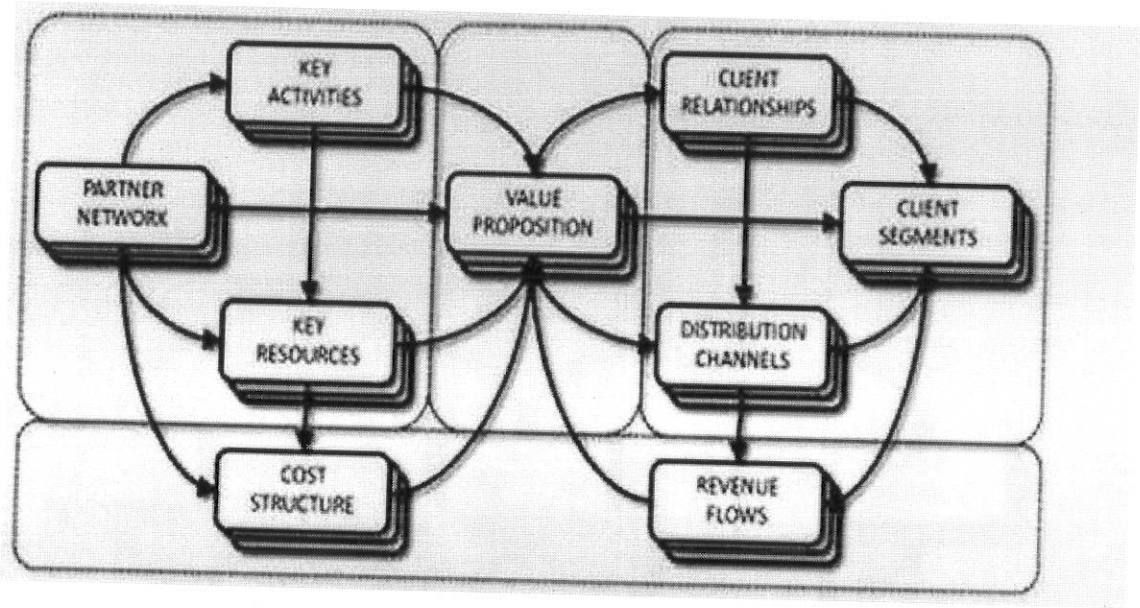

Figure 5: Business Model Canvas (Source: Osterwalder, 2009)

Osterwalder (2005) describes the 9 business model canvas elements explicitly as follows:

1. **Value Proposition**: The value proposition of what is offered to the market. Our offer is what attracts our clients. It is the value that they are willing to pay for. This value can be described as a value proposition for each customer segment.
2. **Client Segments:** The segment(s) of clients that are addressed by the value proposition. A clear description and understanding of a company's customers is an integral part of every business model.
3. **Distribution Channels:** The communication and distribution channels to reach clients and offer them the value proposition. A company reaches its customers through varies communication and distribution channels. They represent the interface between a company, its value proposition

and its customers. These customer touch points include advertising, retail outlets, sales teams, websites, conferences, sales affiliates and many more. Communication and distribution channels have become increasingly important in business model design.

4. **Client Relationships**: The relationships established with clients. Getting management right in our business model is crucial today to satisfy customer's expectations. A sound business model has a clear strategy for customer relationship management for each customer segment.

5. **Key Resources:** The key resources needed to make the business model possible. At the basis of every business model there is a set of key resources a company must dispose of to make its business model work. These key resources include classical ones such as human resources and tangible assets. Increasingly, business models are also built on intangible assets that are difficult to quantify, such as brand equity and expertise of a specific domain.

6. **Key Activities:** The key activities necessary to implement the business model. To implement a business model a company needs to perform a number of key activities. It may perform these activities itself or get them done through a network of partners.

7. **Partner Network:** The key partners and their motivations to participate in the business model. Today's Business models are more and more the result of a network of partnerships, joint ventures, cooperation and alliances between different companies.

business (B2B), business-to-consumer (B2C), or consumer-to-consumer (C2C) markets. Usually a broker charges a fee or commission for each transaction it enables. The formula for fees can vary. Brokerage models include: Marketpalce exchange, Buy and sell fulfillment eg Respond.com, Demand Collection System eg Priceline.com, Auction Broker eg.eBay.com, Transaction Broker eg, Paypal.com, Distributor, Search Agent, and Virtual Marketpalce eg. Amazon.com.

1. **Adverting Model:** The web advertising model is an extension of the traditional media broadcast model. The broadcaster, in this case, a web site, provides content (usually, but not necessarily, for free) and services (like email, IM, blogs) mixed with advertising messages in the form of banner ads. The banner ads may be the major or sole source of revenue for the broadcaster. The broadcaster may be a content creator or a distributor of content created elsewhere. The advertising model works best when the volume of viewer traffic is large or highly specialized. There are number of adverting models some of are: portal eg yahoo, classifieds eg monster.com, user registration eg NYTimes.com, query-based paid placement eg google and overture, Contextual or Behavioral adverting, Content-Targeted adverting eg Google, Intromercials eg CBS or MarketMatch, ultramercials eg Salon by Mercedes-Benze.

2. **Informediary Model:** Data about consumers and their consumption habits are valuable, especially when that information is carefully analyzed and used to target marketing campaigns. Independently collected data about producers and their products are useful to consumers when considering a

purchase. Some firms function as infomediaries (information intermediaries) assisting buyers and/or sellers understand a given market. Some of Informediaries are Advertising networks, Audience Measurement Service, Incentive Marketing, Metamediary.

3. **Merchant Model:** Wholesalers and retailers of goods and services. Sales may be made based on list prices or through auction. Merchant models are Virtual Merchant eg Amazon.com, Catalog Merchant eg Land's End, Click and Mortar and Bit Vendor.

4. **Manufacturer or Direct Model:** The manufacturer or "direct model", it is predicated on the power of the web to allow a manufacturer (i.e., a company that creates a product or service) to reach buyers directly and thereby compress the distribution channel, eg Dell Computer. The manufacturer model can be based on efficiency, improved customer service, and a better understanding of customer preferences. Manufacturer or Direct models are Purchase, lease, license, Brand Integrated Content.

5. **Affiliate Model:** In contrast to the generalized portal, which seeks to drive a high volume of traffic to one site, the affiliate model provides purchase opportunities wherever people may be surfing. It does this by offering financial incentives (in the form of a percentage of revenue) to affiliated partner sites. The affiliates provide purchase-point click-through to the merchant. It is a pay-for-performance model -- if an affiliate does not generate sales, it represents no cost to the merchant. The affiliate model is inherently well-suited to the web, which explains its popularity. Variations include banner exchange, pay-per-

click, and revenue sharing programs eg Barnes & Noble and Amazon. Affiliate Models are Banner exchange, pay-per-click, Revenue Sharing.

6. **Community Model:** The viability of the community model is based on user loyalty. Users have a high investment in both time and emotion. Revenue can be based on the sale of ancillary products and services or voluntary contributions; or revenue may be tied to contextual advertising and subscriptions for premium services. The Internet is inherently suited to community business models and today this is one of the more fertile areas of development, as seen in rise of social networking. Some of Community models are Open sources eg Red Hat, Open Content eg Wikipedia, Public Broadcasting eg Classical Station WCPE.com, Social Networking service eg Flickr and Friendster.

7. **Subscription Mode:** Users are charged a periodic -- daily, monthly or annual -- fee to subscribe to a service. It is not uncommon for sites to combine free content with "premium" (i.e., subscriber- or member-only) content. Subscription fees are incurred irrespective of actual usage rates. Subscription and advertising models are: frequently combined. Subscription Models are Content Services eg listen.com, Netflix; Person-to-Person Networking Services eg Classmates; Trust Services eg Truste; Internet Service Provider eg American Online.

8. **Utility Model:** The utility or "on-demand" model is based on metering usage, or a "pay as you go" approach. Unlike subscriber services, metered services are based on actual usage rates. Traditionally, metering has been used

development cycles, enhance teaming within your organization, reach new markets, and serve existing customers better (Smith et al., 2001).

According to Gong (2004), E-business is the integration of the Internet and related ICTs into the business organization and has to two facets. One is the integration of supply chain so that production and delivery becomes a seamless process. The other is the creation of new business models based on open systems of communication between customers, suppliers and partners.

According to Andam (2003), E-Business can enhance three primary processes in business activities:

1. **Production processes:** which include procurement, ordering and replenishment of stocks; processing of payments; electronic links with suppliers; and production control processes, among others;

2. **Customer-focused processes:** which include promotional and marketing efforts, selling over the Internet, processing of customers' purchase orders and payments, and customer support, among others; and

3. **Internal management processes**: which include employee services, training, internal information-sharing, video-conferencing, and recruiting. Electronic applications enhance information flow between production and sales forces to improve sales force productivity. Workgroup communications and electronic publishing of internal business information are likewise made more efficient.

3.2.2 *E-Business versus E-Commerce*

E-commerce is the act of selling products and services on the Internet. It is *one* element of e-business, the primary element. It concerns itself with business-to-business (B2B) and business-to-consumer (B2C) selling of products and services. E-commerce is typically implemented as some form of an electronic store (e-store) (Smith et. al., 2001).

While some use e-commerce and e-business interchangeably, they are distinct concepts. In e-commerce, information and communications technology (ICT) is used in inter-business or inter-organizational transactions (transactions between and among firms/organizations) and in business-to-consumer transactions (transactions between firms/organizations and individuals) (Andam, 2003).

In e-business, on the other hand, ICT is used to enhance one's business. It includes any process that a business organization (either a for-profit, governmental or non-profit entity) conducts over a computer-mediated network. A more comprehensive definition of e-business is: "The transformation of an organization's processes to deliver additional customer value through the application of technologies, philosophies and computing paradigm of the new economy" (Andam, 2003).

