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3.1: INTRODUCTION

In 1991 the Internet had less than 3 million users around the world and its application to e-commerce was non-existent. By 1999, an estimated 250 million users accessed the Internet and approximately one quarter of them made purchases online from electronic commerce sites, worth approximately $110 billion. If the expansion in e-commerce continues at this rapid pace, as is expected, in four to five years from now, e-commerce transactions between businesses (B2B) and between businesses and consumers (B2C) will account for about 5 percent of inter-company transactions and retail sales respectively. Looking forward, the potential for e-commerce transactions to gain a sizeable share of consumer and business purchases appears to be large, although it is difficult to quantify.105

The prospect that e-commerce transactions may gain a sizeable share of overall commerce is only one dimension of why the Internet is generating such interest. The open structure of the Internet and low cost of using it permit the interconnection of new and existing information and communication technologies, and offer businesses and consumers a new and powerful information system as well as a new form of communication. This makes it possible for buyers and sellers to come together in more efficient ways and is creating new marketplaces and opportunities for the reorganization of economic processes. It is also changing the way products are customized, distributed and exchanged, and how businesses and consumers search, and consumer products.

In the decades to come, exploiting the full potential of these

developments could have profound impacts in individual sectors of the economy as well as for macroeconomic performance and economic policies. At the aggregate level, productivity and economic growth could raise, at least for some time, as a result of more efficient management of supply and distribution, lower transaction costs, low barriers to entry and improved access to information. Moreover, even if the impact of e-commerce on GDP is small and uncertain it could enhance welfare because, for example, of saved time, greater convenience and access to a wider selection of goods and services more finely tuned to individual needs. Nonetheless, to fully exploit the opportunities much remains to be done to ameliorate user and consumer trust, improve access to the Internet infrastructure and services, and to create a stable, predictable regulatory environment. Assessing the potential outcomes and economic impacts of e-commerce, the forces underlying its expansion, and the possible implications for structural and macroeconomic policy management is the focus of this study.\textsuperscript{106} However, given the recent advent of the Internet and the fact that only scattered empirical information is available it needs to be stressed that the policy consequences of e-commerce can, at this stage, only be speculated about and are, in many respects, distant.

3.2: DEFINITION AND SCOPE OF E-COMMERCE

Digital technology has changed the economy. The primary source of value creation for consumers has shifted from physical goods to services and information. There are several definitions of e-commerce that mention the following:

\textsuperscript{106} http://www.oecd.org/subject/e_commerce/.
In 1998, the World Trade Organization (WTO) argued that “Electronic commerce may be simply defined as the production, advertising, sale and distribution of products via telecommunication”.

The term electronic commerce refers generally to commercial transactions, involving both organizations and individuals, that are based upon processing and transmitting 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.

E-Commerce can be formally defined as follows technology mediated exchanges between parties (individuals or organization) as well as the electronically based intra- or interorganizational activities that facilitate such exchanges.

E-Commerce basically refers to the buying and selling of products and services electronically. This can be done through a web site, which presents goods and services potentially to anyone around the globe via the internet, or through a site within a larger service with a specific target audience.

A typical definition used for e-commerce is: ‘the buying and selling of products and services by businesses and consumers over the Internet’. The e-commerce Innovation Centre takes a more pragmatic view, arguing that e-commerce is much more than selling from a Website.

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commerce covers any form of business or administrative transaction or information exchange between the company and the outside world, which is executed using any information and communication technology (ICT).\textsuperscript{111}

\textbf{3.3: WHY STUDY E-COMMERCE}

Why are there college courses and textbooks on e-commerce when there are no courses or textbooks on "TV Commerce," "Radio Commerce," "Direct Mail Commerce," "Railroad Commerce," or "Highway Commerce," even though these technologies have had profound impacts on commerce in the twentieth century and account for far more commerce than e-commerce? The reason, as one shall see, is that e-commerce technology is different and more powerful than any of the other technologies we have seen in the past century.

