

**ELECTRONIC COMMERCE
(E-COMMERCE)**

145582

**A THESIS SUBMITTED TO
THE SOCIAL SCIENCES INSTITUTE
OF
ÇANKAYA UNIVERSITY**

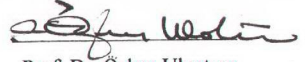
BY

ŞEVKİ KEÇE

145582
**IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE
DEGREE OF MASTER OF SCIENCE
IN
THE DEPARTMENT OF MANAGEMENT**

JANUARY 2004

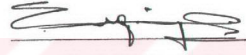
Approval of the Graduate School of Çankaya University Institute of Social Sciences.



Prof. Dr. Özhan Uluatam

Director

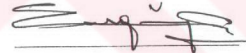
I certify that this thesis satisfies all the requirements as a thesis for the degree of Master of Science in Management.



Prof. Dr. Ergün Kip

Head of Department

This is to certify that we have read this thesis and that in our opinion it is fully adequate, in scope and quality, as a thesis for the degree of Master of Science in Management.



Prof. Dr. Ergün Kip

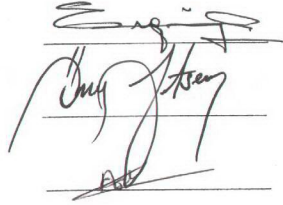
Supervisor

Examining Committee Members

Prof. Dr. Ergün Kip

Yrd. Doç. Ömer Yurtseven

Yrd. Doç. Aslı Bayar



ABSTRACT

The purpose of this study is to investigate the effects of e-commerce on world and Turkish economies. A special emphasis is given to the effects of e-commerce on consumers, businesses and the national economy as a whole. Dell computer company is taken as a case study. It is shown that in a rapidly changing world those who use new ways of doing things will be more successful than their competitors. The development, advantages and disadvantages of e-commerce are evaluated and conclusions are drawn for the future.

Key words:

E-Commerce,
Business to Business (B2B),
Business to Consumers (B2C),
Electronic Data Interchange,
Secure Electronic Transactions,
Global Trade Point Network.

ÖZET

Bu çalışmanın amacı, elektronik ticaretin dünya ve Türkiye ekonomisindeki etkilerini incelemektir. Özellikle elektronik ticaretin tüketiciler, işletmeler ve ulusal ekonomiler üzerindeki etkilerine bir bütün olarak ayrı bir önem verilmiştir. Dell bilgisayar şirketi bölüm çalışması (case study) olarak incelenmiştir. Ve bu çalışmayla, hızlı gelişen dünyada ticari faaliyetlerinde yeni teknolojileri kullananların rakiplerine göre daha üstün ve başarılı olduğu gösterilmiştir. Elektronik ticaretin gelişmesi, avantajları ve dezavantajları değerlendirilmiştir ve gelecek içinde değerlendirmeler yapılmıştır.

Anahtar kelimeler:

E-Ticaret,
İşletmeden işletmeye,
İşletmeden tüketiciye,
Elektronik Veri Değişimi,
Güvenli Elektronik İşlem,
Küresel Ticaret Noktaları Ağı.

TABLE OF CONTENTS

ABSTRACT	i
ÖZET	ii
TABLE OF CONTENTS	iii
ABBREVIATIONS.....	vi
LIST OF TABLES.....	viii
LIST OF FIGURES.....	ix
 CHAPTER 1. INTRODUCTION.....	 1
1.1. Introduction and The Goal of the Study	1
1.2. Literature Review.....	3
1.3. A History of Commerce	5
 CHAPTER 2. THE CONCEPT OF ELECTRONIC COMMERCE.....	 7
2.1. Definition of E-Commerce	7
2.2. The Content of E-Commerce	8
2.3. Elements to Conduct E-Commerce	10
2.4. E-Commerce on the Open and Closed Networks.....	10
2.5. Basic Tools in E-Commerce	11
2.5.1. Telephone.....	13
2.5.2. Fax	13
2.5.3. Television	14
2.5.4. Electronic Payment and Money Transfer Mechanism	14
2.5.5. EDI-Electronic Data Interchange	14
2.5.6. Digital TV	16
2.5.7. Internet.....	16
2.6. History of Internet and Emergence of E-Commerce	17
2.7. The Development and the Future of E-Commerce	19
2.8. Advantages and Disadvantages of E-Commerce.....	22
2.9. Differences Between E-Commerce and Standard Commerce	24

CHAPTER 3. THE TYPES AND EFFECTS OF ELECTRONIC COMMERCE25

3.1. Types of E-Commerce.....	25
3.1.1. E-Commerce by Practice.....	25
3.1.2. Models of E-Commerce	25
3.1.2.1. Business to Business (B2B).....	26
3.1.2.2. Business to Consumers (B2C).....	30
3.1.2.3. Consumers to Government and Business to Government	32
3.2. The Effects of E-Commerce.....	34
3.2.1. Effects on Businesses	34
3.2.2. Effects on Consumers and Shopping	36
3.2.3. Effects on Economic and Social life	37
3.2.3.1. Effects on Social Life.....	37
3.2.3.2. Economic Effects	37
3.2.4. Effects on Advertising and Marketing.....	40
3.2.5. Effects on Small and Medium Size Companies (KOB).....	41

CHAPTER 4. PAYMENT SYSTEM AND INFORMATION SECURITY IN ELECTRONIC COMMERCE44

4.1. Payment System In E-Commerce	44
4.1.1. Electronic Check.....	44
4.1.2. E-Currency	45
4.1.3. Credit Cards	46
4.1.4. Smart Card	46
4.1.5. Balance Reader and Electronic Wallet	47
4.1.6. Temporary Card Number (one-time card).....	47
4.2. Information Security In E-Commerce	48
4.2.1. SSL Protocol (Secure Socket Layer)	49
4.2.2. SET Protocol (Secure Electronic Transactions)	50
4.2.3. 3-D SET (Three Domain Secure Electronic Transactions)	53

CHAPTER 5. E-COMMERCE IN TURKEY	55
5.1. The History of Internet in Turkey	55
5.2. E-Commerce Co-ordination Committee (Elektronik Ticaret Kordinasyon Kurulu-ETKK).....	56
5.3. The Evolution of E-Commerce in Turkey	56
CASE STUDY–DELL COMPUTER CORPORATION.....	59
CONCLUSION	63
APPENDIX-I : Terms Dictionary of Information Security for E-Commerce.....	68
APPENDIX-II : How Will the Web-Page Work?	71
APPENDIX-III : E-Commerce Mechanism in Buying and Selling a Product	72
APPENDIX-IV : The National and International Firms Successful in E-Commerce..	73
APPENDIX-V : The Web-Adress Extentions	74
REFERENCES.....	75

ABBREVIATIONS

3D-SET	Three Domain Secure Electronic Transaction
ARPA	Advanced Research Projects Agency
ATM	Asynchronous Transfer Mode
B2B	Business to Business
B2C	Business to Consumers
B2G	Business to Government
C2C	Consumer to Consumer
C2G	Consumers to Government
CA	Certifying Authority
CD	Compact Disk
DES	Data Encryption Standards
ECU	European Currency Unit
EDI	Electronic Data Interchange
EFT	Electronic Fund Transfer
ETKK (ECCC)	Electronic Commerce Coordination Committee-Turkey
GTPN	Global Trade Point Network
IP	Internet Protocol
ITU	International Telecommunication Union
KOBI	Small and Medium Size Company
KRA	Key Recovery Agency
METU	Middle East Technical University
NAP	Network Access Point
OECD	Organization of Economic Cooperation & Development
PC	Personal Computer
PKI	Public Key Infrastructure
SET	Secure Electronic Transaction
SNS	Singapore Network System
SSL	Secure Socket Layer
TCP	Transmission Control Protocol
TTP	Trusted Third Party
TUKAVA	Network of Turkish Universities and Research Organization
UN	United Nations

UNCITRAL	UN Commission of International Trade Law
UNCTAD	UN Conference on Trade and Development
USA	United States of America
V-POS	Virtual Point of Sale
WTO	World Trade Organization
WWW	World Wide Web



LIST OF TABLES

Table 2.1.	The Comparison of Traditional and Internet E-Commerce	11
Table 2.2.	The Functional Classification of E-Commerce Items	12
Table 2.3.	Consumers Internet Purchases by Product.....	12
Table 2.4.	Individuals Using the Internet, 2001 or Latest Available Years	18
Table 2.5.	How Many are Online Worldwide?.....	20
Table 2.6.	Comparison of Classical vs. Electronic Commerce	24
Table 3.7.	B2B Processes Volume.....	28
Table 3.8.	The Approximate Saving with E-Commerce.....	29
Table 3.9.	Cisco's Saving From E-commerce Customers.....	38
Table 3.10.	The Distribution of Manpower in E-commerce Companies	39
Table 5.11.	The Use of Computer and Internet in Turkey	56
Table 12.	Dell's Daily Online Sales in 1997	60

LIST OF FIGURES

Figure 2.1.	OECD E-Commerce Estimation	21
Figure 2.2.	Some of Probable Developments of Goods and Services in E-Commerce.....	21
Figure 3.3.	E-Commerce Models	26
Figure 3.4.	An Economic Comparison of Traditional and Electronic Commerce	38
Figure 4.5.	Establishing a SET Account.....	52
Figure 5.6.	Proportional Use of E-Commerce by Various Sector in Turkey	57

CHAPTER ONE

INTRODUCTION

1.1. INTRODUCTION AND THE GOAL OF THE STUDY

Today the concept of commerce has been redefined. The explosion of internet making it inevitable to examine the concept of market and customer. Electronic commerce is replacing the traditional commerce rapidly. At the same time, these changes are transforming today's industrial society to an information society.

E-Commerce is an accepted lifestyle of 21st Century. In the last few years, probability has increased that you have heard about e-commerce in your daily life from several different sources. Many firms are advertising their E-Commerce activities by TVs, radios, and other tools. Many people are using Internet to purchase products and to obtain services they never dreamed of doing even a few years ago. Internet is making life easy for people.

As a result of the rapid changes in communication and information technologies in the last decade of the Twentieth Century, e-commerce and e-business became popular ways of commercial activity. E-Commerce became quite prevalent both in the world and in our country. Internet offers us a new way of conducting business. Today's customers, partners, suppliers and employees demand unparalleled levels of service and quality. One must adopt a purposeful e-commerce strategy for one's business to achieve a sustained competitive advantage.

Internet enabled small firms to work with large international companies in the world. Using electronic medium, these small local companies started conducting business with no travel or face-to-face meetings. Faster communication, fast movement of funds gave a boost to our economy.

The continents suddenly became much closer. This then led to a global commerce. The small local businesses suddenly started capturing larger shares of various international markets. These developments reduced the cost and increased the quality. The national

competition suddenly became international or global.

These recent changes resulted in migration of manufacturing capabilities from developed Western Nations to the Developing Nations of Asia and Eastern Europe. The trade deficit between the Western Nations such as the United States and the new economy Nations of Asia increased dramatically.

This thesis examines the developments of E-Commerce in the World and in Turkey.

The goal of this study is to compare the advantages and disadvantages of E-Commerce and predict its future course in the World and in Turkey. This thesis is particularly interested in studying its effect on consumers, businesses, institutions, state-person and national/global economy relations.

Emphasis is given to the importance of security on E-Commerce and it is examined whether the businesses who use E-Commerce heavily are more competitive. These effects are shown in a case study, where the history and the model of the number one computer company in the world, Dell Computer, is presented.

In Chapter 1, an introduction to e-commerce has been given and the goal of the study has been stated. A literature survey of e-commerce has been conducted. And the history of commerce has been examined in some detail.

In Chapter 2, the business models and the concepts of e-commerce are studied in detail. In Chapter 3, various types of e-commerce have been described and the effects of e-commerce on businesses, consumers and shopping, economic and social life, advertising and marketing, and on small-to-medium size companies have been investigated.

In Chapter 4, the payment systems have been defined. Chapter 4 also studies the methods of information security in E-Commerce. Chapter 5 focuses on the E-Commerce in Turkey. After all these chapters a Case Study of E-Commerce prepared where the business model of Dell Computer has been summarized as a successful application. Finally, last pages covers the conclusions of this study.

1.2. LITERATURE REVIEW

Initial review of literature on “commerce over internet or commerce by electronic ways” was undertaken in several stages. The first stage involved a general overview of the subject using the sources at university libraries of Marmara University and Middle East Technical University (METU). Then a review was conducted using the Internet. The third stage of this survey involved published books, articles, and various web pages containing topics of electronic commerce.

Main sources used in this study are tabulated at the end of this thesis in the reference section. Several books and some web pages are used rather extensively.

Extensiveley used sources can be divide into two groups. In first group, AKIN (Her yönüyle internet, 1996), YAKIN (İnternet, Elektronik Ticaret, İnternet Reklamcılığı, 2000) and DOLANBAY (E-Ticaret Strateji ve Yöntemler, 2000) study the development of electronic commerce in the world. AKIN (1996) and YAKIN (2000) describe the historical development of electronic commerce. DOLANBAY (2000) explains the role of internet in the new world economy and models and tools of electronic commerce.

In second group, BOZKURT (Elektronik Ticaret, 2000), ENE (E-Ticaret’te Tüketicinin Korunması, 2002), COX ÖZTUNA (2002) and CANPOLAT (E-Ticaret ve Türkiye’deki Gelişmeler,2001) study electronic commerce in detail and describe the copcept of electronic commerce and its development both in the world and in Turkey. BOZKURT (2000) particularly focuses on Business to Business (B2B) electronic commerce and summarizes the tools of e-commerce in a global world. ENE (2002) gives special importance to the protection of consumer’s rights in electronic commerce and security issues in electronic commerce. Finally, CANPOLAT (2001) focuses on the direct and indirect effects of electronic commerce.

This study is focused on the developments of E-Commerce in the World and in Turkey.

The goal is to compare the advantages and disadvantages of E-Commerce. It also attempts to predict its future course in the world and in our country. It gives the main emphasis on the

importance of security on e-commerce and examines whether the businesses who use E-Commerce heavily are more competitive. It breaks down all the e-commerce models and details them to show the differences between models. However, it strongly states that the companies that use the e-commerce to obtain inputs and/or to be able to market their final goods have extremely big advantages and have higher income than their competitors. It also shows the importance of e-commerce in security and reducing the production costs. To show effects and many advantages of e-commerce in competition, this thesis provides a case study about Dell computer company which is one of the largest computer companies in the world using e-commerce in its operations.

1.3. A HISTORY OF COMMERCE

Commerce can be defined in several ways. It is mainly explained as the buying and selling or the exchange of the goods on the large scale. It can include the transportation of goods from a state to another, from a city to another and etc. Commerce can also be defined as interchange of ideas, opinions or sentiments. The main goal in commerce is to make money. Commerce is a quite simple thing. When you buy a book, for instance, from a book-store you enter into a commercial activity. When you sell something to anybody again you enter into a commercial activity.