E-Business is not e-commerce: E-commerce involves exchange among customers, business partners and vendor. For example, a supplier interacts

Osterwalder et. al. (2002), sates five reasons that understanding and use of e-business model is essential in this increasingly dynamic and uncertain business environment. These are:

1) The process of modeling social systems– such as an e-business model – helps identifying and ***understanding*** the relevant elements in a specific domain and the relationships between them.

2) The use of formalized e-business models enables knowledge representation and helps managers easily ***communicate and share*** their understanding of an e-business among other stakeholders in the decision making process.

3) Mapping and using e-business models as a foundation for discussion facilitates ***change***. Business model designers can easily modify certain Elements of an existing e-business model.

4) A formalised e-business model can help identifying the relevant ***measures*** to follow in an e-business, similarly to the Balanced Scorecard Approach.

5) E-Business models can help managers ***simulate*** e-businesses ***and learn*** about them. This is a way of doing risk free experiments and learning about possible consequences of decisions, without endangering an organization.

3.2.5 *Ontology for developing E-Business Model*

Ontology is a framework that provides a shared and common understanding of a domain that can be communicated between people and heterogeneous and widely spread application systems. Therefore the e-business model framework (eBMF) will allow firms to express their e-business architecture from a comprehensible business point of view and not only from a technological point of view (Lagha et. al, 2001).

3.2.5.1 *Components of E-Business Model*

According to Durbosson-Torbay et. al. (2001), eBMF is divided in to four principal components (Figure 6). These are **customer relationship**, **product innovation**, **infrastructure management** and **financial aspects**.

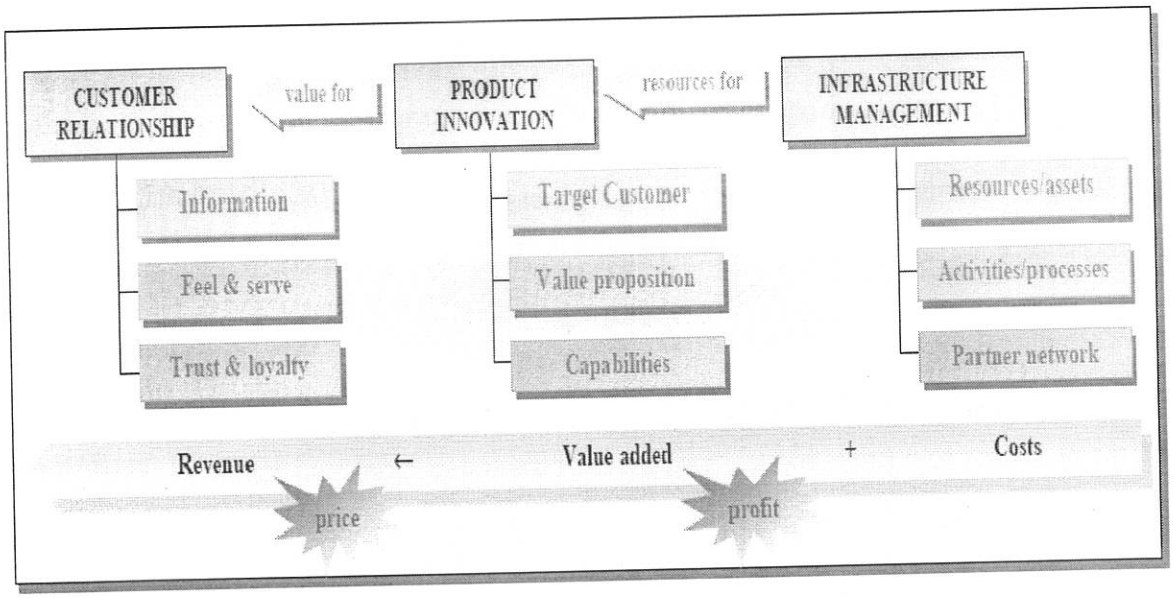

Figure 6: E-Business Model Framework (Source: Durbosson-Torbay et al., 2001)

According to Lagha et. al. (2001) eBMF represents an ontology which will allow firms to develop a sound e-business model, in an environment that is amongst other things characterized by new forms of network organizations. Durbosson-Torbay et. al. (2001) briefly explained each components of eBMF as follows:

Product Innovation

The product component of the e-business model framework describes the ***value proposition*** a firm wants to offer to a specific ***target customer segment*** (Figure 7). To deliver this value, the firm has to possess a certain set of inhouse and/or outsourced ***capabilities***.

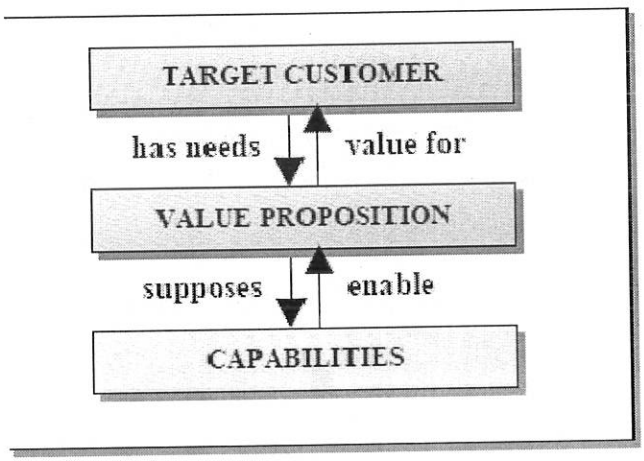

Figure 7: Product Innovation

Value Proposition

This element refers to the value the firm offers to a specific target customer segment. ICT have had a very important impact on new ways of creating and delivering value, for example through substantial *cost savings* thanks to optimized infrastructure management. Internet technologies for example, have substantially reduced transaction costs inside companies and between business partners. Sometimes firms can even sell directly to their customers through dis-intermediation. The resulting cost savings can then be passed on to customers in form of lower prices. Another important value proposition is *product differentiation* through innovation. This means that a firm offers either entirely new products/services or innovative complementary products/services.

Customization it is a source of product differentiation based on ICT. Through mass customization and through rule-based one-to-one personalization or collaborative filtering, firms can propose value tailored to the profile of every single customer.

Another form of value proposition can be the offering of a premium customer service level and customer relationship experience, which accompanies the actual product. ICT allow firms to propose a whole new range of (free) services that augment the value of the sold product. Software firms for example, can make fixes or updates available online, or even offer free web based training that goes with their software.

Target Customer

A firm generally creates value for a specific customer segment. The definition of the market scope captures the essence of where the firm does and does not compete which customers, which geographical areas, and what product segments. A firm can market either to businesses and/or individuals, commonly referred to as business-to-business (B2B) and business-to-consumer (B2C). With the expansion of reach by the use of ICT, differentiated strategies for different geographical regions become an important issue even for small firms.

Capabilities

To deliver the value proposition to different customers, a firm must ensure that it possesses the range of capabilities that underpin the proposed value.

Customer Relationship

ICT offer a range of opportunities to create new and exploit existing customer relationships by ***getting a feel for*** the customer's desires, ***serving*** him and developing an enduring relationship with him. In order to improve the customers experience in doing business, the firm has to gather and exploit ***customer information***. This is important because the notion of branding has also evolved from traditional product and company marketing to include relationship capital which emphasizes the interaction between the firm and the

customer. More than ever before, the focus has to be on a positive customer relationship which will result in customer trust and loyalty (Figure 8).

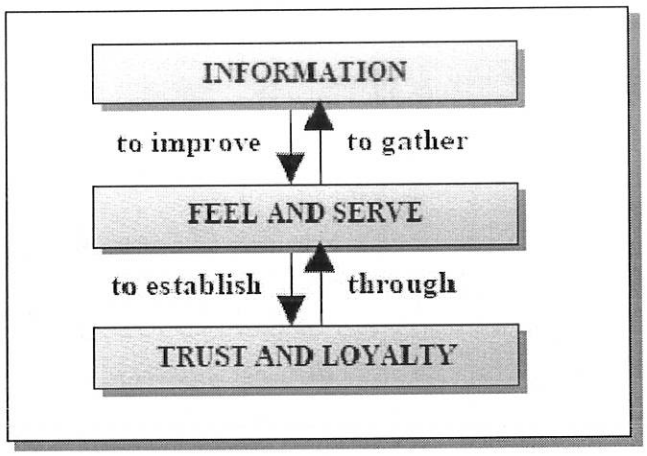

Figure 8: Customer Relationship

Information

This element refers to all customer information and knowledge a company can gather and exploit in order to discover new and profitable business opportunities and customer segments and to improve their relationships with their customers. After establishing an *information retrieval strategy*, which consists in the storage of customer transaction history (data warehousing) and customer information collection (customer queries, feedback), a firm can proceed to *customer profiling*. These insights can be used throughout marketing and sales, and especially for customer relationship management (CRM). A firm with a large base of users, and a way of rapidly extracting feedback and information from those users, may be able to improve its products and services faster than its competitors. In this virtuous circle products and product

innovation can be improved which, in return, attracts new customers. In addition to product improvement, a better knowledge of its customers allows a firm to establish a personalized relationship tailored to the needs of every single customer. Of course it is important that the firm has a *privacy policy* that it will respect and reveal to its customers.

Feel and Serve

Serving the customer includes fulfillment, support and customer relationship management (CRM). A firm must ask itself how it wants to deliver value to its customers and what support and service level it wants to provide. Fulfillment and support refer to the way the firm "goes to market" and how it actually "reaches" customers). A firm must define its *channel strategy* and understand that the Internet has a great potential to complement rather than to cannibalize its business. Direct selling for example could improve margins, whereas selling through new Internet mediation services could mean new market opportunities. After defining channels, the firm has to describe their *transaction cycles* and describe in what way ICT influences them. If a firm chooses to sell directly over the Internet, it can supply its customer with a wide range of basic information on products, prices and availability, or even offer him customized real-time information (i.e., delivery status, product lifecycle management). It is important to mention, that ICT open up new opportunities to customize the different steps in the customer transaction cycle and deeply influence the customers experience in doing business with the firm. Therefore a

company should think in what way it could *personalize* its relationship with the customer throughout the transaction cycle.