Prior to the development of e-commerce, the presses of marketing and selling goods were mass-marketing and sales force-driving processes. Consumer were viewed as passive targets of advertising "campaigns" and branding blitzes intended to influence consumers' long-term product perceptions and immediate purchasing behavior. Selling was conducted in well-insulated "channels." Consumers were considered to be trapped by geographical and social boundaries, unable to search widely for the best price and quality. Information about price, costs, and fees could be hidden from the consumer, creating profitable "information asymmetries" for the selling firm. Information asymmetry refers to any disparity in relevant market information.

among parties in a transaction\textsuperscript{112}.

3.4: KIND OF E-COMMERCE

3.4.1: Elements of electronic commerce

Some people find it useful to categorize electronic commerce by the types of entities participating in the transactions or business processes. The nine general electronic commerce categories are business-to-consumer (B2C), business-to-business (B2B), and business processes. The three categories that are most commonly used are:

- Consumer shopping on the Web, often called \textbf{business-to-consumer} (or B2C)
- Transactions conducted between businesses on the Web, often called \textbf{business-to-business} (or B2B)
- Transactions and business processes in which companies, governments, and other organizations use Internet technologies to support selling and purchasing activities.

To understand these categories better, consider a company that manufactures stereo speakers. The company might sell its finished product to consumers on the Web, which would be B2C electronic commerce. It might also purchase the materials it uses to make the speakers from other companies on the Web, which would be B2B electronic commerce. Businesses often have entire departments devoted to negotiating purchase transactions with their suppliers. These departments are usually named \textbf{supply management} or \textbf{procurement}. Thus, B2B electronic commerce is sometimes called e-

In addition to buying materials and selling speakers, the company must also undertake many other activities to convert the purchased materials into speakers. These activities might include hiring and managing the people who make the speakers, renting or buying the facilities in which the speakers are made and stored, shipping the speakers, maintaining accounting records, purchasing insurance, developing advertising campaigns, and designing new versions of the speakers. An increasing number of these transactions and business processes can be done on the Web. Manufacturing processes (such as the fabrication of the speakers) can be controlled using Internet technologies within the business. All of these communication, control, and transaction-related activities have become an important part of electronic commerce. Some people include these activities in the B2B category; others refer to them as underlying or supporting business processes 113.

Figure 3.1 shows the three main elements of electronic commerce. The figure presents a rough approximation of the relative sizes of these elements. In terms of dollar volume and number of transactions, B2B electronic commerce is much greater than B2C electronic commerce. However, the number of supporting business processes is greater than the number of all B2C and B2B transactions combined.

The large oval in Figure 3.1 that represents the business processes that support selling and purchasing activities is the largest element of electronic commerce.

For more than 70 years, business researchers have been studying the ways people behave in businesses. This research has helped managers better understand how workers do their jobs. The research results have also helped managers, and, increasingly, the workers themselves improve job performance. By changing the nature of jobs, managers and workers can, as the saying goes, “work smarter, not harder.” An important part of doing these job studies is to learn what activities each worker performs. In this setting, an activity is a task performed by a worker in the course of doing his or her job.

For a much longer time - centuries, in fact - business owners have kept records of how well their businesses have performed. The formal practice of accounting, or recording transactions, dates back to the 1400s. A transaction is an exchange of value, such as a purchase, a sale, or the conversion of raw materials into a finished product. By recording transactions, accountants help business owners keep score and measure how well they are doing. All transactions involve at least one activity, and some transactions involve many activities. Not all activities result in measurable (and therefore recordable)
transactions. Thus, a transaction always has one or more activities associated with it, but an activity might not be related to a transaction.

The group of logical, related, and sequential activities and transactions in which businesses engage are often collectively referred to as business processes. Transferring funds, placing orders, sending invoices, and shipping goods to customers are all types of activities or transactions. For example, the business process of shipping goods to customers might include a number of activities (or tasks, or transactions), such as inspecting the goods, packing the goods, negotiating with a freight company to deliver the goods, creating and printing the shipping documents, loading the goods onto the truck, and sending a check to the freight company. One important way that the Web is helping people work more effectively is by enabling employees of many different kinds of companies to work at home. In this arrangement, called telecommuting or telework, the employee logs in to the company computer through the Internet instead of traveling to an office.