In a commercial activity a person may take different roles, such as a buyer, seller and producer. Also sellers can divide into two groups as retailers and wholesalers. Retailers are those who sell goods or services directly to buyers whereas wholesalers sell to retailers. The last role in a commercial activity is the producer who create the new products and services for both the sellers and the buyers. The producers are also sellers. They sell their product to distributors and directly to consumers.

There are a number of basic requirements or elements in a commercial activity. These elements can be examined briefly as follows:

1. Good or Service: If you want to sell something to buyer, you have to have a good or service to sell (offer) to the consumer (buyer).
2. Place: According to the good or service you need to have a place to show or monitor and sell to your product to customers. For most physical products we tend to think of the place as a store or shop some sort. But place can sometimes be very ephemeral, for instance, a phone number might be a place.
3. Marketing: If no one knows that your place exists, you will never sell anything. Because of this you need to figure out a way to get people to come to your place. This process known as marketing.
4. A way to accept order: For instance, if you have a mail order company, the orders

come in by mail or a phone.

5. Pay system: In a routine shopping you can use cash or credit cards to pay for products that you have purchased. But many businesses don't require you to pay for the product or service at the time of delivery and some products or services are delivered continuously (water, power, phone, etc.). Because of this you need a way to accept money.
6. A way to deliver the good or service: This is known as fulfillment. In a traditional store, customers pick up the item which they desired, pay for it, and walk out the door. In mail order company, the item is packaged and mailed.
7. A way to accept returns: Sometimes customers don't like what they have bought, so you need a way to accept returns.
8. Sometimes product breaks, so you need to honor *warranty claims*. Generally warranty claims are handled by the producers.
9. Today products are so complicated that they require customer service and technical support departments to help customers.

CHAPTER TWO

THE CONCEPT OF ELECTRONIC COMMERCE

E-commerce has been widely accepted as a result of the developments in the information and communication technologies in the last portion of the 20th Century. Those who succeed in international trade lately use the communication and information technologies intensely. It is not unusual that the developed nations use their scientific achievements on the communication technologies to their economic advantage.

“These developments in the information and communication technologies made it possible for fast processing, transfer and storage of digitized text, audio and video content. Furthermore, the society today believes that the use of computers is a necessity of daily life. These two important developments give e-commerce a strategic importance in providing economic development and high living standards” (Ene, 2002, p.1).

The increase in customer expectation and in the supply of goods and services make the competition in business world difficult in a global sense. The businesses are trying to adopt this by changing their organizations and their business styles. They are trying to overcome the barriers among businesses, customers and suppliers through the use of internet and e-commerce.

2.1. DEFINITION OF E-COMMERCE

E-Commerce can basically define as buying, selling, and conducting other business operations on the web (also electronic business, procurement, trading, etc.).

In recent times, e-commerce has been defined by a number of countries, international and national organizations. These organizations include WTO (World Trade Organization), OECD (Organization of Economic Cooperation and Development), UNCTAD (UN Conference on Trade and Development), UNCITRAL (UN Commission of International Trade Law), ITU (International Telecommunication Union), the World Bank, UN-CEPAT (UN Center for the Facilitation of Procedures and Practices for Administration, Commerce and

Transport) and Turkish ETKK (Elektronik Ticaret Kordinasyon Kurulu).

Some of these definitions of e-commerce by various international and national organizations are given below:

E-commerce;

WTO- “the sale and distribution of goods and services over the telecommunication networks” (www.e-ticaret.gov.tr).

OECD-“The term *electronic commerce* refers generally to commercial transactions, involving both organisations and individuals, that are based upon the processing and transmission of digitized data, including text, sound and visual images and that are carried out over open networks (like the Internet) or closed networks (like AOL or Minitel) that have a gateway onto an open network”(http://www1.oecd.org/publications/pol_brief/1997/9701_pol.htm).

UN-CEFACT- “E-Commece is the sharing of business information among producers, consumers, and government agencies through the use of electronic means (e-mail and messages, electronic networks, worl-wide-web, smart cards, electronic fund transfer, electronic data exchange, etc.) (COX, 2002 p.7).

ECCC-(Elektronik Commerce Coordination Committee, Turkey) “E-Commerce covers all commercial transactions involving processing and storage of all digital information used by individuals or organizations in open (internet) or closed (intranet) networks via text, audio, or video” (Aytekin, GULCİN; p.2).

2.2. THE CONTENT OF E-COMMERCE

As described above, e-commerce involves a variety of transactions. Although the immediate products that immediately come to mind for e-commerce involve physical commercial products and services that are bought and sold using mail and packages, there are products and services included in e-commerce that do not represent physical shape or form. The two

main types of e-commerce involve the ordering of products using electronic means which are subsequently sent via traditional means (indirect e-commerce) and the ordering of non-physical products (computer software, text, video, or audio content) and their subsequent on-line payments, and delivery (direct e-commerce). Besides the sale of products and services, e-commerce involves the marketing, advertising and product support services of these products and services.

“The business and commercial activities that could be conducted using open or closed networks may involve the following”(CANPOLAT, 2001, P.20):

- The electronic transaction of products and services,
- The planning and manufacturing network,
- The advertising, and marketing,
- Ordering,
- The contracting,
- The electronic bank processing and fund transfer,
- Bill of lading,
- Tariffs,
- Following manufacturing through electronic means,
- Following supply-chain electronically,
- Design, development and engineering,
- Government purchases,
- Electronic transactions of money,
- Electronic purchases of stocks and bonds,
- The recording of commercial transactions,
- Direct marketing,
- Digital signature, electronic notary,
- Virtual distribution of digital information,
- Just-in-time formation and distribution of information,
- Electronic bookkeeping of taxation,
- Protection and transfer of intellectual property and commercial rights.

2.3. ELEMENTS TO CONDUCT E-COMMERCE

One must have the following elements to conduct e-commerce:

- A product,
- A place to sell product: in the e-commerce case a web site displays the products in some way and acts as the place,
- A way to get people to come to your web site,
- A way to accept orders: normally an online form of some sort,
- A way to accept money: normally a merchant account handling credit card payments. This piece requires a secure ordering page and a connection to a bank. Or you may use more traditional billing techniques either on-line or through the mail.
- A fulfillment facility to ship products to customers. In the case of software and information, however, fulfillment can occur over the web through a file download mechanism.
- A way to accept returns,
- A way to handle warranty claims if necessary, and,
- A way to provide customer service (often through e-mail, on-line forms and etc.)

2.4. E-COMMERCE ON THE OPEN AND CLOSED NETWORKS

As a result of improvements in technology, e-commerce, that was using closed networks (intranet) can now be conducted using the open network (internet). A comparison of the two types of e-commerce can be observed in Table 2.1.

Table 2.1: The Comparison of Traditional and Internet E-Commerce

TRADITIONAL E-COMMERCE	INTERNET E-COMMERCE
Business-to-business only	(Four Levels) business-to-consumers business-to-business business-to-public administration user-to-user
Closed "clubs", often industry-specific	open marketplace, global scale
Limited number of corporate partners	unlimited number of partners
Closed proprietary networks	open, unprotected networks
Known and trusted partners	known and unknown partners
Security part of network design	Security and authentication needed
THE MARKET IS A CLUB	THE NETWORK IS THE MARKET

Source: <http://www.cordis.lu/esprit/src/ecomcomc.htm>

As it is seen on the table above, the e-commerce markets are open markets that are physically open 24 hours and it also means that they have very large fields. On the other hand in traditional marketing system the markets are just open for limited period of the time and it has one store for one field. As well as in traditional commerce the partners are known and trusted, but in e-commerce the partners are unknown and not as trusted as in traditional commerce.

2.5. BASIC TOOLS IN E-COMMERCE

The basic tools used in e-commerce:

- Telephone,
- Fax,
- Television,
- Computer,
- Electronic payment and money transfer systems,
- EDI-Electronic data interchange,
- Digital television,
- Internet.

Among these tools, internet and EDI are especially important. They are likely to be used more extensively in the future.

“The functional classification of e-commerce tools may be described as follows” (Canpolat, 2001, p. 15):

Table 2.2 : The Functional Classification of E-Commerce Items

End-Unit Tools	Communication Tools	Application Examples
Telephone/ Cell Phone	Internet	Electronic payment and money transfer systems
Fax	Telecommunication	Electronic data interchange (EDI)
Television	GSM	Digital TV
Computer		

As shown in the table below, the most popular e-commerce items include computer parts, books, magazines, and videos.

Table 2.3: Consumers Internet Purchases by Product, 2000.

	United States	Korea	Japan	France	Finland	Canada	Australia (1)
Automotive			24,5				
Real estate			21,4				
Computer and related products		23,7	11,0				
Computer hardware	37,0						
Clothing/ jewelry/ accessories				27,7	13,3	31,0	
Books/magazines	13,9				16,5		20,5
Music and videos	6,9			37,8	10,0	21,0	13,0
Computer software	6,5			1,0		22,0	11,8
Electronic telecommunication equipments		20,4					
Travel		8,2	7,4		8,8		
Other	35,7	47,7	35,7	33,5	51,5	26,0	54,7

1. Proportions are of all adults making purchases or orders via the Internet for private use.

Sources: ABS, 2001; Statistics Canada, 2000; INSEE, 2001; Statistics Finland, 2001; ECOM in collaboration with the METI, Japan, 2001; Korea National Statistical Office, 2001, U.S. Census Bureau, 1999.

2.5.1. Telephone

The first tool used in developing e-commerce was the telephone. Ordering over the phone has taken place as the first e-commerce practice. "After the first time someone said "hello" on the phone (the first intercontinental phone meeting was made between Europe and USA in 1913, this was the first use of the phone by people intercontinentaly), the phone had continuous technological developments up until today with wireless phones" (Bozkurt, 2000, p.101). The phone was the most often used tool in commerce, even though e-commerce was not used by the people yet. Specifically, most of the companies have used the phone for ordering, paying options, and to communicate to each other. The developments in telecommunications has caused the use of the phone to be widespread throughout the world. So, the phone was the start for e-commerce. Companies were marketing and advertising their products on TV or product brochures and taking orders over the phone for the first years of e-commerce.

However, the development of the fax and internet technology was related to the phone technology. Then, some of the companies started to use faxing and especially the internet, while others continued to use the phone. Some of the purposes for using the phone in e-commerce were: The phone is the most flexible and interactive among the e-commerce tools. It is preferred by companies that have not developed e-commerce yet; phone is used by this kind of companies in place of the internet. Another important development that has improved e-commerce is the "call center system" that is most often used by the banks and the big companies in the recent years. " The purpose for using this style is to provide 24 hours customer service and to make more profit by using time wisely"(Özsan, 1999, p.6).

2.5.2. Fax

The main advantage for using a fax is that it is much faster than sending information by standard postal mail. Sending a fax is more expensive than other e-commerce tools, but the quality of the document does not equate to the higher cost. Before the internet, the fax was the fastest way of sending information. Some companies still choose to use a fax system instead of the internet for sending information. The majority of companies use e-mail to send data. Therefore, the future of the fax machine is questionable.

2.5.3. Television

The most favorite electronic entertainment tool is the television. "It was invented in 1923 by John Logie Baird, having only 8 lines per screen"(Karasu, 1999, p.24). The television was used as a communication tool in the first few phases of e-commerce as a visual and auditorial device. The television was a very influential tool in communication and the businesses that used it for promotional purposes were very successful. Even though the television is a very useful communication tool that people from around the world are most impressed with, comparing the telephone with the television, the television is only a one sided communication tool. Therefore, today, telephone is generally preferred because it is more interactive and more readily available.

2.5.4. Electronic Payment and Money Transfer Systems

Electronic payment and money transfer systems is one of the most popular aspect of e-commerce because it is easy and fast, (ATM-, Credit Cards and Smart cards). Even though this tool is an important feature of e-commerce, it is a limited tool serving only one purpose, to transfer money quickly.

2.5.5. EDI-Electronic Data Interchange

It is the oldest style of e-commerce used in business to business e-commerce. "EDI, is the only aspect of business to business e-commerce that does not require the human touch and can be done automatically"(Ene,2002, p.5).

EDI was established because of the need of communication between public and private sectors and it used modern information technology advances. The traditional trading practices using postal mailing and notes are not required when using EDI. The only requirements with EDI are ordering invoices and delivery invoices. E-mail is used for unstructured documents and EDI is used for structured documents. By using EDI this provides the use of standard structured information through the computer systems. This creates the impression of "just in time-JIT" and "quick response-QR". People want all of the processes done very quickly and on time but in doing this they do not want to spend any more money than they have to. EDI is

the way to transfer the information without the added cost. Because of this all of the major corporations, international associations, and regional organizations use EDI and recommend it to any business that requires e-commerce. By using EDI, the companies will save time and manufacturing costs and also they will be able to solve any problems that humans may have caused because of the information that is already contained in the computer. Besides the ability to switch the information, international commerce includes the transportation businesses, banking, insurance, tariffs, other government firms. EDI provides people with the ability to reach the information through the technological environment and do it in a very short time. EDI can block any copying of information from outside sources and it also reduces any probability of errors on the documents.

The main purpose of using EDI is to decrease the costs associated with the trading processes, (ordering, trading contracts and preparing invoices), banking and their processes and to provide it in the shortest amount of time with minimum errors.

“For instance, Singapore was the first country that did all of their commercial processes through EDI. In 1989, they established the Singapore Network System (SNS). Instead of having to apply to a related association of the government to get permission of to apply for something, by using the EDI system of the computer network they can do all of the processes in 15 –20 minutes that used to take 2-3 days before the use of EDI. They still use EDI in Singapore with 98% of the processes being done by this system which can save them 50% of their costs. As far as productivity concerned, it provides a 20-30% increase. Therefore the Singapore Seaport which uses the EDI system has the fastest transportation in the world”(www.eticaret.gov.tr/genel.htm).

“95% of the companies in the Fortune 1000 use EDI. Some of the companies in the world using EDI: Adidas, Benetton, Coca Cola, Fed Ex, Kodak, Marks&Spencers, Nike, Peugeot, Sony, Toyota, and Toshiba” (Öngören, 1998, p.49).

The use of EDI requires a special telecommunications structure and standard forms. Because only registered users can use the system, it is quite secure. The high hardware and connection costs, however, limit its use to a minimum for most companies.

Technically EDI can be used over the internet but is not preferred by compaines because it is not secure. However, if the security problem over the internet is solved (applying cryptology

for registered users) it is expected in the future to be used widely. It will provide the people unlimited business opportunities such as no geographical boundaries, no time limiting, and no errors during the transferring of information.

2.5.6. Digital TV

As stated before, TV is a one-way conversation tool and therefore, is not the most preferred tool in e-commerce. However, in today's world the development of multimedia technology made TV more useful than it was before. The new technology in the TV sector such as Web TV, internet TV, interactive TV, cable TV, multichannel TV, (TV has a special pin number to use), and digital TV. All of those developments in the TV sector also made TV more convenient for e-commerce.