Trust and Loyalty

It is essential to establish trust between business partners when the business environment becomes increasingly virtual and implicated parties do not necessarily know each other anymore before conducting business. With the emergence of the Internet in business and commerce important research has been conducted on what trust actually is in cyberspace. There exist a certain number of mechanisms to build trust in e-business environments for example, virtual communities, performance history, mediation services or insurance in case of harm, third party verification and authorization, and a clear and explicit privacy policy. Customer loyalty can be understood as the outcome of the customer's trust and satisfaction.

Infrastructure Management

This third pillar of the framework, the infrastructure management element, describes value system configuration that is necessary to deliver the value proposition. This comprises the ***activity configuration*** of the firm, in other words the activities to create and deliver value, and, the relationship between them, the inhouse ***resources and assets*** and the firm's ***partner network*** (Figure 9).

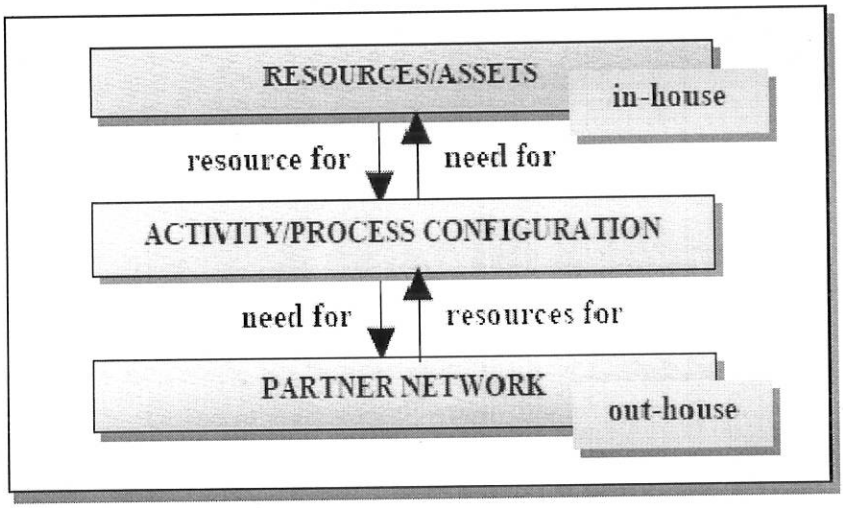

Figure 9: Infrastructure Management

Resources and assets

In order to create value, a firm needs resources. Resources are distinguished in to tangible, intangible, and human resources. Tangible resources include plants, equipment and cash reserves. Intangible resources include patents, copyrights, reputation, brands and trade secrets. Human resources are the people a firm needs in order to create value with tangible and intangible resources.

Activity and processes configuration

The main purpose of a company is the creation of value that customers are willing to pay for. This value is the result of a configuration of inside and outside activities and processes. To define the value creation process in a

business model, we use the extension of the *value chain framework* value chain with the *value shop* and the *value network*. Former describes the value creation process of service providers, whereas latter describes brokering and intermediary activities. It is in this component of the e-business framework that we will find such activities as Supply Chain Management (SCM), Efficient Customer Response (ECR), and eprocurement. In the food retailing business for example, ICT have made Vendor Managed Inventory (VMI) possible, where suppliers directly control the stock of a firmand substantially reduce inventory costs.

Partner network

This element of the e-business model framework (eBMF) is closely tied to the value proposition and the value creation process. The partner network details how the value creation process is distributed among the partners of the firm. In the product component it was all about *what* value to deliver and *what* capabilities are necessary. In this element it is about *how* to create value with a network of partners. Management literature defines strategic networks as "stable inter-organizational ties which are strategically important to participating firms. Shrinking transaction costs make it easier for firms to vertically disintegrate and to reorganize in partner networks. Firms can focus on their core competencies and activities in the value creation process and rely on partner networks for other noncore competencies and activities.

Financial Aspects

The financial aspect, the last pillar of our framework is transversal because all other pillars influence it. This element is composed of the revenue model of the firm and its cost structure. The formerly mentioned determine the firm's profit model and therefore its ability to survive in competition (Figure 10).

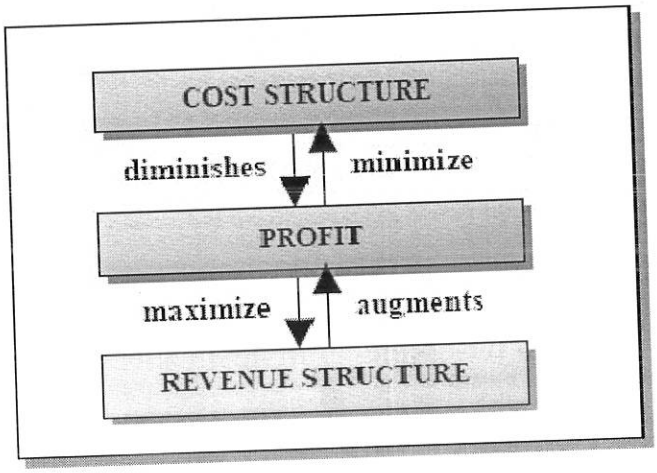

Figure 10: Financial Aspects

Revenue structure

This element measures the ability of the firm to translate the value it offers to its customers into money and therefore generate incoming revenue streams. A firm's revenue model can be composed of different revenue streams that all have different pricing models. Firms selling over the Internet should consider an appropriate pricing strategy and pricing mechanism in order to maximize revenues. First they have to be aligned with the nature of the product. Second, they have to aim at achieving the highest price the customer is willing to pay

for the offered value. It is important to mention that ICT have had an important impact on pricing and have created a whole new range of pricing mechanisms.

Cost Structure

This element measures all the costs the firm incurs in order to create, market and deliver value to its customers. It sets a price tag on all the resources, assets, activities and partner network relationships and exchanges that cost the company money. As the firm focuses on its core competencies and activities and relies on partner networks for other non-core competencies and activities there is an important potential for cost savings in the value creation process. The right use of ICT in customer relationship also opens up new opportunities for delivering premium customer services and therefore additional value at reasonable costs.

Profit structure

This element simply measures the ability of a firm to create positive cash flow.

3.3 Challenges and Opportunities of E-Business

Sellers are finding tremendous advantages in doing e-business. They can increase sales and operations from local to worldwide, improve internal efficiency and productivity, enhance customer services and increase communication with both suppliers and customers. Buyers are enjoying greater access to markets.

According to Napier et. al. (2001) E-business creates the following opportunities both for Sellers and buyers:

- Increase sales opportunities
- Decreased transactions cost
- Access to global market
- Bring multiple buyers and sellers together in one virtual maketspace
- Operate 24 hours a day, 7 days a week from one virtual marketspace.
- Create customized and personalized information and buying options for buyers.

Napier et. al. (2001) identifies some of the challenges of E-business as follows:

- Rapidly changing technology
- Insufficient telecommunication capacity or bandwidth
- Problems maintain systems security and reliability
- Shortage of skilled technical employees
- Difficulty integrating existing systems with e-business soft wares

3.4 *E-Business and Security issues*

While putting business systems on the Internet offers potentially unlimited opportunities for increasing efficiency and reducing cost, it also offers

potentially unlimited risk. The Internet provides much greater access to data, and to more valuable data, not only to legitimate users, but also to hackers, disgruntled employees, criminals, and corporate spies (Oracle, 2002).

E-business depends on providing customers, partners, and employees with access to information, in a way that is controlled and secure. Managing e-business security is a multifaceted challenge and requires the coordination of business policy and practice with appropriate technology. In addition to deploying standards bases, flexible and interoperable systems, the technology must provide assurance of the security provided in the products. As technology matures and secure e-business systems are deployed, companies will be better positioned to manage the risks associated with disintermediation of data access. Through this process businesses will enhance their competitive edge while also working to protect critical business infrastructures from malefactors like hackers, disgruntled employees, criminals and corporate spies (Ibid).

3.5 *Conclusion of the Literature Review*

In this literature review we have presented about all theories related to E-Business modeling and framework for designing the model. Further, we presented the application of E-business and its definition in addition to explaining proposing E-Business model is a solution to integrate ICT in business organization to make them compete and to deploy information systems.

CHAPTER FOUR

APPLICATION OF ICT IN IMPORT AND EXPORT BUSINESS

This chapter aims to present the advantage of Information communication technology to doing Import export business in general, the Import and export business and ICT requirements in Ethiopia in particular. The chapter also explains the Leather export industries in Ethiopia and it will explain business activities of the Ethiopian Leather export industries that required designing the E-business model.

4.1 Import and Export Business in Ethiopia

Import export businesses, also known as international trading, are one of the hottest commercial trends of this decade (Bocco, 2009). Trading goods and services allows small businesses around the world to compete on a global basis with their larger competitors. You can get started with your own import/export business with the list of online import and export business start-up resources and tools (Henczel, 2007). In the past, it was very costly to acquire the commercial intelligence needed to play in the global market place.

Now, armed with the Internet we can access valuable market information and find foreign buyers and local suppliers, anywhere, anytime (Henczel, 2007). Although the computer revolution is well underway, there are many companies who are not taking advantage of the opportunities available because of lack of

expertise and lack of confidence in their ability to acquire the appropriate systems at reasonable prices. There is a baffling array of systems available, with choices at every level of hardware, software, networks, electronic data dissemination, and expert systems. Yet, to remain outside the arena of computerization is to risk falling behind competitively. In addition, the import-export field is particularly well-suited for computerization because the level of information generated, and received, is very high (Lots of essay.com, 2009).