Some researchers define a fourth category of electronic commerce, called consumer-to-consumer (or C2C), which includes individuals who buy and sell items among themselves. For example, C2C electronic commerce occurs when a person sells an item through a Web auction site to another person. In this study, C2C sales are included in the B2C category because the person selling the item acts much as a business would for purposes of the transaction.

Finally, some researchers also define a category of electronic commerce called business-to-government (or B2G); this category includes business transactions with government agencies, such as paying taxes and
filing required reports. An increasing number of states have Web sites that help companies do business with state government agencies. In this study, B2G transactions are included in our discussions of B2B electronic commerce\textsuperscript{114}. Figure 3.1 summarizes these five categories of electronic commerce.

### Table 3.1

**Electronic commerce categories**

<table>
<thead>
<tr>
<th>Category</th>
<th>Description</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>Business-to-consumer (B2C)</td>
<td>Businesses sell products or services to individual consumers.</td>
<td>Walmart.com sells merchandise to consumers through its Web site.</td>
</tr>
<tr>
<td>Business-to-business (B2B)</td>
<td>Businesses sell products or services to other businesses.</td>
<td>Grainger.com sells industrial supplies to large and small businesses through its Web site.</td>
</tr>
<tr>
<td>Business processes that support buying and selling activities</td>
<td>Businesses and other organizations maintain and use information to identify and evaluate customers, suppliers, and employees. Increasingly, businesses share this information in carefully managed ways with their customers, suppliers, employees, and business partners.</td>
<td>Dell Computer uses secure Internet connections to share current sales and sales forecast information with suppliers. The suppliers can use this information to plan their own production and deliver component parts to Dell in the right quantities at The right time.</td>
</tr>
<tr>
<td>Consumer-to-consumer (C2C)</td>
<td>Participants in an online marketplace can buy and sell goods to each other. Because one party is selling, and thus acting as a business, this book treats C2C transactions as part of B2C electronic Commerce.</td>
<td>Consumers and businesses trade with each other in the EBay.com online marketplace.</td>
</tr>
<tr>
<td>Business-to-government (B2G)</td>
<td>Businesses sell goods or services to governments and government agencies. This book treats B2G transactions as part of B2C electronic commerce.</td>
<td>CAL-Buy portal allows businesses to sell online to the state of California</td>
</tr>
</tbody>
</table>

Source: Secondary data

3.5: THE DIFFERENCE BETWEEN E-COMMERCE AND E-BUSINESS

There is a debate among consultants and academics about the meaning and limitation of both e-commerce and e-business. Some argue that e-commerce encompasses the entire world of electronically based organizational activities that support a firm's market exchanges – including a firm's entire information system's infrastructure.

Others argue, on the other hand, that e-business encompasses the entire world of internal and external electronically based activities, including e-commerce\textsuperscript{115}.

We think that it is important to make a distinction between e-commerce and e-business because we believe they refer to different phenomena. For purposes of this study, we will use the term e-business to refer primarily to the digital enablement of transaction and processes within a firm, involving information systems under the control of the firm. For the most part, in our view, e-business does not include commercial transactions involving and exchange of value across organizational boundaries. For example, a company's online inventory control mechanisms are a component of e-business, but such internal processes do not directly generate revenue for the firm from outside business or consumers, as e-commerce by definition, does. It is true, however, that a firm's e-business infrastructure can also support e-commerce exchanges\textsuperscript{116}.