Especially digital TV is a very important invention. "It is a system that refers to a traditional TV broadcasting such as entertainment, childrens, sports, games, shopping, music, education, health, documentary, culture, art and interactive topics. Digital TV technology broadcasts over the satellite system, it has many channel options and gives a clear appearance and clear audio to the audience"(Bozkurt, 2000, p.19).

The digital TV is starting to be used widely in the world, it looks like it is going to change the direction of e-commerce in the future. It is expected that with this technology people will be able to do commercial processes (shopping, banking, etc.) and non-commercial processes, (sending SMS) when they are sitting at home in front of their TV.

2.5.7. Internet

The internet is the most important, effective and mostly used tool in e-commerce of all of the main tools explained above. The internet is available via telephone, fax and EDI. Some of the reasons why e-commerce is done through the internet are because of low start-up costs, quick and efficient means of transferring data for time-limited business, the enhanced atmosphere available that allows many forms of exchange, such as video, audio, text and data, and the

ability to perform multiple tasks at the same time. The internet is an interactive tool. The market that was created on the internet is very large, and consists of many users, customers and companies.

“If internet technology had not been as well developed as it is today, e-commerce would not be very popular, and virtual or e-business terms would not be understood by people, in other words, e-commerce would not be an alternative for traditional commerce” (Bozkurt, 2000, p.107). All of these developments tell us how important the internet has become.

Until now the tools of e-commerce are discussed and now the “Internet” E-Commerce is examined: “The Internet is the biggest union of human and machine up until now, and as far as companies are concerned, it is a new playing field for buying and selling in a technologically advanced environment” (Hasiloglu, 1999, p.45).

The internet is the superstructure that connects heterogeneous computer networks worldwide—heterogeneous meaning dissimilar operating systems and content. The content on the Internet resides in independent high-capacity computers referred to as servers. These servers are linked to regional networks that connect to the essential high-speed/high-bandwidth long-distance wires that are the “backbone” of the Internet. There are various network or primary access points (NAPs) on the backbone. NAPs are the entry and exit ramps on the superhighway.

Even though e-commerce is defined as a commerce that is being done over the internet or other networks, e-commerce and the internet are combined together because of easier access, comfortable usage and data transfer is more economical and of better quality. Therefore, when we say e-commerce we mean commerce which is being done over the internet.

2.6. HISTORY OF INTERNET AND EMERGENCE OF E-COMMERCE

The basis of the internet, which encompasses the whole world today comes from the competition between the United States and Russia. The first application of Internet was to

secure information in case of a chemical or nuclear war and to keep the communication going. The internet was invented by the Advanced Research Project Agency (ARPA), in the United States just for use in the army and they established a computer network called ARPANET. "It was an amazing communication network that in case of losing phone communication with a certain area, (for instance, if Los Angeles was disconnected) the system still should work properly and the communication with other certain areas should be ongoing and non-stop"(Akin, 1996, p.36).

Even though the ARPANET was established for the security of the United States and the army, it gave permission to other computers (universities), that could get into the system, it then became the biggest network in the world that has billions of computers connected. It was named as the INTERNET. The Internet has doubled it's users each year.

Table 2.4 : Individuals Using the Internet, 2001 or Latest Available Years

Country	Individuals using the Internet (%)
Sweden	76,0
Finland (1)	63,7
Denmark (1)	62,0
Canada (2)	60,8
United States	58,4
Netherlands	57,0
United Kingdom (1)	55,0
Australia (2)	47,0
France	38,0
Portugal	33,3
Italy (2)	18,5
Turkey (2,3)	9,1
Mexico	8,8

1. 2002 instead of 2001.

2. 2000 instead of 2001.

3. Individuals belonging to households in urban areas.

Source:OECD,ICT Database, August 2000.

Table 2.4 shows the rate of using the internet of many countries. All of the developments with the internet and the companies and customers who started to use the internet more often caused the spread of internet commerce. Electronic commerce does not add any rules to traditional commerce, it just provides new development which makes commerce easier in the communication and information technology.

The internet is used almost everywhere around the world and has developed very rapidly. This has increased the importance of e-commerce throughout the world. The sectors that first started using the internet are media associations, banks, and other industries that provide logistic services. In Turkey, banks started to provide electronic services. (examples: Yapi Kredi Bank, Garanti Bankasi, Is Bank, etc.)

All around the world the number of people who use the internet is increasing dramatically and so this increases the importance of e-commerce. The detail of the electronic commerce are explained in the next section of the thesis.

2.7. THE DEVELOPMENT AND THE FUTURE OF E-COMMERCE

As it was mentioned earlier e-commerce is not a new subject and it has been used in many different manners. But in the past it was used between companies on a closed network (intranet and extranet) and it was done on the independent networks. The concept called e-commerce was spread out all over the world and found it's place in the business world soon after computers were connected with wires and satellites.

The first application in the e-commerce development process was started with EFT (Electronic Funds Transfer) which was the first technology used between banks in the 1970's with establishing closed secured networks. In the 1980's companies started to use written data communication and they started to use EDI and electronic postal. In 1989 the world wide web HTML language (Standard Hypertext Markup Language) was invented and TCP/IP (Transmission Control Protocol/Internet Protocol) was developed in the late 1980's as well. These developments provided computers with the ability to communicate on open networks in other words, the internet. After this, scanners, classifying tools, fast processors, satellites, optical wires and other developments in computer technology all contributed to the extremely great popularity and use of the internet. The computer modem and the internet have given the smaller business the opportunity to participate on the same level as other companies.

"In the late 1980's e-commerce was discovered and in 1994 the first book was sold on Amazon.com web site. In the same year right after this sale marketing and advertising by

email was discovered. In 1995 the first search was conducted at yahoo.com which was one of the premier search engines” (Yakin, 2002, p:10).

The e-commerce advertisement makes up of a small portion of today’s total advertising but the increasing trend shows that e-commerce advertising will have a big portion of the total in the future. The development process of e-commerce is parallel with the development of the internet because the e-commerce concept is trading activities over the open network.

If the development of e-commerce depends on the use of the internet it is good to have statistics on the total use of the internet. Statistics show that the number of users of the internet and web sites have been increasing rapidly. The opportunities that are provided by the internet has been increasing at the same rate. All of the missing applications and tools have been completed and the security has been increased. Internet has spread out all over the world and the internet is now available worldwide. All of these events have affected e-commerce in the same way.

In the table below, it can be seen that in late 2002 the total internet users have spread over the entire world.

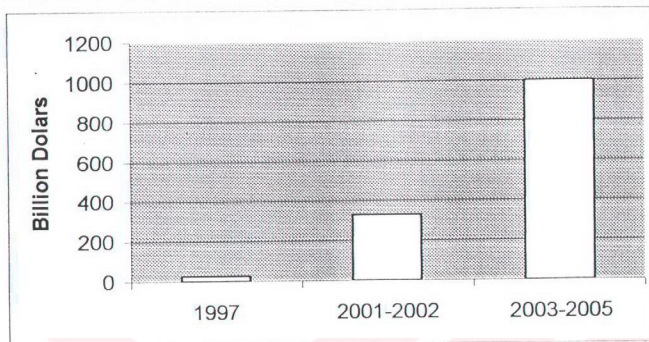
Table 2.5 : How Many are Online Worldwide?

World Total	605.60 million
Africa	6.31 million
Asia/Pacific	187.24 million
Europe	190.91 million
Middle East	5.12 million
Canada & USA	182.67 million
Latin America	33.35 million

Source: www.nua.net

The volume of e-commerce has been increasing rapidly every passed days. According to OECD, E-Commerce will reach 1 trillion dollars in 2003-2005 (see below).

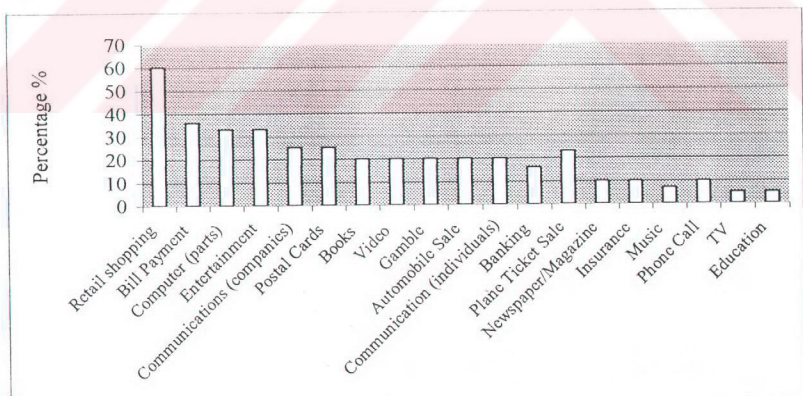
Figure 2.1 : OECD E-Commerce Estimation



Source: www.bilgiyonetimi.org

All of the predictions concerning the future of e-commerce are different and hard to make because e-commerce (done over the internet) is a new concept. The graph below shows the e-commerce total sales based on goods and services between 2002-2005.

Figure 2.2 : Some of the Probable Developments of Goods and Services in E-Commerce.



Source: Ene, 2002, p.24

As it was explained earlier, along with the development of e-commerce, the companies that have been establishing their e-commerce sites to utilize the opportunities of a newly developed market and marketing systems.

2.8. ADVANTAGES AND DISADVANTAGES OF E-COMMERCE

In these days everybody has been talking about e-commerce but do they really know what e-commerce provides and the potential advantages that e-commerce provides for people?

Advantages of e-commerce for consumers and sellers may be summarized as:

- **The global market:** The most important feature of the internet is globalism. The sellers have a chance to market their goods and services all over the world and the consumers can enjoy the variety of goods and services which can be purchased easily via the internet.
- **Cheap shopping:** Shopping on the internet provides companies the opportunity to market their goods and services with a minimum of starting costs and it also provides customers the ability to buy the goods and services for the least amount of money. For companies it decreases the transaction costs because of less paper work per transaction, for instance billing and customer service. Therefore, this decreases the prices for the goods and services.
- **The variety of the options:** It basically has an unlimited storage capacity, offering an unlimited variety of goods. Some of the e-commerce sites can directly sell the products to the customers from their storage or they can get it from their manufacturer's storage facility. This gives the customer an unlimited variety of goods to choose from.
- **Competition/increase of service quality:** On the internet the seller is more available to his customer than the competitor, which is why they are always preferred and this gives the customer more quality of goods.
- **Improved monitoring of customer satisfaction:** The seller can detail and rapidly figure out the customer needs and when they need it. This provides better customer service in that the customer can buy exactly what they want at a cheaper price.
- **24 hour service:** Even though the owners of the companies are sleeping, their

products are still being advertised, marketed and sold on the internet and the customer can be taken care of 24 hours a day.

- **Active marketing:** E-commerce sites provide companies with the ability to directly market their goods and services.
- **New employment opportunities:** The developing information technology sector has created lots of employment opportunities, which decreases the unemployment rate.

Although online business transactions have much potential there are some drawbacks, including inadequate online payment options, poor security and insufficient directories. “This whole online process can put some people out of job. For instance, book selling is extremely popular on the internet. In our country this could put publishers that sell foreign books out of business. In other words, the developing information technology decreases the potential income for the standard market”(Bozkurt, 2000, p.73).

A further disadvantage is that it is not easy to foster trust between business and customers, because there is no personal contact when accessing a web site.

2.9. DIFFERENCES BETWEEN E-COMMERCE AND STANDARD COMMERCE

The main differences between e-commerce and standard commerce are communication and proof processing. There are many ways in standard commerce to exchange data, but all of those ways can never be as fast as e-mailing data via the internet.

The table 2.6 compares the differences in processing between e-commerce and standard commerce.

Table 2.6 : Comparison of Classical vs. Electronic Commerce

Purchasing Firm	Classical	E-Commerce
Methods of Info. Gathering	Meetings, Catalogs, Magazines, Ads	Web Pages
Method of Request	Written form	E-mail
Approval of Request	Written form	E-mail
Price Search	Meetings, Catalogs	Web Pages
Placement of Order	Written form, fax	E-mail, EDI
Supplier		
Inventory	Written form, fax, telephone	Online Database, EDI
Prep. for Shipping	Written form, fax, telephone	Online Database, EDI
Billing	Written form	Online Database, EDI
Receipt	Written form	E-mail, EDI
Ordering Firm		
Delivery Approval	Written form	E-mail, EDI
Payment Program	Written form	Online Database, EDI
Payment	Wire Transfer, Mail, Collector	Internet Banking, EDI, EFT

Source: www.rtasarim.com/eticaret.asp

CHAPTER THREE

THE TYPES AND EFFECTS OF ELECTRONIC COMMERCE

3.1. TYPES OF ELECTRONIC COMMERCE

There are two types of E-commerce.

3.1.1. E-Commerce By the Practices

E-commerce by the practices is divided into two which is Direct and Indirect E-commerce.

- **Indirect E-Commerce:** The kind of commerce in which the goods are ordered by electronic ways and guaranteed shipment by traditional ways (postal service and commercial vendors) to the purchaser.
- **Direct E-Commerce:** The selling and buying of non-physical goods and services using the internet (computer programs, entertainment, cultural arts, visual and audio arts, and services containing information about a variety of informational subjects, counseling services, etc.) Direct e-commerce can pass over geographic borders.

3.1.2. Models of E-Commerce (E-Commerce According to the Parties)

The electronic e-commerce can contain very large fields if it is explored by the definition of its name. The models of e-commerce are divided into four different subjects.

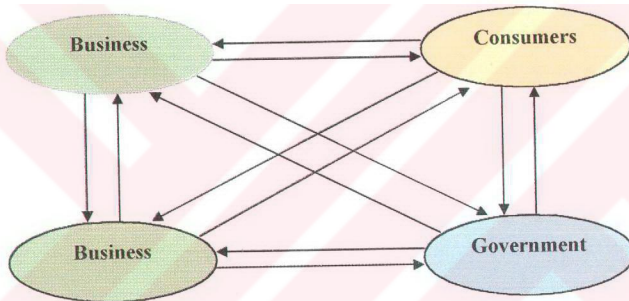
- **Business to Business (B2B):** Companies will do business electronically using the internet, ie; ordering, payments, and invoices.
- **Business to Consumers (B2C):** WWW(World Wide Web) because of its fast development and technological advances businesses are selling their goods electronically through virtual shops, selling directly to the consumer.
- **Consumers(Citizens) to Government:** This system has not been used commonly but is planned to be used in the future for use in an electronic government. (drivers

license, passport applications, retirements, tax payments, etc).

- **Business to Government:** This section covers the commercial processes between firms and the public or government associations, that have been done over the internet. Basicly it is to put all the public tenders to the internet and to make the companies available to bid on the tenders on the electronic atmospher. Another thing is to make individuals and assosiations available to pay taxes and tarrif's charges over the internet. The purpose of doing this is to develop the internet usage between the people.