There are some problems, however, specific to import-export that also make it difficult to choose the right systems. Besides the high level of information generated, there is a diversity of data in import-export that exceeds that in other fields. For example, in thinking about generating shipment labels, or other kinds of customer documentation, it is often necessary to create documents in different languages. As a consequence, it is not possible just to rely on a simple system; in order to be effective, an information system in import-export must be tailor-made for the industry (Ibid).

Ethiopia's main imports include petroleum products, civil aircraft, vehicles, spare parts, construction equipment, medical and pharmaceutical products, industrial equipment and machinery, both agricultural and industrial chemicals, agricultural machinery, hybrid seed, fertilizers, irrigation equipment, and durable and non durable consumer goods (Embassy of The United State, 2009).

The main items that Ethiopia's exports are coffee, chat, skins and hides, pulses, gold, live animals and processed meat, oilseed cake, and fruits and vegetables. Among these products, coffee is by far the most important, constituting an average of 55 percent of total exports by value during the last twenty three years and reaching as high as 60 percent in 1999/2000 (Ibid).

4.2 Leather Export Industry in Ethiopia

World trade in leather and leather products — worth more than $60 billion in 2004 — is expected to grow. With a quarter of the world's sheep and goats and 15% of its cattle, Africa is bursting with potential, but there is a gap between resources and production. African countries produce just 14.9% of the global output of hides and skins and hardly any ready-for-market finished leather goods. When a country such as Ethiopia makes high-end leather products, it shows that promise can become a reality (International trade Forum, 2006).

Ethiopia has a major comparative advantage in the raw materials sector needed for the leather sector which makes it in principle very appropriate for leather product exporting: Ethiopia has the largest livestock production in Africa, and is the 10th largest in the world. Ethiopia's livestock population is estimated at 35 million cattle, 21 million sheep and 16.8 million goats. Annually it produces 2.7 million hides, 8.1 million sheepskins and 7.5 million goatskins. This comparative advantage is further underlined by the fact that the cost of raw hides and skins constitute on average between 55 to 60% of the

production of semi-processed leather (Ethiopian Business Development Service, 2008).

During the past two decades leather and semi-processed hides and skins have constituted the second major export product of the country with between 10 and 20 % of total foreign earnings, second only to coffee with between 50 and 60% of earnings. The Ethiopian leather and leather product sub-sector produces a range of products from semi-processed leather in various forms to processed leathers such as shoe uppers, leather garments, stitched upholstery, school bags, handbags, industrial gloves, and finished leather. Such leather products have been exported to markets in Europe, the USA, Canada, Japan and the Far East. There is also export to countries in Africa, in particular to Nigeria and Uganda, as well as to the near East, i.e. Yemen. The market for leather products is mainly international and not domestic (Ibid).

The Ethiopian leather industry has been manufacturing mainly wet blue leather for the last 10 to 15 years. It is a typical feature of developing countries, as wet blue is the first stage of the leather value chain. In order to generate higher added value, however, the Ethiopian industry is struggling towards crust (the next stage) or finished leather. The Government of Ethiopia has designed, along with UNIDO, a strategy to achieve this goal. It is based on developing leather products — the "downstream" part of the chain — in order to pull up finishing capacities in leather manufacturing. The idea is that a

higher demand for finished leather would cause higher production in the country (International trade Forum, 2006).

Ethiopia has tremendous potential to develop leather exports, which the Government has singled out as a priority sector. It wants to move the country's production up the value chain from the "wet blue" stage to "crust" leather and finally to finished leather and leather goods (Ibid).

From agriculture to industrial products, consumer goods and business services, technology matters. Whether companies manage traditional exports in new ways or exploit opportunities in new export sectors, they are 'putting "e" to work' to sharpen their compete. Across the developing world, pioneering small firms are taking advantage of new information and communications technologies to improve their business processes and expand their export markets for traditional products and services. They are also supplying high-tech goods and services themselves. It's not always necessary to use the most sophisticated technologies. Whether exporting gift items, specialty foods or luxury goods, "everyday" information and communications technologies such as e-mail, web sites, mobile phones and digital photography make a big difference (International, 2007).

Ethiopian leather exporting companies has a great advantage of getting raw materials seeing that the country has the largest livestock population and the companies need to support the business with the available technologies to be more competent in world market. Adding a letter "E" on the traditional

business is not only about the technology infrastructure it is the decision of managers and owners of the export companies to integrate the available technology with the traditional business trend by designing a well functional business model that enables to shift from the old one to the digital business step by step. The design model should consider the country technology adoption level and the available infrastructure.

4.3 ELICO and E-Business

ELICO – Gloving and Hide Unit is a highly specialized tannery with over 50 years of experience in the processing and export of Ethiopian hair sheepskins for leather gloves and garment producers throughout the world. It produces ladies' and men's dress gloving leathers in the traditional black and brown as well as trendy pastel colors. It also produces one of the finest golf gloving leather in silver and snow white colors which have gained great popularity among world famous sports gloves producers.

The main activities of the company are Production and export of suede leather, finished gloving leather for dress and sports gloves, finished shoe upper, finished and lining leather, as well as various types of leather garments and articles. Venture into the world of Ethiopia's most ancient activity, led by a state-of-the-art company of worldwide reputation. ELICO is uniquely identified by its glove leather production; it makes the softest gloving leather from Ethiopian hair sheep skin.

The export destinations of ELIO's products are 80% exported to markets in Europe, Japan, China, Korea, South East Asia and North America. The main products that ELICO export for those countries are dress gloving leather, golf gloves and upholstery leather.

ELICO has a quality management and control mechanism in order to meet the whole and complete satisfaction of customers by supplying them products and services, which meet their explicit and implicit requirements. In order to adhere to these objectives, the company heavily invests in training of its staff in quality management and control. The company's raw materials and finished products are fully inspected and controlled during processing. The motto is "to do it right first time".

ELICO is in continuous improvement on formulating, communicating and monitoring clearly defined goals and its business plan. But they have no proposed business model that enables the companies to integrate Information communication technologies in their business activities to utilize the benefits that ICT can give. There is Management Information System department in the organization to facilitate and gives support for the stand alone computers in the organization. ELICO is using electronic mail to receive customer orders from outside the country and web site elicoplc.com for advertising its products.

The MIS department has attempted to implement the information systems in the organization for many times but most of the projects are failed due to different reasons. According to the interviewed persons the organization has no

enough awareness on the E-Business modeling concept. As we described on the literature review E-business modeling enables specially the managers and other stakeholders to have a common understanding the overall business activities and objectives of the organization besides to implement information system in the organization successfully in order to join the world e-market and to utilize the merits that technology gives.

CHAPTER FIVE

PROPOSING E-BUSINESS MODEL

5.1 Components of the proposed E-Business Model

The ultimate goal of this thesis is to propose a business model based on the Ethiopian leather export industry requirements which enables them to add the necessary ICT technologies in their organization including and mainly to utilize the centuries best innovation the Internet. Designing a business model in this Internet era is not a choice of doing but rather it is a choice of failure or success and it is a mandatory activity.

In the literature review the researcher realizes that the four eBMF components value Innovation, Infrastructure and ICT technologies, customer relationship, and revenue streams are the basic milestones to build any business model in all business sectors. The reason behind this is every activity, concepts, objectives, plans, strategies and business process can be expressed or represented in these four elements. In addition, the four main components can be further decomposed in to different subcomponents. These design variables, the main components and the subcomponents are critical to design the model and their relations also determine the success of the business model.

5.1.1 The Four Main Components and Their Relationships to the Proposed Business Model

We have four main e-business modeling components depending on the e-business modeling framework (eBMF). These are Value Innovation, Infrastructure and ICT Technologies, Customer Relationship and Revenue Streams. These components are the first level and the higher abstraction of the model.

Name of BM elements	e-Business Model it is a root element
Composed of	• Value Innovation • Infrastructure and ICT Technology • Customer Relationship • Revenue Stream
Level of decomposition	0 level

Table 1: E-Business Model Root

There is a tremendous relation and interdependence between these four main pillars of business model. The design variables and their relationship are depicted in the figure below.

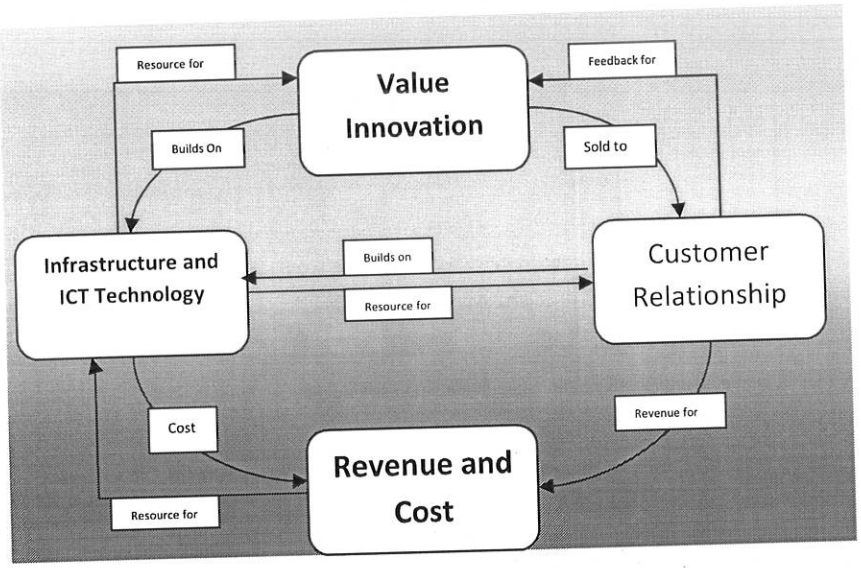

Figure 11: E-Business Model Components' Relationship

In fig.11 it is depicted the relations of the four main pillars of E-business model. Infrastructure and ICT Technology is a resource for creating value innovation which is cost for the Revenue and Cost element again Revenue and Cost is a resource for constructing Infrastructure and ICT Technology. Customer Relationship is the critical part where it is generate revenue and a resource for Revenue and Cost component and which is also a feedback to improve the value innovation.