3.6: THE DEVELOPMENT AND GROWTH OF E-COMMERCE

E-Commerce is growing substantially on the internet. Before the end of this decade, millions of companies and individuals will be (i) bidding (ii) buying (iii) selling (iv) brokering (v) advertising and (vi) collaborating on a daily basis, as the internet merges with other branches of the information highway. The resulting economies of scale will drastically lower the cost of implementing and maintaining a procurement infrastructure. Those who clearly see the opportunity understand the medium and creatively put it to work for them, will definitely succeed in the digital economy of tomorrow.

E-Commerce has been defined by different experts in their own approaches and there is no official definition. The people who are well versed in the field of communication say that it is the transmission of information, products/services or payments through telephone lines, networks or any other medium. From a businessman's standpoint, e-commerce has been defined as the use of technology to automate business transactions and work flows. The service industry experts might say that e-commerce is a helpful innovation that allows a business to cut costs, enabling it to provide better quality products and a faster delivery time.

In general, people define e-commerce as the actual buying and selling of goods or services electronically online. Customers can see the products displayed in an online store, read information about the products, see them on the website and have the option to purchase them online. The products could be anything from pet supplies to automobiles, selling everyday from the site. Furthermore, the benefit is that all the principles involved in good practices
could be applied here\textsuperscript{117}.

3.7: ELECTRONIC DATA INTERCHANGE (EDI)

Businesses also have been engaging in a type of electronic commerce, known as electronic data interchange, for many years. Electronic data interchange (EDI) occurs when one business transmits computer-readable data in a standard format to another business. In the 1960s, businesses realized that many of the documents they exchanged were related to the shipping of goods, for example, invoices, purchase orders, and bills of lading. These documents included the same set of information for almost every transaction. Businesses also realized that they were spending a good deal of time and money entering this data into their computers, printing paper forms, and then reentering the data on the other side of the transaction. Although the purchase order, invoice, and bill of lading for each transaction contained much of the same information—such as item numbers, descriptions, prices, and quantities—each paper form usually had its own unique format for presenting that information. By creating a set of standard formats for transmitting that information electronically, businesses were able to reduce errors, avoid printing and mailing costs, and eliminate the need to reenter the data.

Businesses that engage in EDI with each other are called trading partners. The standard formats used in EDI contain the same information that businesses have always included in their standard paper invoices, purchase orders, and shipping documents. Firms such as General Electric, Sears, and Wal-Mart have been pioneers in using EDI to improve their purchasing

processes and their relationships with suppliers.

The U.S. government, which is one of the largest EDI trading partners in the world, also was instrumental in bringing businesses into EDI. For nine years, ending in 2001, the Defense Logistics Agency operated a number of Electronic Commerce Resource Centers (ECRCs) throughout the country. The ECRCs provided free assistance to many businesses, especially smaller businesses, so they could do EDI with the U.S. Defense Department and other federal agencies. The Georgia Institute of Technology continues to operate one of these centers as the **Georgia Tech Electronic Commerce Resource Center**, which serves businesses in Alabama, Georgia, and Tennessee.

One serious problem that potential adopters of EDI faced was the high cost of implementation. Until the late 1990s, doing EDI meant buying expensive computer hardware and software and then either establishing direct network connections (using leased telephone lines) to all trading partners or subscribing to a value-added network. A **value-added network (VAN)** is an independent firm that offers connection and transaction forwarding services to buyers and sellers engaged in EDI. Before the Internet came into existence as we know it today, VANs provided the connections between most trading partners and were responsible for ensuring the security of the data transmitted. VANs usually charged a fixed monthly fee plus a per-transaction charge, adding to the already significant expense of implementing EDI. Many smaller firms were unable to afford to participate in EDI and lost important customers, who went elsewhere to buy. The companies that operated VANs have gradually moved EDI traffic to the Internet, but many other companies have
developed other ways to do EDI types of transactions on the Internet.

3.8: FRAMEWORK FOR E-COMMERCE

Successful strategies emerge from a deep understanding of where the market- and, hence, the cash flow- will be in both the short-term and long term future. The important word in this sentence is market. While the market certainly involves the customer – indeed, the customer is at the center- a market also includes the buyers and sellers as well as the broader contextual forces that shape the nature of the market place exchange. We argue that there are four critical forces that the e-commerce manager must know and manage if the online firm is to be successful. These four forces are technology, capital, media, and public policy. We review each of these forces and provide a simple illustration.