It basically shows the relationships of those four models with each other in Figure 3.3 below;

Figure 3.3 : E- Commerce Models



3.1.2.1. Business to Business E-commerce- (B2B)

B2B applications provide the communication between firms and they are used together by all firms. The B2B applications also increase the productivity of the operations that is done between the firms. "B2B gets the seller and buyer together to communicate each other, to exchange informations, to determine the prices for some specific goods or services by making public auction, to manage their processes, and to coordinate their stocks and orders. It is an electronic market that has all of the above processes done in it"(<https://b2b.migros.com.tr>).

Before the internet has developed, the firms had their data interchange over the special network, that is called Electronic Data Interchange(EDI) which was mentioned in the tools for the E-commerce section. EDI is the base for the internet and business to business category. "In 1999 the B2B market in the United States was \$114 billion, in 2004 it is expected to be \$ 1.5 trillion"(<https://b2b.migros.com.tr>).

"The Business to Business e-commerce model is the %80 of the total e-commerce in the world"(Dolanbay, 2000, p.55). In comparing B2B and B2C; B2B is more commonly used than B2C. There are lots of B2B sites getting developed in the world right now. The statistics shows that the work volume on the B2B applications are going to have serious increase in the future. According to the searches, which is done in sectorial field and done by Giga Forecast; the firms' gross income that has used B2B has a decrease in their costs. According to the statistics, that has been done based on the annual gross income by Giga Forecast...i.e., it shows that B2B commerce has decreased manufacturing costs %3.2 in retail industries. So, e-commerce plays a big role on decreasing manufacturing costs and increasing productivity. For instance; one supermarket, that uses "bar code system" and does all the transactions electronically will get helped to keep up with inventory, reordering goods, and the profit and lost reports. They can automatically order new items(goods) over the internet network. The computer automatically makes the orders report and send them to related department. (such as: sales, production shipping and accounting department). Producer will send the items(goods) with the invoice after getting internet network order.

After switching to the computerized system, most of the companies save money on labor costs, since the computers keep up with detail reports on every single transactions. This helps the companies not to have over-stock of the goods or not to get out of it. With this computerized system, the storage needs of the companies are going to decrease. This system makes easier to make the decision between the best seller products and it will also make easier chose the product that is sold more than others, and to order it.

According to the statistics, the development of the e-commerce shows that the business to business processes will be increased by %100 every year.

Table 3.7 : Business to Business Processes Volume

Years	Business to business processes volume (\$ Billions)
1999	145
2000	403
2001	953
2002	2.180
2003	3.950
2004	7.290

Source: Dolanbay, 2000, p.56

“Recently, everybody probably heard the news that lots of huge companies satisfy their logistic needs over the internet. First General Motors, then Ford, Daimler Crysler, BMW, WV, Renault, and Peugeot got together and announced that, they are going to do all their parts shoppings over the internet network, that they established together. Right after this, Boeing, Airbus, General Dynamics and the other big military and civil airplane producers have announced to do all their shoppings over the internet. And finally, the big petrol companies such as BP, Amacco, Exxon, Shell, and Elf...etc. have announced that they started to establish required system infrastructure for online shopping”(Ene, 2002, p.38).

According to the survey, that has been done in the United States about the costs of goods in business to business e-commerce and the cost in classical business to business commerce shows that; as it can be seen on the table below, the companies that use business to business e-commerce have saved money about %15-20 of the total costs.

Table 3.8 : The Approximate Savings With E-Commerce

INDUSTRY	Saving Ratio %	INDUSTRY	Saving Ratio %
Space,Machine Industry	11	Health	5
Chemical Products	10	Social Sciences	12-19
Coal Industry	2	Metal-Machine Industries	22
Communication	5-15	Media and Advertising	10-15
Sciences Technology	11-20	Management Maintenance	10
Electronic Parts	29-39	Petroleum	5-15
Food Contribution Items	3-5	Paper Industry	10
Wood Products	15-25	Steel Industry	11
Airline Transportation	15-20		

Source: Business Week, 17 January 2000.

The business to business e-commerce applications, which are between main industry to aftermarket and main firm to agent firms or services has been rapidly increasing in our country, such sectors are automobile, electronic appliances, information technology...etc.

“Three major reasons for the increase in the business to business e-commerce applications”(Bozkurt, 2000, p.96) are:

- With the electronic commerce the costs are decreased, therefore the companies provide better quality for the goods and better customer service.
- It provides the defensive act for the competitives.
- A requirement, that to connect to the e-commerce for producers to sell their products to the big companies.

The companies, that provide e-commerce and require for their agents to use it decreased their paper costs, stop the delays and errors that are based on employees, save time, and do all their processes fast and right. Therefore, they will have increases in their profits.

3.1.2.2. Business to Consumers E-Commerce (B2C)

“In e-commerce, companies advertise their products, their features and their prices on the web as it is on their shop window with the colorful animations, and they also provide alternative financing and shipping services to the consumer, therefore, they provide consumers to buy or shop the goods, while they are sitting on their table; all those processes are called business to consumers e-commerce”(Kansu, 1999, p.38). In business to consumer model the companies do not need any delivery agent or markets(stores) in any other place(city). Therefore, it decreases the sale cost for the company.

The companies, that have caught the “.com” revolution in world trade, try to reach their customers by opening showrooms or stores in virtual environments. This provides them the opportunity to reach millions of internet users 24 hours a day and 7 days a week.

B2C has a smaller capacity than B2B. The main reasons are the limited use of PC's, the suspicions of consumers to the security of Internet, and the limited knowledge of consumers on the advantages of B2C.

The market segments of Business to Consumer (B2C) may be summarized as follows:

- **Entertainment:** It occupies an important place. It includes music, video broadcasting, games, and gambling. Successful business examples are www.mp3.com and www.cdnow.com.
- **Travel:** Today the transactions on air travel and car rental are conducted through the internet. A successful site on this is www.travelocity.com.
- **Retail sales:** Many companies in the World and in our country conduct an important portion of their sales today in the electronic environment.
- **Auctions:** Auctions in electronic medium are developing rapidly.
- **Financial Services:** Banks adapt technological developments easily. E-commerce is, therefore, widely used in the banking industry. The on-line banking is widely used today. They provide services such as home banking, direct banking, virtual banking, and telephone banking. An example to e-banking is www.akbank.com.tr.
- **Investment Services:** Investment services are also rapidly developing e-commerce

application. This provides one to follow the world financial markets and conduct transactions worldwide.

- **Publishing:** Almost all the newspapers and magazines also publish their electronic versions in their web-sites. This allows them to broadcast news developments almost instantly world-wide. The examples in our country are www.milliyet.com.tr and www.aksam.com.tr.

“The pioneers such as Amazon.com, e*Trade.com , and Autobytel.com transformed the traditional book store, financial services, and car sales to internet. They took the limitations of locality and physical store and transformed these transactions to online to satisfy the consumer needs to an internet address”(Dolanbay, 2000; p.54).

The largest bookstore in the world is neither Foyles of London nor Barnes & Noble of Minneapolis. The bookstore with the largest amount of booksales is Amazon.com, which has no stores, other than a warehouse near Seattle and sells only through their web site on the internet.

Although there are many success stories in e-commerce like amazon.com, there are many more examples that represent failures. One of the criterions of being successful in e-commerce is to keep the consumer in your web site.

Although B2C e-commerce is advancing rapidly, a real revolution will only take place in e-commerce once the digital TV and personal mobile systems are commonly used among ordinary masses.

Other than B2B and B2C, there is a third type of e-commerce called C2C (consumer to consumer). In other countries, especially in the United States, garage sales are very common. On Sundays, people take their used items in front of their garages, offer them to people who come to their homes, especially early in the morning, for a reasonable price. This garage sale concept is now conducted over the internet and is called C2C. This type of e-commerce is not professional and only limited to the products that the seller's family currently owns.

3.1.2.3. Consumer (Person) to Government and Business to Government E-Commerce

Person to State, and Business to State e-commerce is known as digital or electronic state. Digital State involves the transformation of the bureaucracy to the electronic medium in order to provide better services to individuals and the institutions.

The rapid developments in technology not only affect our daily lives deeply but also bring new dimensions to economy and commerce. It influences the people-state relationship and even the structure of the State.

Throughout history the dictators tried hard to keep the flow of information to the masses. The limited nature of technology and its concentration in the hands of central authority served this purpose. The masses in general were unaware of the intentions of the central authority. The situation is totally different now. Ordinary people watch from their homes the developments of a war thousands of kilometers away with all the details. This was the case in the last two Gulf Wars in Iraq.

When an e-State concept is fully realized, the State will rid of its bureaucracy and will provide better services to the people and the living standards will improve. For example, the citizens will not have to wait in lines for hours to pay for their taxes, the public auctions will be broadcasted on the internet, and the census transactions will be done on-line.

E-State will be utilized widely in the next 5-10 years. Developed nations use limited e-State applications even today and are seriously investing in their futures. Singapore is one of those States. Malaysia has some serious e-State projects. England, Finland, Brazil, and Slovenia all have some futuristic e-State projects. Turkey, too, could benefit from such projects. But, ~~it needs to~~ make investment in this area.

“According to a research covering 27 countries, Sweden provides 53% of its public services through e-State, followed by such countries as Canada, Denmark, Finland, U.S.A., Hong Kong, Australia, and Holland. Turkey is at the bottom of this list with a 3% e-State use” (www.liberal-dt.org.tr).

B2G (Business to Government) e-commerce involves concepts such as the internet broadcasting of public bids and the electronic bidding of firms. The tax payments and the tariff transactions are also carried into the electronic domain.

In Consumers to Government (C2G) e-commerce, which has virtually no application in Turkey, social security payments and tax payments are paid electronically. Both the internet use and the e-State applications are quite limited in Turkey compared to the developed nations. Despite the presence of a large young population in Turkey, the limited use of internet and e-State in Turkey may be attributed to the low income level, the inadequacy of the infrastructure, and the presence of a large government bureaucracy, and most of all, to the failure of the older bureaucrats in charge to understand the importance of technological developments of current times.

If the e-State applications in Turkey is considered, the taxpayers are able to look up their current tax status through the internet. This allows them to be prepared prior to selling their cars or going through the inspection for their cars. The taxpayers can look up their social services and health insurance status.

3.2. THE EFFECTS OF ELECTRONIC COMMERCE

E-Commerce carries a great importance since it has the potential to affect human life significantly. It has great social and cultural influence even though it seems to carry mostly an economical importance on the surface. E-Commerce has differing effects on different segments (company, individual, government). Recent developments in technology have forced companies to change the way they conduct business. These developments created virtual markets where those companies who use technology could use it to their benefit and they will get competitive advantage over the others. These developments in technology also provided advantages to the customer in that they could now reach these products online with no regards to physical distance or time limitations.

E-Commerce affects the:

- Business life,
- Economic and social life,
- The small and middle size companies,
- Marketing and advertising,
- Consumers and sales.

3.2.1. Effects of E-Commerce on Businesses

E-commerce influences the following activities in business life:

- “Marketing, sales and promotions
- Pre-sales, subcontracting, supply-chain
- Financing and insurance
- Commercial transactions: Order shipping and payment
- Servis and maintenance
- Joint product development
- Use of public and private services
- Delivery and logistic
- Public purchases
- Accounting
- Automated sales in electronic medium

- The conflict resolution''(www.kobinet.org.tr).

Examples of E-commerce on Businesses:

- The transactions in e-commerce are done in the shortest possible time, with the least error, and in a paperless way. All these reduce transaction costs.
- In e-commerce, Internet replaces the middlemen. This then reduces the commissions and increases the profit margins.
- Since the cost of doing business is reduced for businesses that use e-commerce, these businesses compete favorably against those that don't use e-commerce.
- Since the addresses of the people who visit a company's web site are recorded, the businesses know their potential customers.
- A business that uses e-commerce supplies a product to the market at a cheaper price than those who use traditional means.
- The advertising is more effective while the consumer is about to purchase a product. This gives an advantage to companies using the Internet. For example, when one tries to buy a book from Amazon.com, he receives the list of relevant books, the most popular books, and the highest selling books in that subject. This then encourages a consumer to buy.
- In e-commerce, the consumers can visit the virtual stores any time. There is no time or distance limitations compared to the traditional stores.
- In e-commerce the market and the customer are global in principle. The products may be sold to or bought from anywhere in the world. The businesses therefore may enter into new markets without opening any new stores.

How e-commerce changed some market segments, that are:

- The Travel Agencies and the Airlines: Airlines wanted to reduce their expenditures lately in light of recent economic downturns because of the September 11 events.. They determined that the best way to accomplish this would be to minimize or eliminate the commissions of the travel agents. Here the Internet became the best ally for the airlines and the worst nightmare for the travel agencies.
- Financial Service Companies: These types of businesses provide specialized and customized services to their customers in the personal financing, credit rating and stock brokerage areas. Internet provides exceptional opportunities to these companies.

They are beginning to thrive with the advent of e-commerce.

- Insurance: The insurance industry, in general, is behind the other industries in terms of using new technologies. Following this conservative tradition, the insurance industry seems to be hesitant in adapting the use of Internet. The high level of money paid to many insurance policies and the complexity of many insurance policies are obstacles for an easy adaption of Internet for use in insurance transactions.

3.2.2. Effects on Consumers and Shopping:

- Ease and Comfort: Through e-commerce, the consumers may easily reach to the virtual store of their choice from the comfort of their home without having any traffic or parking problems. They may gather informaton on products and buy them.
- Customization: They may customize their product as in the case of Dell Computers.
- Good Price: The cost is low in e-commerce since there is no middleman, no store rent, and no personnel or electric expense. This leads to reasonable prices and increases consumer's purchasing power.
- Time Savings: The consumers save time by buying from home. It is the only way the delivery of the product that is becoming quite fast nowadays.
- Global: The consumer can compare the quality and price of various companies and quickly make their choices.
- Secure: With proper precautions, virtual shopping is as secure as the traditional shopping. The businesses take various precautions (SSL, SET, etc.) to provide a secure shopping environment. The details on security will come later in this thesis.
- Competition and Choice: "In traditional commerce, the products are manufactured before the purchase in a standardized norm. In e-commerce, the product can be customized according to the sale specification. This results in a win-win situation for the businesses and for the customers"(see Slywotzky, Jan. 2000, p.40).
- On-line shopping is entertaining: Online shopping provides very large market and the variety of products to customers, so it is enjoyable because they do not have to walk or drive, all they need to do is "click".

3.2.3. Effects on Economic and Social Life

The economic effects of e-commerce cover a very broad range. “The main economical effect of e-commerce is that it enables an environment of reduced obstacles”(Ene, 2002, p.31). There is increased competition in e-commerce. The cost is reduced, the quality is increased and the supply chain is more efficient. E-commerce has significant social effects as well, especially on efficient distribution of goods and services, cultural development, and education.