5.1.2 The Subcomponents of the Designed E-Business Model and Their Interdependence

Based on the literature review and the requirements gathered from the firms, the researcher would like to further decompose each of the four components in to their corresponding elements that enable to explain the concepts explicitly.

The Value Innovation is the product or service that the organization deliver to its customer and the customers are willing to pay for it. The Value Innovation further decomposed to **Customer Segment**, **product and service**, and **Capability**.

Name of the BM Element	Value Innovation
Child of	Root Element BM
Composed of	• Target Customer Segment • Offers • Capabilities
Level of decomposition	1
Related to	• Marketed through Customer Relationship • Based on Infrastructure and ICT Technology

Table 2: Value Innovation Subcomponents

As we depicted on the fig 11 above Infrastructure technology is a resources for creating a value in organization. In addition Infrastructure technology has a vital role to establish and maintain a customer relationship activity in the firm. Thus, this Infrastructure and ICT technology decomposed in to Resources, Activity and Process, and Partner and Supplier.

Name of the BM Element	Infrastructure and ICT Technology
Child of	Root Element: BM
Composed of	• Resource • Activity and Process • Partner and Supplier
Level of decomposition	1
Related to	• Resources for Value Innovation • Resources for Customer Relationship • Cost expenditures

Table 3: Infrastructure and ICT Technology Subcomponents

The third element of the model is Customer Relationship components. With the aid of ICT technology firms can redefine and ameliorate their customers handling mechanisms. ICT can support or substitute human activity fully or partially to elevate the customer handling mechanisms of the organization. To represent the model more clearly Customer Relationship components can be decomposed into Information Gathering, Distribution Channel, and Customer Satisfaction.

Name of the BM Element	Customer Relationship
Child of	Root Element: BM
Composed of	• Information Gathering • Distribution Channel • Customer Satisfaction
Level of decomposition	1
Related to	• Feed back for Value Innovation • Based on Infrastructure and ICT Technology

Table 4: Customer Relationship Subcomponents

At last but not least the Revenue component determines the success or failure of the company. This element is a resource for the Infrastructure and ICT Technology component, and it shows the value network intended to capture monetary values. Its component is decomposed into Revenue Streams and Cost Structure.

Name of the BM Element	Revenue Stream
Child of	Root Element: BM
Composed of	• Revenue Streams • Cost Structure
Level of decomposition	1
Related to	• Resource for Infrastructure and ICT Technology

Table 5: Revenue Stream Subcomponents

Finally, we need to summarize the main components and the subcomponents together in the fig below. The figure depicted the relationship and interdependence between the elements.

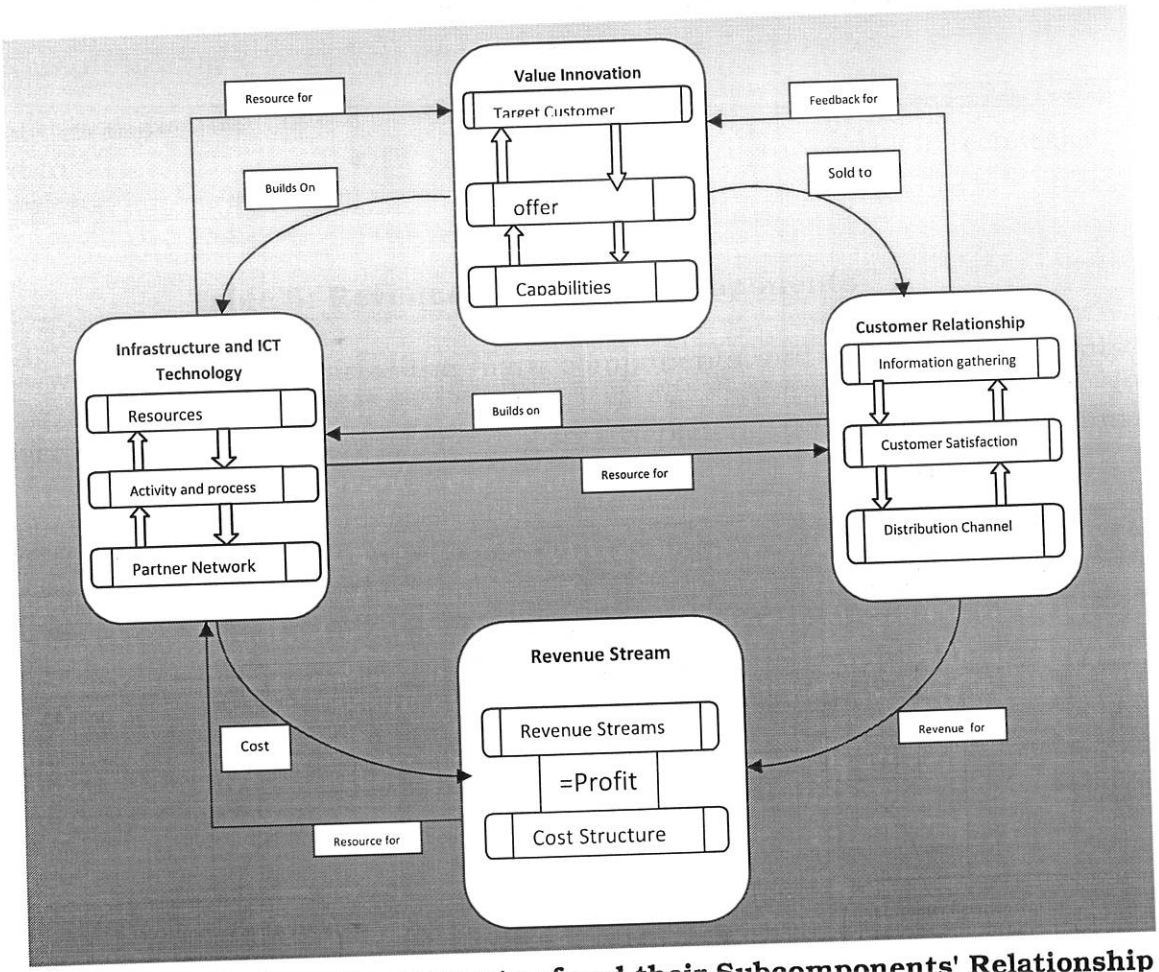

Figure 12: The Four Components of and their Subcomponents' Relationship

The above figure illustrates the subcomponents of the four main pillars of the e-business model and the relationship between each main component is still preserved. Besides the main components relationship the subcomponents have also relationship as we can see on the figure.

5.2 Designing Models for the Four Main Components

5.2.1 Value Innovation Components Design

The subcomponents of this component are Target Customers Segment, Offers, and Capabilities. In this section the researcher describes each subcomponent in the context of Ethiopian Leather Industry Company (ELICO).

Offers: ELICO offers for its customers suede leather, finished gloving leather for dress and sports gloves, finished shoe upper, lining leather, as well as various types of leather garments and articles leather jackets, bags, different fashion footwear, Golf gloves, dress gloving and Upholstery Leather. ELICO differentiates itself from other Ethiopian leather Manufacturing firms by offering the finest golf gloving leather in silver and snow white colors. Gloving and Hide Unit is a highly specialized tannery with over 50 years of experience in the processing and export of Ethiopian hair sheepskins for leather gloves and garment producers throughout the world. It produces ladies' and men's dress gloving leathers in the traditional black and brown as well as trendy pastel colors.

Target Customers: Main target customers of ELICO is outside the country 80% of its products are exported to Europe, Japan, China, Korea, South East Asia and North America. Even though there is a large demand of the products of ELICO in the country.

Capabilities: To offer the above mentioned products to the customers ELICO has to assure a number of capabilities. First the local target customers can go physically to the shops or the factory of the firm to order their products but the customers outside the country can order products by the firms' web site. Second ELICO need to assure the customer's order produced according to their requirements. Third it assure and track the products are delivered to the customers address within the specified date.