In a competitive environment of a supply-and-demand economy the price of products and services is reduced and the quality is improved. This comes as a result of reduced processing and manufacturing costs and a more efficient distribution. All of these then fuel an economic growth and higher living standards.

3.2.3.1. Effects on Social Life:

E-commerce brings ease and efficiency to human life. This results in many improvements in social life. Since the public service tools can also be used for educational and health purposes, it is obvious that e-commerce would be beneficial not only to the businesses but to the society as a whole. In this form, e-commerce is a tool in the transformation to the information age.

Although e-commerce is an economic event, it results in social consequences as it helps the globalization of the world.

3.2.3.2 Economic Effects:

The manufacturing cost reduction: E-Commerce is changing the cost structure of businesses. The transaction costs for the manufacturing and distribution of products and services has been steadily decreasing. Examples include electronic bill payments, simplified tax payment schedules and removal of the middleman.

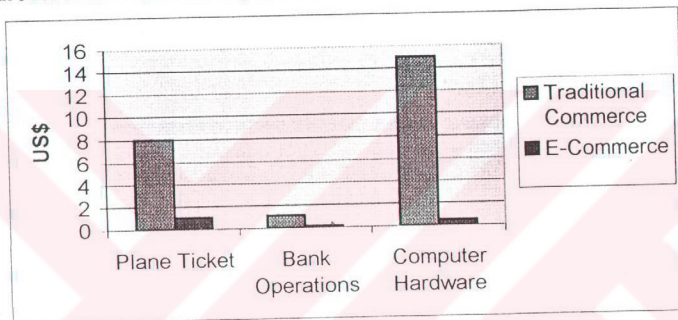
Table 3.9 : Cisco's Saving from E-Commerce Customers.

	Million US Dollars
Cost of writing by hand	270
Software Distribution	130
Technical Service via phone	125
Total	525

Source: www.bilgiyonetimi.org

The above table clearly shows the marked reduction of the cost in Cisco's internet software, business software and networking products.

Figure 3.4 : An Economic Comparison of Traditional and Electronic Commerce



Source: www.bilgiyonetimi.org

The figure above shows the results of a study comparing the cost of traditional and e-commerce in three industries in the U.S. The graph clearly shows that e-commerce costs are much less in these three sectors than those of traditional commerce.

In table 3.10, it is observed that about one-third of the workforce is employed in research and development (see the table below). Therefore, one may conclude that in order to work in these companies, a significant portion of the work force need to be qualified enough to work in R&D. The less qualified work force seems to get a diminishing chance to survive in this new environment.

Table 3.10 : The Distribution of Manpower in E-Commerce Companies.

Company	Full Time	Sales and Advertising	Research and Development	Management and Finance	Other
Excite	434	%43	%35	%15	%7 (support)
Infoseek Co.	171	%44	%26	%29	-
Lycos	137	%46	%39	%15	Support
Yahoo	386	%52	%19	%8	%21 (surfers)

Source: OECD

“According to a study conducted in the OECD countries in 1998 and published in 1999, it is found that e-commerce resulted in significant changes in economic and social life” (www.kobinet.org.tr).

These effects of e-commerce on economic life may be summarized as:

- Increasing inter-company competition,
- Reducing cost,
- The reduced cost is then reducing prices,
- Increasing the choice of products,
- Passing the savings to the consumer,
- Creating a direct selling environment (no middlemen or changed middlemen),
- Creating Cyber middlemen,
- Simplifying life by providing a 7x24 continuous shopping environment, All these are the reducing prices in dramatic rates,
- Increasing the B2C to B2B volume ratio with the improvement of infrastructure,
- Increasing the direct sales of small and medium-size companies to the consumer with improvements on telecommunications, inexpensive PC's, and Cable TV,
- Increasing the power of the consumer via “openness”,
- Diminishing the importance of geographical closeness to the market,
- Reducing cost through an effective supply-chain (15-20% savings in the U.S.),
- Increasing the efficiency through web-based marketing, and online ordering,
- Reducing the cost by reducing the ordering, receipt processing, and billing mistakes,
- Changing the market structure,
- Resulting in a changed business organization and company business models.

3.2.4. Effects of E-Commerce on Advertising and Marketing

Some of the advantages of virtual E-Marketing for the companies may be summarized as:

- Easy enhancement by use of graphics, video, audio and other special effects to keep the consumers interested in the products/services being portrayed;
- Effective and fast fulfillment of consumers' informational needs by providing data; pictures, and search engines.
- Companies can understand what enhancement are effective with the consumer and can easily track where and why consumers shop, as well as what they are buying.
- There are advantages to companies to have marketing data about shopping habits of the consumer for inventory purposes and preparation.
- The developing e-commerce methods are consistently becoming more impressive to the consumers.
- Effective methods of managing supplies to determine which products are needed in stock and for how long.
- Effective and faster methods of banking, shopping and obtaining services saves time (and money) for the company and the consumer. It makes services more effective.
- The option to pay online saves money for the business.
- Virtual surveys of public opinions enables the company to conform to the customers wants and needs.
- One-to-one marketing involves direct marketing of goods to the consumer without any agents or middleman. For instance, with E-banking one can open an account with a bank across the country without the need to have a branch nearby.

Some of the disadvantages of e-commerce for advertising and marketing are:

- Companies may not be used to the developed technology infrastructure yet.
- Some companies may not keep up with the endless variables in marketing conditions.
- Some companies may not develop their products quickly enough to compete.
- Companies may face logistical problems with returned or defective products.
- Companies may face logistical problems with delivering or distributing products or providing services to certain areas.

3.2.5. The Effects of E-Commerce on Small and Medium Companies (KOBİ)

In the past with globalization, the largest companies had established their place in new and international markets to sell their services or goods, but this was not easy for the small and medium companies. They were unable to compete with the large merchants. However, today e-commerce costs to merchants are minimal, and the ease of reaching billions of consumers has made the competition between large businesses fairly limited, all of which are getting equal shares in the market and therefore not allowing one company to have an edge above the other. This also is allowing the small and medium companies to have equal opportunities to break into the market without incurring large expenses and start up costs, and giving them access to the same billions of consumers. They are able to supply quality products and services much faster and with less costs to sellers now, which allows them to keep their prices down, therefore they are selling more products. They are able to reach consumers they had never imagined possible, thus increasing their client base. They have also been able to diversify their products and services, allowing these companies to grow and flourish. For this reason, e-commerce has been of major importance to small and medium size companies.

On the other hand, for the small- and medium-size companies, e-commerce carries the following problems:

- Insufficient Information: Some of the small and medium companies around the world are not aware of the advantages of e-commerce yet.
- Lack of Utilization: Some small and medium companies are unaware of the benefits and the limited costs in participating in e-commerce trading.
- Negativity: Some businesses may have heard of many negative examples or experiences by merchants and consumers alike, which amounts to a lack of trust in using e-commerce as a tool. The low prices to these businesses are thought to represent poor quality products or services, further lowering their faith and willingness to try the new market.
- Sectoral Differences: Some companies that are engaged in the practice of infomariational technology are well skilled at taking advantage of e-commerce and promoting their products world-wide. However, other merchants are far removed and have a lack of

experience with informational technology find this much more difficult, if not impossible, to use.

- Unavailability of Technology Based Employees: Small and medium sized companies may be unable to find or afford experienced personell that are educated in informational technology and/or programming that could allow these merchants to trade via the internet.
- Legal Issues.: The electronic e-commerce does not have a known, common, developed and established law at this time, which is globally applicable. This is frightening to some small and medium sized businesses who cannot afford to take risks.
- Security.: This is the most serious issue in e-commerce today. It affects not only consumers, but merchants as well. Security issues include the credit card fraud, lack of dependable methods of shipping and transporting goods, and the lack of guarantees of quality merchandise or services. Even though a lot of Internet savvy professionals testify that using the Internet is a safe way for making purchases, consumers and merchants alike are still quite suspicious and wary.

“The results from surveys on the effects of e-commerce on small and medium sized businesses”(www.kobinet.org.tr) are as follows:

- Increases in advertising via internet;
- The internet is recognized as a more profitable sales system;
- The internet is a powerful marketing tool to reach new consumers;
- E-commerce develops a relationship between the company and consumer;
- People around the world are taking advantage of e-commerce, but the costs to the companies remain the same;
- Companies have limited time to compete in the market, therefore are using e-commerce;
- Companies are following other businesses in order to develop more funtional methods of e-commerce.

On the basis of above mentioned effects, five main reasons for small and medium businesses to utilize e-commerce may be summarized as follows:

- Surveying the market;
- Product/Service investigation;
- Marketing;
- Communication with customers;
- Providing income.

CHAPTER FOUR

PAYMENT SYSTEM AND INFORMATION SECURITY IN ELECTRONIC COMMERCE

4.1. PAYMENT SYSTEM IN E-COMMERCE

Secure and easy transfer methods are very important in E-Commerce both for the buyers and sellers. Due to lack of personal contact and the distance involved, there is a major lack of trust between the parties of e-commerce. This has been a major concern in the development of e-commerce. One of the biggest complaints about e-commerce has been the difficulty of confirmation of identification and authority that the parties have for each other. The internet has become a global medium and is used in every country imaginable. It has enabled sellers to find more ways to market their products and has given buyers an increased ability to find goods and services online. At this time, the standard payment system is only one of the many options.

E-commerce allows for fund transfers and electronic payments between buyers and sellers. Banks are now faced with digital currency and electronic checks. Software allows for connection to both credit card and banking networks; thus banks are expanding their private networks to interface with the Internet.

Consumers in e-commerce can use credit cards, digital cash, electronic checks, and micro cash (when less than \$1 is involved). In doing online business, the buyer remits an electronic payment (digital cash or electronic check) and some payment information to the seller. The account is settled when the seller substantiates the payment information. E-commerce can be used not only for billing and payment but also for escrow, managing cash, financial data and reporting, foreign currency exchange, and investment services. One can now be assured of security in transactions and safety in such online payment instruments as electronic checks and digital cash.

4.1.1. Electronic Check

An electronic check is a debit-payment including the payer's name, payee's name, identity of the payer's financial institution, the payer's account number, and check amount. When the electronic check is offered, the payer signs it digitally. The payee also signs the electronic check digitally before it's deposited. For safety purposes, public key cryptography is associated with electronic checks. An example of electronic checks is the Net Cheque system.

4.1.2. Electronic Currency

Electronic currency is virtual money representing real money in online shopping. Electronic transactions are ideal for small purchases where the unit cost is too high for traditional credit card purchases. They are small payments, usually under \$10. Electronic currency is in the form of electronic bank notes. The notes are identified by serial number and denomination with a digital signature of the issuing bank. To make use of electronic bank notes customer and merchant both establish E-cash accounts at the issuing bank. Security safeguards assure that the same bank note is not presented for payment twice. The issuing bank keeps an online database of issued bank notes and compares it with notes presented for payment. A match means the transaction has been settled. The match must exist before the bank accepts the note for payment. In E-cash transactions the payee does not know the payer's identity unless it's provided voluntarily. The issuing bank may or may not keep track of the identity of the recipient of electronic bank notes. This anonymous digital money is the electronic cash exemplified by DigiCash and NetCash. DigiCash's E-cash is extremely anonymous because the issuing bank, the merchant, and any third parties to the transaction do not know the payer's identity.

Those, who want to utilize electronic money services, need to download the provider company's software to their computers and open an account at their virtual bank. The users buy electronic money in their online account using real money. They can then use their virtual money for online shopping or for e-mailing it to third parties (For example: Ecash.com, Digicash.com, Beenz.com, Ecoin.com).

Blind (virtual) signatures allow issuers to digitally sign bank notes without being aware of

their serial numbers. The consumer's software randomly selects the serial number of the bank note. The bank note is then encrypted and sent to the issuer, who gives it a blind digital signature and returns the encrypted bank note to the consumer. The consumer can then decrypt the original encryption without destroying the signature of the issuer. The issuer accepts the bank note when it substantiates its own signature. With blind signatures, the issuer does not know who receives the bank notes. The homepage for E-cash is <http://www.digicash.com>. There is much less security with NetCash because the parties cannot collude to hide the payer's identity. Web server software can handle payment transactions.

4.1.3. Credit Cards

Most on-line payments are made by credit cards, with the final payment stage performed conventionally. Because credit card data is transferred over secure Web browsers and servers, there is virtually no risk of interception while in transit over the Internet. But Visa and Mastercard have developed a Secure Electronic Transfer (SET) specification standard using public key cryptography, digital signatures, and digital certificates.

A cardholder obtains from a card-issuing bank a certificate that is a digital analog of a credit card but does not include the account number and expiration date. The issuer digitally signs the certificate; the signature assures the validity of the credit card. The seller obtains a similar merchant certificate, also digitally signed by its financial institution. The seller is not informed of the credit card number or expiration date. Because possible misuse of credit card data at the merchant site is thus eliminated, SET transactions are more secure than typical credit card transactions. Thus the integrity of the system is assured.

4.1.4. Smart Card

Off-line electronic payment as through *smart cards* is also possible. A smart card is a device, usually a plastic card about the size of a credit card, containing a chip. The chip is a microprocessor with memory elements. Smart cards are prepaid or stored-value cards. Once the value has been used up, more can be added. Smart cards are becoming common in metropolitan transit systems. Besides the card itself, a smart card scheme includes a card-

accepting terminal and software to handle smart card transactions.

Some physical products will be made into smart products that permit digital interfaces for monitoring and control purposes. Smart cards can be used to make purchases in e-commerce. For example, Mondex International is developing a smart card to be used with a digital cash system. In Europe, a study is being undertaken to use smart cards as a medium of exchange for the European Currency Unit (ECU).

The personal ATM, a countertop device, allows for downloading money to the consumer's smart card. Mayes Microcomputer Products' Smart Card modem lets consumers use telephone lines to update personal smart cards. Verifone has come up with an inexpensive smart card terminal for retailers that can be used with a smart card reader attached to a personal computer.

4.1.5. Balance Reader and Electronic Wallet

Other devices besides the smart card that consumers can use include the *balance reader* and the *electronic wallet*. The balance reader is a small electronic device to read the balance on the card. The wallet is a more sophisticated balance reader. The wallet can hold a substantial amount of electronic money for transfer to the card as needed. The wallet also allows the transfer of money among cards. The wallet should be kept in a secure place. The smart card can be carried by the consumer with much less risk because it only has a limited amount of money.

4.1.6. Temporary Card Number (One Time Card Number):

This is a randomly generated temporary credit card number just to be used for a single transaction. It is attached to the actual credit card number prior to the purchase. Thus, the credit is taken from the actual credit card. Since the owner of the card contacts his bank to get the temporary card number before the transaction, he cannot deny the transaction. This method that improves the security in e-commerce cannot prove the identification of the store.

4.2. INFORMATION SECURITY IN E-COMMERCE

The most important information subject in e-commerce is security. In e-commerce the seller and the buyer both feel the need for extra security because of the impersonal contact. For instance, sellers and buyers want to make sure that their identification information is secure. Customers are especially concerned when making a purchase with a credit card that the information remains secure and is not seen by others, but the security standards that are used in e-commerce (SSL, SET etc) have less risks than the standard credit card transactions.

Basically there are two types of security on the internet:

- The security of the hardware, software and the network infrastructure.
- The security of the data processing when customers are shopping.

“The important information that is being processed on the internet should not be available to the people who may have bad intentions, therefore there are some precautionary steps that are necessary in order to block them from getting this information. These steps include” (www.ykb.com/hizmetler/e_ticaret):

- Confidentiality: Information is sent directly to the recipient without any interference from another party. For example, credit card information is blocked from being intercepted from others.
- Integrity of data: Providing information that remains in its original format when being processed.
- Authentication: Correcting the information received on credit cards and stores. For example, authorizing the person's identification who gives the credit card information.
- Non-repudiation: Buyers and sellers can not change the information that is being processed.

Today there are three different security applications that are being used on the internet. They are SSL (Secure Socket Layer), SET (Secure Electronic Transactions), and 3D SET (Three Domain Secure Electronic Transactions).

4.2.1. SSL Protocol (Secure Socket Layer):

SSL protocol was developed by Netscape Communication Corporation to provide confidentiality and security on the internet. This protocol authenticates information that is being sent and received, (recognition between two computers). The information is encrypted so that only the sender and receiver can view the information. It is supported by web sites and scanners and provides information between customers and stores being sent encrypted, then unencrypted by the receiver. For instance, the credit card information will be encrypted by the SSL technology as it is being transferred to the online bank while employees are unable to view the information being sent.

“The purpose of Netscape Corporation was to provide security between messages and different applications (web scanners or HTTP) and TCP and IP terms. The “socket” which is part of the SSL term is the process that moves the data back and forth between sender and receiver or programs on the computer (socket method)”(www.adambilgiseyar.com.tr/adim.html).

SSL uses digital certificates to prove the correction of the party's information on the internet process. The person who has digital certificates sends the encryption keys with his/hers certificates to encrypt the message that is being sent back to him. The key is sent with the certificate, then the message, which can only be unencrypted by the owner of the certificate is sent back which verifies that the proper person received the message.

“Any sites need to have SSL certicators downloaded into their system to be able to work with SSL on its web browser. They can provide SSL certicators from the limited CA's (certificate authority) . Those certificates that are provided from the CA are identified by Netscape and Internet Explorer scanners. The web scanners encrypt information that the certicators have verified as being trustworthy then send it to the browser as encrypted. In doing this the user who has the information that was entered into the system has the information back that was encrypted” (Ene, 2002, p.59).

SSL uses the public key cryptography style to encrypt the information. In doing this, SSL keeps the transferred information secret and original and also it verifies the sender's and browser's identifications.

4.2.2. SET Protocol (Secure Electronic Transactions)

It is considered as the most trustworthy standard by the world. It is developed to make the payments secure with the credit card by Visa, Mastercard and IBM. SET provides confidentiality and security especially on the payments that have been made online.

“SET protocol uses the union of public key cryptography (PKC), data encryption standard (DES) and RSA (Rivest, Shamir, Adleman) encryption methods. This protocol provides a secured environment with the virtual wallet and certificates” (www.ykb.com/hizmetler/e-commerce).

SET verifies the user's identification and the store's arrangement with the bank and it also keeps the payment information secret during shopping. The provision process starts with verification between the store's POS (point of sale) and the customer's virtual wallet by the certificates when the customer is checking out in SET. It continues with the store's virtual POS software certificate, transmitting the order amounts certificate and the credit card which is chosen from the virtual wallet certificate to the bank. The bank gives the approval for it without considering the type of shopping (what is purchased or how much is spent). The virtual store which cannot see the customer's information waits for the payment from the bank, then upon approval of the order is shipped.

All of the parties who use the internet (credit card owner, store, the credit card's issuing bank, the bank who owns the POS, and the acquiring bank) verify each other's information with SET and approve the information. The verification process is done in the same manner as in SSL which is by a digital certification system. SET blocks stores from seeing credit card information by using a different encryption system for both credit cards and orders.

“The three advantages of SET are (Ene, 2002, p.60)”:

- *Keeping data confidential:* Data confidentiality is provided by using open key cryptography. The message has been encrypted by the receiver's public key and can only be unencrypted by the same party's private key.
- *Keeping data original:* In this system the predetermined message is rewritten and encrypted in order to be digested by the receiver. The recipient un-encrypts the

original message then rewrites it according to the predetermined length. After rewriting, it is then compared with the original message. If both are the same, the original message is kept.

- *Verifying Information Between Parties:* This process requires a trustworthy hierarchy. SET protocol verifies the trustworthy hierarchy to support the certificate management. Afterwards, a digital signature is created by the authority which is the next level after trustworthy hierarchy. Digital certificates are used to verify the parties.

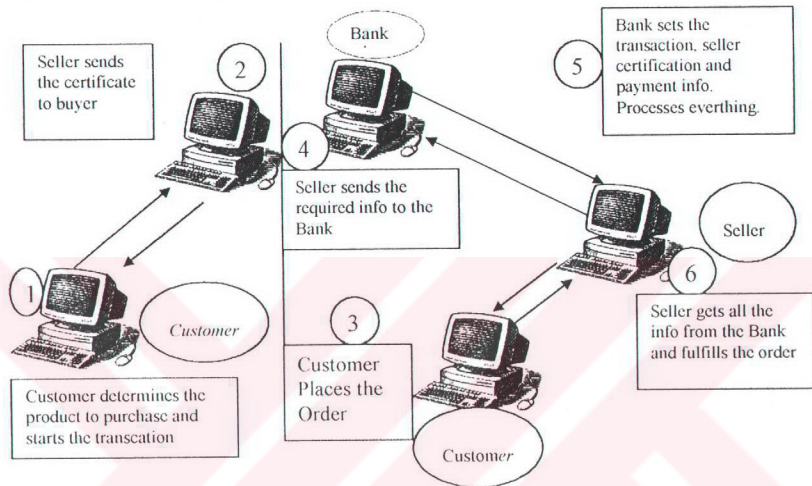
Credit cards have to be in accord with the SET criteria to be functional in the system. There are some infrastructure tool requirements for SET. These are" (www.ykb.com/hizmetler-eticaret/):

- *Virtual Wallet.* A virtual wallet is a product that enables customers to do secured processes online. It is used to hide the credit card owners information, keys, and the encryption information. The software is downloaded to the cardholders computers, which allows them to not have to re-enter the same credit card information each time they use it.
- *Virtual POS (Point of Sale).* This product is used by online merchants to complete authorization and payment processing. It is also used to hide the merchants card, keys and encryption information.
- *Payment Gateway.* This SET process is used by merchant's bank or third party. This is a kind of "middleman" for financial networks that proofs and verifies merchant, consumer and payment information.
- *Certificate Authority.* This product is used by financial associations or authorized third parties to produce or authenticate the digital certificates that are used to prove verifiable persons or associations on the internet.

SET Processing Flow

All parties in SET applications must have SET software downloaded in their systems, like the one shown in the Figure 4.5 below.

Figure 4.5 : Establishing a SET Account



“The processing flow is as follows”(www.kobinet.org.tr/hizmetler/e-ticaret):

1. Cardholder chooses the product for purchase and then fills out online ordering forms.
2. Cardholders chooses the SET system for payment.
3. After a user name and password are entered, SET electronic wallet opens and the cardholder chooses which credit card (Visa/Mastercard) to use for payment.
4. Electronic wallet sends a message to the merchant stating which credit card will be used for payment.
5. The merchant sends a message to the card owner (credit company) that contains its identification and its bank identification, the chosen credit card type certificate, and the merchant bank's open key.
6. The electronic wallet encrypts messages that contain the ordering and payment

information, then send them to the merchant after it authenticates the merchant and bank certificates. The payment and ordering information are encrypted separately, therefore payment information can only be seen by the bank and the ordering information can only be seen by the merchant.

7. After the merchant verifies the message, it is un-encrypted.
8. The merchant sends the encrypted payment information to its bank.
9. The bank un-encrypts the payment information, verifies the card owners certificates and sends the information to the card owners bank for approval.
10. Card owners bank sends the message to the merchant's bank with approval after verification is completed.
11. The merchant's bank sends a message to the merchant advising if the transaction was authorized.
12. The merchant then relays a message to the cardholder advising whether transaction was authorized and completed, or denied.
13. If the transaction is authorized, the merchant then provides the product or the service to the consumer.
14. The card owners bank then transfers funds to the merchants bank and the merchant collects the funds.

4.2.3. 3D SET (Three Domain Secure Electronic Transactions)

The three domain model uses the SET technology. It contains three different aspects of the process flow.

The first of these is *Aquirer Domain*. This is responsible for verification of the merchant information.

The second is *Issuer Domain*. Its responsible for verification of the cardowner information.

The third is *Interoperability Domain*. This is a place that processed information is exchanged by using protocol.

According to the system processes, the difference between 3D SET and SET is that in 3D SET cardholders information and certificates are provided by the card owner's bank, and the

merchant information and certificates are provided by the bank that has a merchant POS.

3D SET solves the problem that the SET model had in managing and distributing the certificates and information.

Three advantages of the 3D SET model are:

- The payment application information is kept in secured browsers, yet this application can be reached easily by the card owners from any PC;
- In this application, the bank who owns the credit card, determines the methods to be used to reach the virtual wallet;
- In this application, certificates do not need to be distributed because the bank who owns the card holds the certificates for the cardholder, and the bank who owns the POS holds the certificates for the Merchant.

CHAPTER FIVE

ELECTRONIC COMMERCE IN TURKEY

In order to understand the development of e-commerce in Turkey, first, the history of Internet in Turkey is examined.

5.1. THE HISTORY OF INTERNET IN TURKEY

The first large scale computer network, TUKAVA (Universities and Research Institutions Network of Turkey), was established in 1986 with the leadership of the Universities. However, since TUKAVA was used and financed only by the universities, it could not follow rapid technological developments.

“In 1993, Turkey established a modern network and connected itself to the global Internet in a Turkish State Planning Organization (DPT- Devlet Planlama Teşkilatı) project, jointly executed by TUBITAK (The Turkish Scientific and Technical Research Institute) and METU (The Middle-East Technical University). All the rights for establishing transmission lines are given to the Turkish Telecommunication, Inc. (Türk Telekom)”(Yakin, 2002, p.4).

The studies show that the possibility of owning a computer in Turkey is directly proportional to one's income level. Those with high levels of income are much more likely to own a computer than those with low levels.

The rate of usage of Internet in Turkey is increasing rapidly. The table below summarizes some of the statistics related to the use of Internet with respect to time.

Table 5.11 : The Use of Computers and Internet in Turkey

	2000	2001	2002
Number of Internet Users (Thousand)	3000	5000	6000
Percent of Population who Use Internet (%)	4.4	7.2	8.5
Percent of Population who Owns PC (%)	3.0	5.1	7.8
Percent of PC owners using the Internet	30	43	49

Source: (Yakin, 2002. p.6) www.basarm.com.tr/yayin/internet/internetreklamciligi

5.2. WHAT IS ECCC (E-Commerce Co-ordination Committee)-(ETKK)?

“The Science and Technology Council of Turkey (Bilim ve Teknoloji Yuksek Kurulu) established the Electronic Commerce Coordination Committee (ECCC) on August 25, 1997”(www.e-ticaret.gov.tr). ECCC was charged with establishing a national E-Commerce strategy.

ECCC held its first meeting in 1998. In this meeting, three ECC committees were established on Technology, Law, and Finance. These committees were required to meet at least twice a month and were to prepare a summary report once in every quarter. An oversight committee, consisting of three members of the three committees, was established. This nine-member combined committee was charged to evaluate and act on the quarterly reports of the Technology, Law, and Finance committees.

“The Science and Technology Council (SATC) discussed the ECCC reports at their meeting on June 2, 1998. SATC decided that ETCC should continue to promote and legislate E-Commerce until the appropriate laws are passed by the Legislators” (www.kobinet.org.tr).

5.3. THE EVOLUTION OF E-COMMERCE IN TURKEY

In Turkey, the Internet was not seen as a commercial tool at first. Some businesses later recognized the potential of virtual shopping and became the pioneers. Recently, the use of Internet as a medium for e-commerce has been intensified.

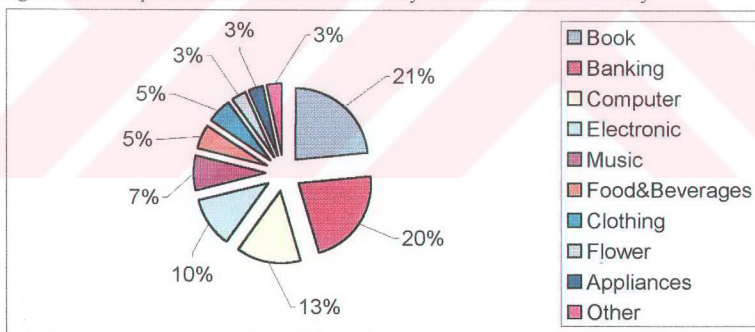
The banking industry was the first in Turkey to conduct business over the Internet. Today, many banks have developed capabilities for their customers to conduct almost all of their transactions from home. The intense TV commercials we see everyday exemplifies this fact.

The second step in Turkey was taken by the Stock Market. Before the use of Internet, the customers had to go to the Exchange in person in order to do transactions or give orders to their Stock Brokers over the telephone. Both methods involved concerns. Now, many Stock Exchange transactions may be carried out instantly using Internet.

The third big application of Internet was implemented by the booksellers, Record/CD houses, electronic equipment sellers, and toy stores. Especially Remzi Kitapevi (Publishing Co.), Genclik Kitapevi, Pandora are the pioneers of the virtual bookstore concept in Turkey.

According to a survey, the largest sector of e-commerce is in the area of book sales, followed by banking, computer sales, and electronic equipment sales. The pie chart below shows the proportion of the use of e-commerce by various consumer sectors.

Figure 5.6 : Proportional use of E-Commerce by Various Sectors in Turkey



Source: IDC, "Sectorlere Gore E-Ticaret." www.idcturkey.com/sanalkonferans/sk01/sld013.htm

"E-Commerce use may evolve through four typical stages:" (Ene, 2002; p.27)

- The first stage is the exchange of information and documents over closed computer networks. There are several successful applications of this type in Turkey today.

- The second stage involves converting such transactions as ordering, billing, contracting, insuring, shipping and payment to the electronic medium.
- The third stage involves the elevating the documents such as digital signature, virtual digital documents, the tariff transactions, the taxation to legal status by the government.
- The fourth stage involves the secure information and document exchange over the Internet (open networks).