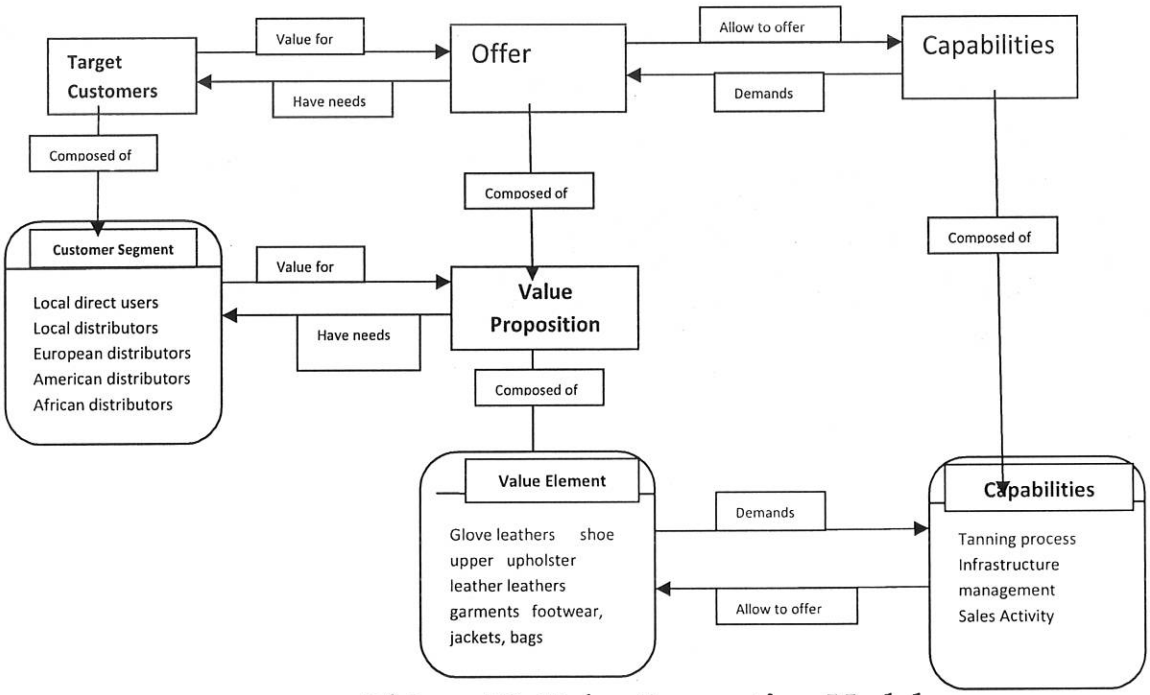

Figure 13: Value Innovation Model

5.2.2 *Infrastructure and ICT Technology Component Design*

Resource: ELICO disposes of different in-house resources and assets. These consists of different (name of the machines) computerized and large tannery machines and a number of knowledge and labor workers.

Activity and Process: ELICO has performed a number of activities and processes to offer a value for its customers. Most Ethiopian leather export tanneries send semi-processed hides and skins. But ELICO produces and export good and finished leather products that feel like soft skin and smells headily aromatic. To produce this type of leather for export ELICO from slaughter through the tanning processes face a grim, malodorous and environmentally hazard activities. Skins are tumbled in drums of chemicals, the soaking, matted hair is scraped off by hand and the pungent heaps of would-be leather are manhandled off to the next noxious stage of the proceedings. Generally, ELICO has two main business process activities; wet blue is the first stage of the leather value chain where most developing countries are export and the second is the crust stage which enables to generate higher added value.

Partner and Supplier: ELICO does own the whole value chain and there is no partners that participate in the value chain; however it relies on a network of partners and suppliers. It imports different Machines and chemicals from its suppliers outside the country, especially from Europe Germany. There are a number of organizations that supplies animal skins inside the country by

collecting from different areas. ELICO need a partner in supplying its products to its customer like DHL, Ethiopian Postal Service and Ethiopian Cargo transport.

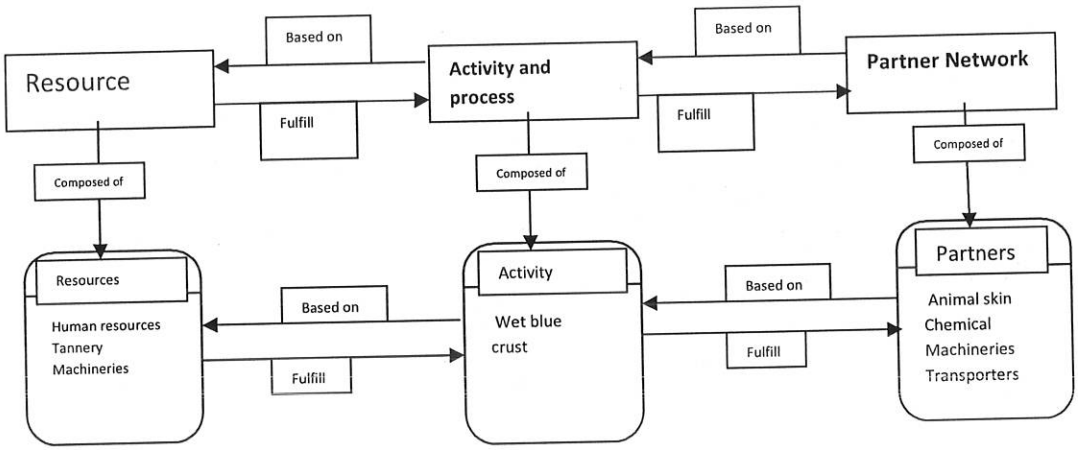

Figure 14: Infrastructure and ICT Technology Model

5.2.3 *Customer Relationship Design*

Information Gathering: Currently ELICO has no computerized mechanisms to collect customer information which enables the organization to understand and know its customer needs.

Distribution Channel: The firm relies on three different sales channels, which are direct sales especially for local customers, during trade fair exhibition which conducted on different European countries and the third on through affiliates. The communication with its direct customers takes place mainly over the ELICO (i.e www.elicoplc.com) website and by email address.

Customer Satisfaction: ELICO is totally committed to meet the whole and complete satisfaction of customers by supplying them products and services, which meet their explicit and implicit requirements. In order to adhere to these objectives, the company heavily invests in training of its staff in quality management and control. In addition ELICO is awarded ISO2001 Certificate by its customer satisfaction and environmental pollution prevention.

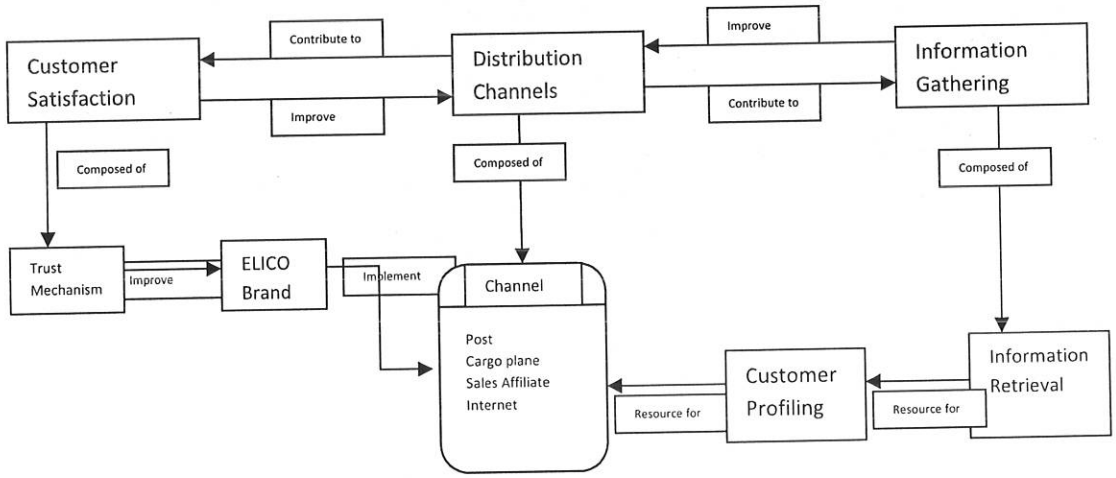

Figure 15: Customer Relationship Model

5.2.4 *Revenue and Cost Design*

Revenue Stream: This element measures the ability of the firm to translate the value it offers to its customers into money and therefore generate incoming revenue streams. ELICO is offer to its customer's different kinds of products that the customers are willing to pay for it. Thus ELIO generate revenue by selling its leather and leather products.

Cost Structure: This element measures all the costs that ELICO incur in order to create, market and deliver value to its customers. ELICO spend a lot of money on tannery machines, Infrastructure buildings, employees, chemicals and different raw materials to manufactures the intended products.

5.3 Graphical Representation of the E-Business Model of ELICO with the Nine Building Blocks of Business Model Canvas

After all these four main components design the researcher came up with an E-Business model which has nine interrelated building blocks and fig 16 shows us all the necessary relations between the blocks. Still the nine blocks keeps the E-Business model framework constraints and main components.