E-Commerce is developing rapidly in Turkey. Turkey is now a member of the “Global Trade Point Network (GTPN) that has network presence in 180 countries. “Ankara is now a GTPN Trade point. GTPN was developed by the United Nations for helping small and medium size businesses. The leaders of e-commerce in Turkey are Vakko, Teba, Arcelik, Bazaar 54, Yesil Kundura, and Migros” (Bozkurt, 2000; p.87).

Despite all these developments, there are several significant obstacles for e-commerce in Turkey. One of these obstacles is the attitude of Turkish people toward catalog shopping. Turkish people, in general, prefers face-to-face sales where the merchant sits down the customer and offers tea over a pleasant conversation. Another issue is the concerns on security of Internet shopping.

Case Study: DELL COMPUTER CORPORATION

DELL, which was founded in 1984 by Micheal DELL, is a recognized leader in e-commerce of its sector now.

DELL is a straightforward company that, like Gateway 2000, Micron and a host of others, sells custom-figured PCs to consumers and businesses. While the rest of the industry was building personal computers to stock, and selling them through value added resellers, distributors and retail stores, Dell was creating a new business model. Dell started as a mail-order company that advertised in the back of magazines and sold their computers over the phone. This way, distribution and retail markups common in traditional channels would be avoided and Dell's inventory carrying costs are much lower.

Dell saw the advantages of the internet and began taking benefiting from them before others in its industry. In 1996, www.dell.com started using e-commerce and Dell's customers could configure and order a computer directly from Dell's Web site. In six months' time, Dell was selling \$1 million worth of computers via the internet each day. Its volume doubled a few months later. Dell reported having sold \$6 million per day several times during the 1997 holiday selling season. Here, Dell's competitive advantage was its direct customer focus. Dell sells directly to the customers, without intermediaries, it offered custom-configured, built-to-order systems at competitive prices over the web. The formula has allowed the company to grow rapidly and become the top server vendor in terms of U.S. market share.

As of December 1997, Dell was the second largest supplier of desktop PCs, with 9.7 percent of the market and had a ten to fifteen percent price advantage versus its major competitors who distributed product through indirect channels.

Table 12 : Dell's daily Online Sales and Weekly Technical Support Volumes Tripled During 1997.

	1st Quarter	2nd Quarter	3rd Quarter	4 th Quarter
Sales/day	\$1 Million	\$2 Million	\$3 Million	\$3 million ++
Tech. Support Queries/week	30,000	45,000	60,000	120,000
Visitors/week	213,000	225,000	250,000	400,000
% sales outside U.S.	0	5%	10%	17%

The company's Web site also provides technical support and order status information, including the ability to download software directly from the site. The site responds to more than 120,000 technical support queries each week.

After six strong years of online sales, Dell has racked up some impressive statistics. In the last quarter of 2002, www.Dell.com logged a billion page views, a company first. About half of the companies revenue come from the site, which means approximately \$16 billion flowed through www.Dell.com in the last year.

Does this matter? Dell has been selling computers by mail and over the phone for more than a decade. Mail order sales is a standard way of marketing that has been around for over a century. So if fifty percent of Dell's sales move over the web, rather than from the telephone, is that a big difference? The answer could be "YES" for three reasons:

- If Dell lost 50% of its phone sales to achieve its 50% increase of sales over the web, then it would have been obvious that e-commerce has no advantages. Dell would be selling no more computers. But what if the sales conducted over the web cost the company less, (because the company does not have to hire someone to answer the phone), or what if the people purchasing over the web tend to purchase more accessories? If the transaction cost on the web is lower, or if the presentation of merchandise on the web is more inviting and encouraging larger transactions, then the web is productive for Dell.
- What if, in the process of selling merchandise over the web, Dell lost no sales through its traditional phone channel? Rather, what if there just happened to be a percentage of the population that preferred to buy things over the web, (perhaps because there is more time to think, or because you can try multiple vendors easily, and so on...)? In building its web site to attract these buyers, Dell may be able to lure customers away from other

vendors who do not offer similar service. This gives Dell a competitive advantage that allows them to increase their market share.

- There is also a widely held belief that once a customer starts working with a vendor, it is much easier to keep that customer than it is to bring in new customers. Therefore, if you can build in brand loyalty for a web site early, it gives you an advantage over other vendors who enter the market later. Dell implemented its web site very early, and that, presumably, gives it an advantage over the competition.

A key part of Dell's success is that the site offers consumers "choice and control". Buyers can click through Dell's website and assemble a computer system part by part, choosing components like hard drive size and processor speed based on their budget and need. This direct contact with consumers, one to one, gives Dell a competitive advantage.

Dell is selling PCs direct to end consumers, thus it largely avoids having to estimate demand. By producing to order, Dell customizes the product to precisely what the customer wants and essentially eliminates finished-goods inventories throughout the supply chain. The internet and World Wide Web lend themselves to this kind of process. The ability to check for component compatibility in real time is valuable. Moreover, the internet store is always open.

Still, competitors have many ways to surpass Dell at its own game. For instance, consider computer production. While machines from Compaq and IBM can languish on dealer shelves for two months, Dell doesn't start ordering components and assembling computers until an order is received. That may sound like insignificant, but the price of PC parts can fall rapidly in just few months. By ordering immediately before assembly, Dell figures their parts, on average, are 60 days newer than those in an IBM or Compaq machine sold at the same time. That can translate into a 6% profit advantage in components alone.

Dell has no central warehouse facility but instead ships to customers directly from its manufacturing plants. Based on customer location, a shipment may originate from a Dell plant in Ireland, China, Brazil, Malaysia, Texas or Tennessee.

While Dell's consumer sales are highly visible, thanks in part to a high profile TV campaign,

its business sales are a much larger revenue source. About 15 percent of Dell's total revenue is consumer business and rest is business to business.

In the year of 2005, Dell Computer Corporation is expecting \$60 billion in revenue generated by sales.

Certainly, it appears that Dell's core focus will remain its direct e-commerce model. Perhaps the best estimate of where Dell goes from here is more of the same, just bigger and better. With e-commerce, there is no end.

The sources used for the Case Study include:

www.dell.com,

www.sentim.com.tr,

http://ecommerce.internet.com/news/insights/trends/article/0,,10417_2013731,00html,

http://www1.us.dell.com/content/topics/global.aspx/casestudies/en/dell_on_dell?c=us&l=en&s=orp,

www.gsb.stanford.edu/news/research/supplychain_internet.shtml,

www.ntvmsnbc.com/news/250395.asp#BODY,

www.activefinans.com/activeline/sayi7/dell_pazar.html,

www.humanfactors.com/about/casestudies.asp,

www.businessweek.com/1997/14/b3521131.htm.

CONCLUSION

In last decade, the rapid developments of information and telecommunication technologies gave strategic importance to e-commerce.

E-Commerce provides many advantages to its parties. These advantages can be summarized as, decreasing in manufacturing costs, saving from time and place, increasing competition power and taking more share in international trade and etc.

E-Commerce has some effects on national economies. One of these effects is flexible prices. Flexible price mean is selling some products or services with different prices to customers. Thus, customers can buy the products or services cheapest and businesses can sell more than before.

E-Commerce will affect differently the developed nations and developing nations economies. Because of the adequate infrastructure and qualified work force in developed nations, effects of e-commerce will be positive on these nations. Thus the growth rate of economy will increase. The developing nations, such as Turkey, infrastructure and qualified persons are insufficient. These developing nations have to follow technology and adapt it to their economies. Thus, they can decrease differences between developed nations and themselves.

One of the most important things in e-commerce is information security. Many alternative payments systems are developed for secure e-commerce. Although there are some security problems in credit cards, most used payment tool is credit card. But in future, the smart cards, e-checks, e-currency and other systems (that will be develop) will take place of credit cards.

The world has been becoming a small economic village, taking away all of the borders. Internet and e-commerce will continue to shape the world economy in the future. The development of e-commerce will depend on government, private sector, and education of the community. In order for e-commerce to develop, the information transformation has to be done by public management, the required infrastructure must be provided and trust in this field needs to be maintained. In the following years, more companies are expected to use e-commerce because it is faster and the costs are lower than traditional commerce.

The technological practices that have rapidly changed until today and have been changing at the same speed guarantee that the positive effects of e-commerce are going to increase in the future. If considering all the developments of the internet that have happened in the last ten years, it can easily be seen how much e-commerce has developed and continues to develop. E-commerce affects all major and minor fields in economy. And at all levels in community, people can easily feel e-commerce; it is everywhere in human life, it is in market, bank, government offices, etc. E-Commerce is also affecting people's lifestyle, tradition, and culture in the world. The world is getting smaller and all of the cultures and traditions are being mixed up together. In other words, the basis of e-commerce is communication. Therefore, people are learning more about different cultures and different traditions by communicating.

The companies that can effectively use e-commerce will play an effective role in the new commerce system. As it is reviewed in the case study chapter, Dell is the biggest e-commerce company today, with a little competition. It has a large market share, a large product variety and strong e-commerce infrastructure. So the companies like Dell will increase the popularity of e-commerce and they will achieve new developments and the new styles in e-commerce. Unlike other traditional commerce business, e-commerce has a lower cost compared to the opportunities that it provides. Sometimes web sites and phone numbers are more important than other additional values in the company. Because e-commerce makes international communication easier and international storage of data easier, it then helps to make complicated business easier and makes all of the processes faster than before. It is unexpected in traditional commerce for the small and medium companies to compete with the larger companies but in e-commerce markets the small, medium and large companies are equal competitors.

Electronic commerce is not just about buying and selling; it is also about electronically communicating, collaborating, and discovering information. It is about e-learning, e-government, and much more. Electronic commerce will impact a significant portion of the world, affecting businesses, professions, and, of course, people.

E-commerce helps companies to get into the new markets. These markets existed from the hundred millions of people who have been using the internet for most of their life and there is

no geographic border in this environment. So when communication technology provides speed, cheapness, trust and marketing strategies for this big environment the created potential will be great. And thus, it is undoubted that international trade will increase. It is hard to imagine what this will bring, but realistically we have to learn all of the established technological developments in order to use the ones we have today. The only way to keep this structure is to adapt ourselves to all of the fast changes.

In Turkey, Business to Business e-commerce is not common at this present time, therefore Business to Consumer model is preferred and most common model that will probably be use in future.

Although there is not absolute data about e-commerce in Turkey, there are some important developments. Such as, Banks started to do their operations over internet. Some publishing companies started to sell books on their web pages. And some big store chains, which are relating with retail sales, started shopping services over internet.

In Turkey, the development of e-commerce is very important . So, Turkish government should give more importance to e-commerce, and should help the companies to establish their secured infrastructure. In order to get more develops in Turkey, The government should provide the technical support, spacial attention, spacial care and technical supported infrastructure for all e-processes, they should pass strong laws for the e-business(e-commerce), they should help increasing the usage and popularity of e-commerce, and they should develop national policies that are also applicable in international arena. New e-commerce will present over time countless opportunities and challenges to our economies and societies. Expansion of commerce and technological innovations are two of the levers of economic growth The macroeconomics effects of e-commerce on the national and regional economies, and on the international trade and its terms will need to be assessed and analyzed. The prevailing judgment at this stage of e-commerce development is to allow free-market forces to assert themselves unhampered by excessive government regulation. The traditional institutions, such as commercial banks, universities, established business intermediaries, media and publishing companies, would find a need to redefine their roles in the new environment. The taxability of products traded globally over the internet is as yet an open

issue in the global marketplace.

So, in our country the public and private sectors are playing big roles in developments on e-commerce. E-commerce should be taken more serious by the government, to be able to get some tangible developments. E-commerce provides a completely new infrastructure for a whole new way of conducting business and competing in the digital economy. New business models and new rules of competition make e-commerce the business imperative of the 21 century. So the Turkish government needs to keep up with new developments and the new requirements for developing the e-commerce infrastructure. However, the most important concept in e-commerce is security. Therefore all the new development should be forwarded in this field. In nowadays all the developments are being done in security and more protection for information but at this present time, the developments that have been done are not enough to protect costumers or business information; there are some spots on systems that are been used right now but every passed day it is getting better and every passed day the security is getting more increased.

Finally, e-Commerce is spreading on all over the world , it is actually becoming people's lifestyle. It is more profitable for companies, more comfortable and benefitable for consumer, and it is easy to fallow(by data keeping, for taxation porpuses) but hard to control for the governments. However governments actually utilize the e-commerce for some of the their processes(such as: public auctions and public bids). It definitely effects the other traditional businesses and costumers. The businesses that are using e-commerce have not have much competitives as others so this field is also gives much more opportunities to the costumers. However the product is always cheaper and easy to buy with e-commerce. For procuders e-commerce is just a great tool to sell their product. As well as for businesses it was never been as easy as now to buy the products and have them shipped to them in very short period of the time. Besides all the advantages of e-commerce ofcourse it has some disadvantages such as: changing peoples lifestyle, culture and traditions. It also has not been completely secured yet, so maybe once a while but there is still probability of stolen information or stolen data. It is a really big competition so the smaller companies are getting direct effected by e-commerce.

This thesis has resourced on the competition between companies, that have been using e-

commerce models and companies that have not converted e-commerce system yet. It defines the e-commerce, e-commerce models, the advantages of e-commerce and the disadvantages of e-commerce to clearly show that, what would happen if the company use e-commerce?, what would happen if it would not? So, the thesis examines all the real events and the statistics to show extremely big advantages that the e-commerce used companies have in this competitive business world. And it definitely defends that the e-commerce used companies have no competition with the companies that have not using e-commerce yet. The examples and the case study clearly show and support the thesis's main point. In the future, most of the resources might be about the e-commerce security and the e-commerce law. Because, the world have to beware that, internet is another virtual world, all the countries should issue laws and regulations and have to find some ways to provide more secured ways for information transportation. For the safe future of e-commerce, the security and issuing new laws are the most important subject in e-commerce. The people who are intent on stealing will always find new ways to go over the security and breake the laws. So the laws and the security should be renewed or reissued every once a while.

Appendix I

Terms Dictionary of Information Security for Electronic Commerce

Access: To use; the act of reading data from or writing data to a device.

Authentication: Identifying user.

Certifying authority-CA: The association that identifies the person and issues the electronic identification card for them.

Channel: It is an electronic physical tool that is used to carry the information from one to others. For instance: phone wire, computer connections.

Closed computer network: The computer network that is not open the public; it requires some of the private tools to get in. example: the connection between banks and bankmachines (ATMs).

Code: an encrypted form of information

Cryptographic algorithm: The content of system that is used to encrypt of information or de encrypt the information.

Cryptography: The science creates or develop systems for secured communication, information encryption, and hiding information.

Data: The information that is encrypted to use for communication or other proposes.

Data element: A data unit that is used to evaluate, determine, and define the data.

Data element attribute: The defined property of the data element

Data element directory: The list that has the specifications to show how to evaluate the available data according to its name or definition.

Data element name: converting data element concept into the natural language.

Digital certificate: Verification that the holder of a public or private key is who they claim to be.

Digital notary: The association that hides the information (if requested by the parties) to proof the information if needed.

Digital signature: The part of electronic document that added the electronic contract and proofs that the document is original.

Document: A data carrier that is used to store information written by users or systems.

Double Key Cryptography: Also known as Asymmetric Cryptology, allows one user to exchange secret messages with another user over the network, but only after they have shared a secret key.

EDI Association: Organizations developing e-business standards which will help individuals and the businesses improve processes, reduce costs, increase productivity, and take advantage of new opportunities.

Electronic Data Interchange-EDI: The electronic transfer of specially formatted standard business documents such as bills, orders and confirmations sent between business partners.

EDI server: The computer system in the center of EVD.

Key: The secret code used to encrypt and decrypt a message.

Key Generation: Preparing open and secret keys by using a cryptography system dependant on mathematical processes.

Key Management: Assigning different key couples to each user in open key cryptography. A system that is responsible to enable users to store their open keys in a publicly accessible yet private keys are kept hidden and are not accessible to the public. Includes the processes of key generation, key certification, certificate distribution, and certificate revocation.

Key Recover Agency-KRA: An association that legal authorities use to decrypt encrypted information, or enables users to decrypt and recover their own encrypted information.

Lawful Access: The government that the government can reach the private keys of the users whom uses open key cryptographic algorithm in case of governmental need.

Message: The series of characters that are planned to carry the information.

Message Code: An alphabetical name that defines the message type.

Message Diagram: A graphical representation of a series of messages.

Message Directory: A list of message types that are named, defined, and directed.

Message Integrity: To keep information original, including hidden information.

Message Type: The planned and defined data set that provides needs for determined process.

Open Computer Network: An electronic communication environment in which everyone around the world can connect with and communicate to other parties electronically.

Privacy: Hiding the information between two parties from third part or hiding the person's information from everybody.

Private Key: The secret key of the user, who uses open key cryptography.

Public Key: Encryption code that is publicly available to anyone.

Public Key Cryptography: Encryption and decryption systems, also known as double-key cryptography system.

Public Key Infrastructure-PKI: Provides wide and secure open key cryptography which also includes key production, key management, verification association, numerical notary and time stamp.

Segment Code: A code that shows every segment individually.

Segment Directory: Defined and named segments list.

Segment Name: Defining a data section by using natural language.

Simple Data Element: A data element that has one value.

Simple Segment: A section that has an open value.

Single Key Kryptography: It is whole systems that are used to encrypt the data and decrypt to data.

Trusted Third Party-TTP: It is kind of approving institution. It determines the people's information and issues the electronic identification and electronic key for them; it also hides the key for people and gives it to the needed titles by the court decisions.

UN/EDIFACT: The set of sections that are determined in the message dictionary.

Appendix II

How Will the Web-Page Work?

E-Shopping in 7 Steps:

1. The consumer visiting the virtual store chooses the desired product,
2. The consumer sees the pricing and other details,
3. The consumer registers if he/she is a first time visitor,
4. The consumer selects a product, places it in the shopping cart, and goes to “Check-Out”,
5. Fills out shipping address and credit card information and hits “Submit” button,
6. Follows the “Payment-Follow up-Check Out” info on the Web Using “VPOS”,
7. Within a minute the price of the product paid to the sellers account.

Appendix III

E-Commerce Mechanisms in Buying and Selling a Product

Function	Mechanism
Obtain Data about a Product (Buyer)	Web Page
Look at catalogs for features and prices (Buyer)	Online catalogs
Request a product (Buyer)	e-mail
Generate and send order (Buyer)	e-mail, web pages
Receive order (Vendor)	EDI
Prioritize order (vendor)	Online Database
Determine availability (vendor)	Online Database
Make delivery arrangements (vendor)	e-mail, online database
Produce invoice (vendor)	Online Database
Confirm Receipt (vendor)	e-mail
Send invoice (Vendor)	e-mail
Receive invoice (Buyer)	EDI
Schedule Payment (Buyer)	EDI, online database
Send Payment (Buyer)	EDI, online database
Receive payment (Vendor)	Electronic Fund Transfer

Appendix IV

The National and International Firms Successful in E-Commerce

Name of Firm	Sector	Web Address
Dell	Computer	http://www.dell.com
Amazon	Book-CD- DVD sales	http://www.amazon.com
Yahoo!	Internet Portal	http://www.yahoo.com
Microsoft	Computer and internet	http://www.microsoft.com
Wall-mart	Retail shopping	http://www.wall-mart.com
Cdnw	CD's	http://www.cdnw.com
Travelcity	Travel	http://www.travelocity.com
EBay	Online auctions	http://www.ebay.com
Migros	Retail sale	http://www.migros.com
Akbank	Finance	http://www.akbank.com.tr
Is-Bank	Finance	http://www.isbank.com.tr
Garanti Bankası	Finance	http://www.garanti.com.tr
THY	Air transporting	http://www.turkishairlines.com.tr
Tansas	Retail sale	http://www.tansas.com.tr
Sanyo	Digital Cameras	http://www.sanyo.com.tr
Remzi	Publishing	http://www.remzi.com.tr
Seckin	Publishing	http://www.seckin.com.tr
Genclik Kitabevi	Publishing	http://shop.genclik.com
Pasabahce	Ceramic objects	http://www.pasabahce.com.tr
Basari	Electronics&cell phones	http://www.basari.com.tr
K. V. K	Electronics&cell phones	http://www.kvk.com.tr

Appendix V

The Web-Adress Extentions

.com	Commercial Institutions
.edu	Educational Institutions
.gov	Government Institutions
.net	Networks
.org	Organizations

REFERENCES:

BOOKS

- ❖ AKIN, Cahit; **Her Yönüyle İnternet**, Alfa Basım Yayım Dağıtım, 1996.
- ❖ AYTEKİN, Gülçin; **Elektronik Ticaret**, T.C. Dışticaret Müsteşarlığı, 1998.
- ❖ BOZKURT, VeySEL; **Elektronik Ticaret**, Alfa Basım Yayım Dağıtım, 2000.
- ❖ CANPOLAT, Önder; **E-Ticaret ve Türkiye'deki Gelişmeler**, T.C. Sanayi ve Ticaret Bakanlığı Hukuk Müşavirliği, Mart 2001.
- ❖ COX OZTUNA, Buket; **Avrupa Birliği Hukukunda Elektronik Ticaret ve Türkiye'deki Gelişmeler**, Pusula Yayıncılık, 2002.
- ❖ DOLANBAY, Coşkun; **E-Ticaret, Strateji ve Yöntemler**, Meteksan sistem Yayınları, 2000.
- ❖ ENE, Selda; **Elektronik Ticaret'te Tüketicinin Korunması**, Pusula Yayıncılık, 2002.
- ❖ HASILOĞLU, Selçuk Burak; **Enformasyon Toplumunda Elektronik Ticaret ve Stratejileri**, Türkmen Kitabevi, 1999.
- ❖ YILMAZ, Eyyüp; **Türkiye'de Kredi Kartı Uygulaması ve Ekonomik Etkileri**, Türkmen Kitabevi, İstanbul 200.

ARTICLES

- ❖ KANSU, Murat; "Türkiye'de İnternet Üzerinden Elektronik Ticaret", **Banka ve Para Teknolojileri Dergisi**, Kasım-Aralık, 1999.
- ❖ KARASU, Ayşe Özek; TEKİDAN, Nurgül; "Bunlara çok Şaşırdık", **Hürriyet Pazar Eki**, 26 Aralık 1999.
- ❖ OZSAN, Ayşegül; "Zaman Kaybına İlaç Bulundu", **Hürriyet Finans Eki**, 24 Kasım 1999.
- ❖ ÖNGÖREN, Hande; "Elektronik Posta ile Beş Dakika İhale", **Business Week**, 1 Mart 1998.
- ❖ SLYWOTZKY, J.Adrian; "The Age of Choiceboard", **Harward Business Review**, January-February 2000.

- ❖ ALPTURK, Ercan; “İnternet ve Etkin Devlet”.
<http://www.ceterisparibus.net/arsiv/alpturk2.doc>
- ❖ BOZKURT, Veysel; “KOBİ’ler ve Elektronik Ticaret”.
<http://iktisat.uludag.edu.tr/dergi/6/veysel/veysel.html>
- ❖ CEM, İpek; “E-Girisim”. <http://isguc.org/ipek1.htm>
- ❖ CETİNKAYA, Murat; ALTINOK, Serdar; SUGOZU İ. Halil; “Elektronik Ticaret ve Türkiye Ekonomisi Üzerine Olası etkileri”, Selçuk üniversitesi, İİBF.
http://www.bilgiyönetimi.org/cm/pages/mkl_gos.php?nt=244
- ❖ CLARKE, Roger; “Introduction to Electronic Payment Mechanism”, Xamax Consultancy Pty Ltd, 1998.
<http://www.anu.edu.au/people/Roger.Clarke/EC/EP/EPMIntro.html>
- ❖ Dış Ticaret Müsteşarlığı; “E-Ticaret”, Elektronik Ticaret Kordinasyon Kurulu.
<http://www.e-ticaret.gov.tr/genel.htm>
- ❖ IDC; “Sektörlere Göre E-Ticaret.”
<http://www.idcturkey.com/sanalkonferans/sk01/sld013.htm>
- ❖ İLTER, N. Güven; “Elektronik Ticaret Danışmanlığı”, Haziran 2000.
<http://www.gilter.com/YaziTur/ETicDan.htm>
- ❖ KUTLAY, Mustafa; “Dijital Devlet 24 saat vatandaşın hizmetinde”, 18 Nisan 1999.
<http://arsiv.hurriyetim.com.tr/tekno/turk/99/04/18/monitor/01mon.htm>
- ❖ ÖZKAN, Yalçın; “İnternetli Ekonomi, İnternetli Yönetim”, 15 Eylül 2000.
http://www.yesevi.edu.tr/haberbulteni/old_issues/015_eyul2002/15internet.htm
- ❖ RUSH, Laura; “ The biggest E-Commerce Trends of 2003”, 19 December 2003.
http://ecommerce.internet.com/news/insights/trends/article/0,,10417_3291671,00.html
- ❖ SAYIN, Meral; FAZLIOĞLU, Mustafa; “Dünya Ticaretindeki Değişim... Elektronik Ticaret”, Ankara, Temmuz 2000. <http://www.kobinet.org.tr/hizmetler/e-ticaret/e-ticaret-kutuphanesi/icindekiler.html>
- ❖ ULUSOY, Ahmet; “E-Devlet (in),Bürokrasi (out), Karadeniz Teknik Üniversitesi.
http://www.liberal-dt.org.tr/guncel/A.%20Ulusoy/au_burokrasi.htm
- ❖ YAKIN, Mehmet; “İnternet, elektronik Ticaret ve İnternet Reklamcılığı”, 10 November 2000. <http://www.basarm.com.tr/yayin/internet/internetreklamciligi>

- ❖ YÖRÜK, M. Ahmet; “Elektronik Ticaret”.
<http://www.mfa.gov.tr/turkce/grope/ues/yoruk.htm>
- ❖ “Elektronik Ticaret ve Kobinet”, <http://www.kobinet.org.tr/hizmetler/e-ticaret/e-ticaret-kutuphanesi/ba1.html>
- ❖ E-ticaret uygulama örnekleri, 04 Mart 2002. http://btvizyon.com.tr/viz_dergi_dosya_phtml?kulakcik_nox=25&konu_dosya_nox=94
- ❖ “İnternetin Hayat Hikayesi”, http://www.bilgisayardershanesi.com/internetinhayat_hikayesi.htm
- ❖ “İnternetin Tarihi”, <http://gridergi.8k.com/internet/internet tarih.htm>
- ❖ OECD. http://www.oecd.org/publications/polbrief/1997/9701_pol.htm

İNTERNET

- ❖ http://b2bmigros.com.tr/CustomAsp/cd_b2bhakkinda.asp
- ❖ <http://etic.ihlasnet.com.tr>
- ❖ <http://eticaret.garanti.com.tr/icerik/goster.asp?t=a&c=1&i=040620021906561023201081747>
- ❖ <http://eticaret.garanti.com.tr/icerik/goster.asp?t=a&c=1&i=181020011804103131>
- ❖ <http://gridergi.8k.com/internet/internetdinamo.htm>
- ❖ <http://turk.internet.com/haber/yazigoster.php3?yaziid=3562>
- ❖ <http://www.acti-form.net>
- ❖ <http://www.adambilgisayar.com.tr/adim.html>
- ❖ <http://www.adambilgisayar.com.tr/guvenlik.html>
- ❖ <http://www.adambilgisayar.com.tr/odeme.html>
- ❖ <http://www.adambilgisayar.com.tr/olusturma.html>
- ❖ http://www.ceterisparibus.org/_wsn/page2.html
- ❖ <http://www.cordis.lu/esprit/src/ecomcome.htm>
- ❖ http://www.digitaldevlet.com/basim/yerli/2000_06_25_YB.htm
- ❖ <http://www.e-cozumevi.com/e-ticaret.htm>
- ❖ <http://www.eng.bahcesehir.edu.tr/css/bolum11/bolum11.html>
- ❖ http://www.est.com.tr/elektronik_ticaret.asp
- ❖ http://www.est.com.tr/elektronik_ticaret.asp###

- ❖ <http://www.e-ticaret.gov.tr/ETKKsozluk.htm>
- ❖ http://www.gns.com.tr/eticaret_nedir.nsf
- ❖ <http://www.kobinet.org.tr/hizmetler/e-ticaret/e-ticaret-kutuphanesi/003c.html>
- ❖ <http://www.milliyet.com.tr/ozel/21yy/980329/980329yy5.html>
- ❖ <http://www.netcon.com.tr/e-ticaret.shtml>
- ❖ <http://www.ntvmsnbc.com/news/55696.asp>
- ❖ http://www.nua.net/surveys/how_many_online/index.html
- ❖ http://www.oksinet.com/elektronik_ticaret_uygulamalari.htm
- ❖ <http://www.platinonline.com/yeni/03/haber6.html>
- ❖ <http://www.rtasarim.com/eticaret.asp>
- ❖ <http://www.teknikhizmet.com/internettarihi.htm>
- ❖ <http://www.undp.org/info21/e-com/e8.html>
- ❖ <http://www.unigenc.com/girisim/yazarlar.asp?HBR=11>
- ❖ <http://www.vizyonnet.com/etic.html>
- ❖ http://www.ykb.com/hizmetler/e_ticaret/e_ticaretin_avantajlari.html
- ❖ http://www.ykb.com/hizmetler/e_ticaret/e_ticarete_guvenlik.html
- ❖ http://www.ykb.com/hizmetler/e_ticaret/odeme_yontemleri.html
- ❖ http://www.ymm.net/e-ticaret/elektronik_ticaret_ve_kdv.htm
- ❖ <http://www.ymm.net/e-ticaret/e-ticarete-guvenlik.htm>