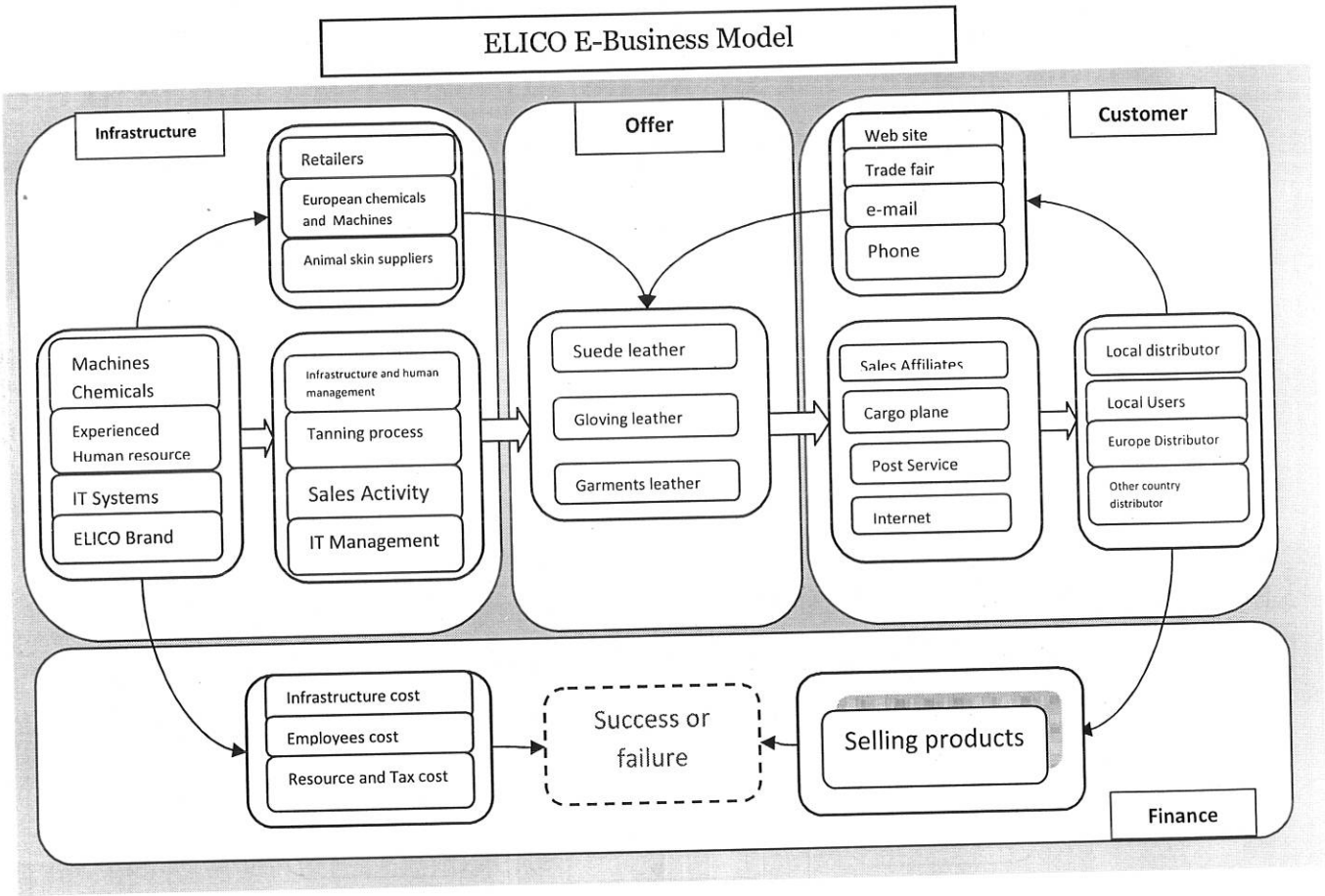

Figure 16: ELICO E-Business Model (Source: Own Survey)

The above ELICO E-Business model designed with extensive literature review on the E-Business model framework and the nine canvas business model. As the diagram depicted the four main pillars of the model Infrastructure and ICT Technology, Customer Relationship, offer and Finance aspects are taken as the main building blocks of the model. In addition the nine canvas building blocks customers, value propositions, distribution channels, Customer Relationships, Revenue, capabilities or key resources, value configuration or key activities, partners, and cost structure are identified explicitly on the diagram.

This model is helpful to implement e-business information systems by creating common comprehensive understanding between business peoples and information system developers. This diagrammatical representation also leads to the creation of E-Business model document by eBML which enables the company to share knowledge and by integrating it in to the decision support systems it can help E-Business model creators to design, critique, and simulate business models. The document that written from the above E-Business model by eBML is important to create ebXML document that enables the company to exchange secured business messages via internet, and it is a standardized format for describing structured information (Lagha et al., 2001 and Osterwalder et a. 2002).

In the next chapter we will encode the above model with eBML in order to utilize all the advantages that XML gives.

CHAPTER SIX

ENCODING THE PROPOSED E-BUSINESS MODEL BY eBML

6.1 *E-Business Modeling Languages to Encode the Proposed Business Model*

So far we try to express the ELICO e-business model diagrammatically and using formal English text. But we have adequate technology that enables us to express the e-business model in formally with eBML which enables to exchange and maintain the e-business model in heterogeneous IT environment is very easy (Legha et. al, 2001).

According to Lagha et. al. (2001) eBML allows the formalization of e-business models with an XML-based markup language. This makes it possible to compare different business models and to generate different views of the model in function of different needs (such as descriptions, graphical representations, business plans, reports for financing, reports for eventual partners, acquisitions or mergers, etc.). The language eBML is an XML Document Type Definition or XML schema. It is composed of a number of concepts called elements that represent the vocabulary of a model and the relationships between the elements (Ibid). The following fig. 18 shows the E-Business model languages skeleton.

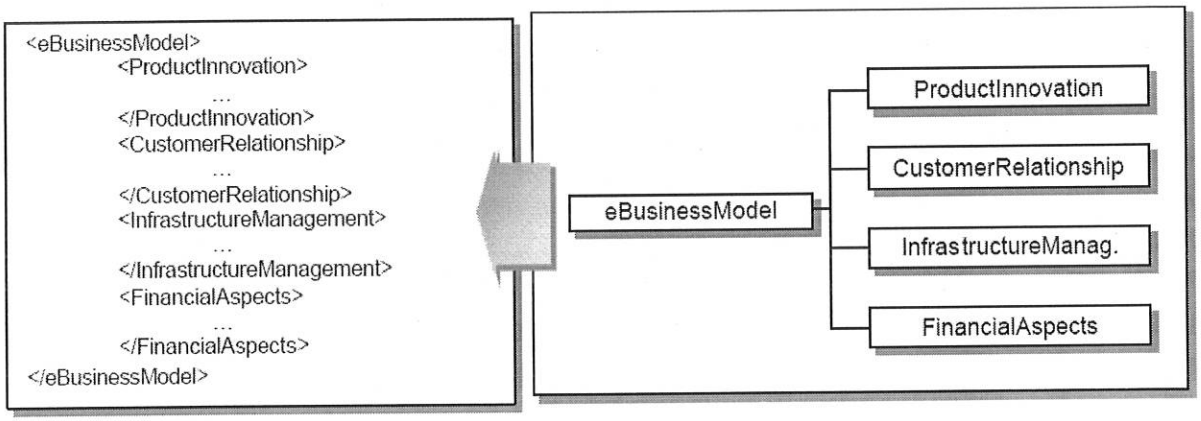

Figure 18: e-Business Model Languages

eBML does not focus on the exchange of messages and e-business process. eBML is situated at a higher level of abstraction and it will help to encode business model. A business model expressed in eBML is an XML document that respects the constraints and the rules imposed by eBMO (Osterwalder et. al., 2001)

According to Osterwalder et. al. (2001) an e-business model of a company is a valid XML document based on the eBML DTD. The description (or instantiation) of each concept is delimitated by an opening tag in the form of <concept> and a closing tag in the form of </concept>. An eBML document starts with the tag of the root element <eBM> and ends with the tag </eBM>. The subtree contains the four main components of the e-BMO which contain their respective subtrees defined in the eBML DTD. Ostewalder et al. (2001) in Listing 1 illustrates a part of the DTD followed by the global structure of an e-business model document.

```
<!ELEMENT eBM                          (PRODUCT_INNOVATION,
                                       CUSTOMER_RELATIONSHIP,
                                       INFRASTRUCTURE_MANAGMENT,
                                       FINANCIAL_ASPECTS)>

<!ELEMENT INFRASTRUCTURE_MANAGMENT     (RESOURCES,
                                       ACTIVITY_CONFIGURATION,
                                       PARTNER_NETWORK)>

<!ELEMENT RESOURCES                    (RESOURCE+)>


<eBM>
   <PRODUCT INNOVATION>...</PRODUCT INNOVATION>
   <CUSTOMER_RELATIONSHIP>...</CUSTOMER_RELATIONSHIP>
   <INFRASTRUCTURE_MANAGMENT>
      <RESOURCES> ...</RESOURCES>
      <ACTIVITY_CONFIGURATION>...</ACTIVITY_CONFIGURATION>
      <PARTNER NETWORK>..</PARTNER_NETWORK>
   </INFRASTRUCTURE MANAGMENT>
   <FINANCIAL_ASPECTS>...</FINANCIAL_ASPECTS>
</eBM>
```

Figure 19: Global Structure of an e-Business Model Document

6.2 Encoding the Infrastructure and ICT Technology Component With eBML

In this section we illustrate our purpose of E-Business modeling for the case study in the Ethiopian Leather Industry Company (ELICO) by eBML. Every requirements need to be coded with eBML is available in chapter five and due to the constraints of resources it is wise to encode with one of the elements of the model. Particularly the researcher needs to select the Infrastructure and ICT Technology component to show as a prototype. In the subsequent listing we try to encode all the sub elements and the components of the Infrastructure and ICT Technology.

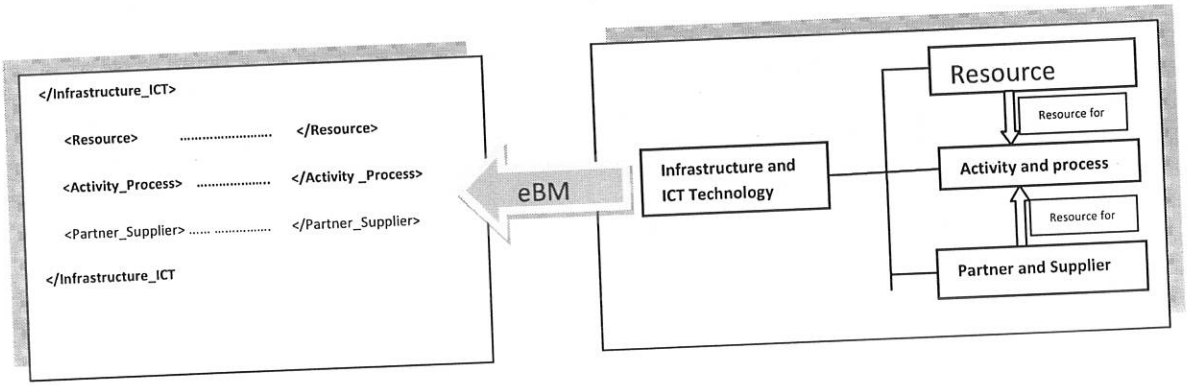

Figure 20: e-Business Model Language for Infrastructure and ICT Technology

6.2.1 Creating DTD File for Infrastructure and ICT Component

As we can see on fig. 20 Infrastructure and ICT component has three elements these are; Resource, Activity and Process, and partner and Supplier. In this sub section we are going to look into how we can create a DTD file to define the structure of the XML document which we are going to create in the next sub sections. In this document we defined each elements and attributes of the Infrastructure and ICT component. For the convince of the reader we define here only some of the elements and the rest are attached on the appendix 3. We create the document with file name Infrastructure_ICT.dtd and the first line <?xml version="1.0" ?> is the processing instruction it tells us the parser we are working with, particularly version of XML.

File Name: Infrastructure_ICT.dtd

```
<?xml version="1.0" ?>
<!Element  Infrastrucre_ICT ((Resource+), (ActivityAndProcess+), (PartnerAndSupplier+)>
<!Element  Reource  (Resource_Type,  Resource_Id,  Resource_Name,
Resource_Description)>
<!Element ActivityAndProcess (ValueChainActivity+)>
<!Element PartnerAndSupplier (partner, Supplier)>
<!Element  ValueChainActivity  (Activiy_Name,  ValueChainActivity_Description,
UsesResource)>
<!Element partner (partner_Name, Partner_Id, Role, Outsourcing)>
<!Element Supplier (Supplier_Name, Supplier_Number,Item_Supplied)>
<!Element Resource_Type(#PCDATA)>
<!ATTLIST Resource_Type (tangable | intangible| human)
<!Element Resouce_Id (#PCDATA)>
<!ATTLIST Resource_Id CDATA #REQUIRED>
<!Element Resouce_Description (#PCDATA)>
<!Element  Activity_Name (#PCDATA)>
<!Element ValueChainActivity_Description (#PCDATA)>
```

Figure 21 Infrastructure and ICT Component DTD file

6.2.1 Creating Xml File for Infrastructure and ICT Component

After we create the DTD file for the Infrastructure and ICT elements and attributes we are going to build the XML document in this sub sections. In the figure below we create a file name Infrastructure_ICT.xml. The first line is indicating the xml version and the second line (*<!DOCTYPE Infrastructure_ICT SYSTEM "C:\Users\user\Desktop\Infrastructure_ICT.dtd">*) is used to link the xml file with the external DTD file. In the figure below we include the root element Infrastructure_Ict and the child element Resource the rest elements of the Infrastructure_ICT component are attached on the appendix 4.

```
<?xml version="1.0"?>
<!DOCTYPE Infrastructure_ICT SYSTEM
"C:\Users\user\Desktop\Infrastructure_ICT.dtd">   <!----linking with dtd file-- >

<Infrastructure_ICT>

    <Resource type="tangible" Resource_Id ="001">
        <Resource_Name>
            Tannery Mahcine
        </Resource_Name>
        <Resource_Description>
            ELICO disposes of a modern .....
        </ResourceDescription>
    </Resource>
    <Resource Resource_Id="002" Resource_type="tangible">
```

```
        <Resrouce_Name>
          Sun Microsoft server
        </ Resource_Name>
        <Resource_Description>
            server which can handle customers request and different    Organizational data.
         <Resource_Description>
    </Resource>
    <Resource Resource_type="human">
        people working in factory and offie.....
.....
    <Resource type="intagible">
            <Resource_Name>
          ELICO Product brand
        <ResourceDiscription>
    </Resources
</Infrastructure_ICT>
```

Figure 22 Infrastructure and ICT Component XML file

6.3 Findings and Discussion

During our research about E-Business modeling in the literature review we found out that E-Business modeling plays a role bridging the gap of business strategy and developing e-business information system in the organization. E-business is changing the ways that companies do business and most traditional business shift from their conventional business model to modern and ICT supported business via E-Business Model. It was also realized that E-Business models are built common comprehension between real world business problems and information technology systems which leads to integrate e-business applications like e-commerce systems, CRM, SCM, Inventory and Human Management software.

The researcher gets understanding on the world E-Business model framework and the tools and languages that available for implementing the model in formalized way. In our investigation we also get the main components to build E-Business model. Furthermore, we discover every aspect of E-Business model, E-Business applications and we tried to investigate the role of ICT on business to get a deep insight about the subject.

Based on the above understanding and the information gathered it is designed an E-Business model and derived some conclusions that provide answers to our research problems. Although it is tried to discover all aspects of the subject, there are some issues that could not reach on and these gives on the recommendation part.

CHAPTER SEVEN

CONCLUSION AND RECOMMENDATIONS

In this Chapter it is summarized what we acquired from the study and forward some recommendations that the researcher observed during the study.

7.1 Conclusion

The major contribution of this paper is to propose E-Business model for ELICO. ELICO and other import and export business firms in Ethiopia are not supporting their business activities and processes by ICT and information systems applications. The proposed model enables ELICO to implement E-Business information systems gradually and it is a requirement to shift from the old business strategy to a new modern global business strategy.

The study after investigating every business activities of the organization it designs an E-Business model for ELICO. This model enables the organization to describe what ELICO offers to its customers, how it reaches them and relates to them, through which resources, activities and partners it achieves this and finally, how it earns money.

The proposed model is a ground for every stakeholder including the mangers to share, communicate, understand, and measure the organization business activities. Above all these, the model helps the organization to deploy e-business applications in the organization and is used as a bridge between the information systems development process and the business process.

Finally, the study illustrates the model in two mechanisms. It is important to depict the model diagrammatically which represent the model with 9 building block canvas which also included on the eBMF. Encoding the model with eBML is advisable to possess all the advantages that an ordinary XML document has and eBML language helps to encode new and existing e-business models (eBM). The eBML document written in XML is lead ELICO and other Ethiopian Import and Export enterprises to create a new and persuasive metaphor to conduct e-business via Internet.

7.2 *Recommendations and Future Works*

The researcher would like to make the following recommendations in this section:

- To make Ethiopian firms compete in this digital economy it is better to design an E-Business model for each small and medium sized enterprises based on their needs and requirements.
- Further researches need to transform the eBML document into different formats and documents (eg. For knowledge sharing, business plans ...). In function of to redesign the model or to planning e-business process.
- The researcher would like to recommend further research on the transformation of the document that contains the E-Business model written in eBML to their corresponding ebXML to enables enterprises of any size and in any geographical location can meet and conduct business with each other through the exchange of XML based messages, which is

difficult previously to exchange business message in EDI especially for small and medium sized enterprises.

- Another recommendation that the researcher would like to make is after designing a business model there must be mechanisms that can evaluate the efficiency of the model. This is important to taste the model before it goes to implementation. Even developing simulator based on the proposed E-Business model is crucial for managers and information system developers to get insight what would be the system in risk-free condition.
- Finally, it is better to investigate on the design tools or software that enables the designer to model easily.

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building-an-import-export-business.html. [Accessed Date: September 19, 2009]

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10. Does ICT support in treating, gathering customer information and identifying your customer?

11. What distribution channels do you use to reach to your customers or market and to promote your products or services?

12. Does your organization apply ICT for the above purpose?
If not, why?

13. What do you do to get customer trust?

14. What are the main resources of your organization?

15. Who are your partners?

16. In what way do you reach to your business partners?

Appendix 4: Infrastructure and ICT Component XML File

File Name: Infrastructure_ICT.xml

```
<?xml version="1.0"?>
<!DOCTYPE Infrastructure_ICT SYSTEM
"C:\Users\user\Desktop\Infrastructure_ICT.dtd">   <!----linking with dtd file-- >

<Infrastructure_ICT>

    <Resource type="tangible" Resource_Id ="001">
      <Resource_Name>
        Tannery Mahcine
      </Resource_Name>
      <Resource_Description>
        ELICO disposes of a modern printing infrastructure from Germany
        Company With equipment good glove leather manufactured. And fully computerized
        machine and has many additional futures and easy to operate plus so power saver.
    </ResourceDescription>
</Resource>
<Resource Resource_Id="002" Resource_type="tangible">
   <Resrouce_Name>
     Sun Microsoft server
  </ Resource_Name>
  <Resource_Description>
    A 10TB server which can handle customers request and different
```

organizational data.

<Resource_Description>

</Resource>

<Resource Resource_type="human">

200 people working in factory and offie

<Resource type="intagible">

<Resource_Name>

ELICO Product brand

<ResourceDiscription>

</Resources>

<ActivityAndProcess>

<ValueChainActivity>

<ActivityName>

Skin tanning process 2

</ActivityName>

<ValueChainActivity_Description type="wet blue operation">

This activity Skins are tumbled in drums of chemicals, the soaking, matted hair is scraped off by hand and the pungent heaps of would-be leather are manhandled off to the next noxious stage of the proceedings.

</ValueChainActivity_Description>

<UsesResource> 001 </UsesResource>

</ValueChainActivity>

<ValueChainActivity>

```
<ActivityName>
   Skin tanning process 2
</ActivityName>
<ValueChainActivity_Description type="Crust operation">
   The final stage of making leather
</ValueChainActivit_yDescription>
<UsesResource> 001 </UsesResource>
</ValueChainActivity>
<ValueChainActivity
   <ActivityName>
      Recieving Order from its Customers
   <ValueChainDescription type="Supply Chain Management">
      Receving order from its customer who are outside the country then ordering and
      manfacturing by   considering their requirements.
   </ValueChainDescription>
   <useResource> 002 </UseResource>
</ValueChainActivity>
</ActivityAndProcess>
```

```
<partnerAndSupplier>
   <Partner partner_Id="010">
      <Partner_Name>
         Ethiopian telecommunication Service (ETC)
      </Partner_Name>
```

```
        <Partner_Role>
          Giving IP address and telecommnication service
        </PartnerRole>
</Partner>
<Partner Partner_Id="020">

      <Partner_Name>
         Ethiopian postal service
      </parnterName>
      <Partmer_Role>
        Delivering Customer order items
     </Partner_Role>
<Suplier Supplier_Id="040">
        <SuplierName>
         Germany Chemical industry
      </supplierName>
      <Item_Supplied>
        Chemicals
       </SupplierGood>
  </PartnerAndSupplier>
</Infrastructure_ICT>
```