Figure 3.2
Four infrastructures in e-commerce

[Diagram showing four infrastructures: Media Infrastructure, Technology Infrastructure, E-Commerce Infrastructure, Capital Infrastructure, Public policy Infrastructure]

1- Technology Infrastructure

The technology infrastructure of the internet and websites are both enablers and drivers of change. An infrastructure is defined as "the foundation of a system." In this case, the technological foundation of the internet and websites enables the running of e-commerce enterprises. Understanding technology infrastructure is essential to managing a successful online business. Knowing what technology is available (as well understanding the tradeoffs involved) and begin able to make the appropriate choices so that the website can be a reflection of the company's strategy is critical.

2- Capital Infrastructure

Where does the money to launch these new businesses come from? How does the process work, from finding the right managers to building the business plan and seeking funding sources? Finally, how should this venture be valued? Any successful senior e-commerce manager must understand the capital infrastructure and know how to secure funding for a venture (whether independently or in a global 2000 company) and, subsequently, value that business.

3- Media Infrastructure

Why is the media infrastructure an important issue for all e-commerce managers, whether they run GE Medical System, USA today.com, or Gamesville.com? The answer is that the internet is a mass communication platform. Just as technology evolution sets the context for technology choices and the capital markets set the context for funding, media convergence providers who run e-commerce enterprises must learn to manage a staff responsible for design interface, stylistic choices, editorial policies, and most
important, content choices associated this new communication venue. Thus, in addition to all other tasks, the e-commerce manager is now a publisher of digital content on the Web.

4- Public Policy Infrastructure

All decisions related to strategy, technology, capital, and media are influenced by laws and regulations—short, public policy. The **Public Policy Infrastructure** affects not only the specific businesses but also the direct and indirect competitors. Senior managers must understand the current laws and how the laws may change to hurt or help their businesses and those around them.¹¹⁹

3.9: INFORMATION AND COMMUNICATION TECHNOLOGY INDUSTRY

The ICT industry is one of the world largest enterprises and accounts for 22% of developing countries' exports. ICT companies are comparatively heavy users and beneficiaries of e-commerce. In Arab countries though, both the ICT sector and the use of e-commerce by the sector is still comparatively low. However, many of the subsidiaries of the ICT companies in the Arab region are also using e-mail and have a website, but comparatively few engage in more complex e-commerce operations such as offering online catalogues, receiving online orders and handling online payments.

ICT investment from multinationals might make an important contribution to increasing e-commerce in Arab countries, boosting data traffic on the Internet and hence potentially bringing about cost reductions in telecommunication services. ICT investment in developing Arab countries has

also appeared to have positive effects on the local productive sector, which is significantly involved in the production process of the multinationals. However, most ICT multinationals' investment in developing countries is still heavily concentrated in South Asian and South-East Asian countries; even more so than investment from industries which are more dependent on the availability of natural resources. ICT investment for research and development which offers the best opportunities for transfer of technology – is even more heavily concentrated in these regions.

In the Arab region, the local ICT industry must act as a facilitator of the adoption of an e-commerce culture by the local business community. When the business sector starts adopting new information and communication technologies in its operations, it relies heavily on local or locally available ICT expertise in order to fully realize all the efficiency gains that the Internet makes possible at the level of a single firm as well as at the level of the industry and of the country's production system as a whole120.

3.10: E-COMMERCE IN INDIA
3.10.1: Categorization of Internet Users

The potential for e-commerce is enormous in India, owing to the rapid growth of the number of internet users. The enormous savings in time and money achieved by both buyers and sellers is the principal advantage.

A pertinent question arises about the readiness of Indian buyers for e-commerce. The proliferation of the 'net at a rapid pace and the granting of private ISP (internet Service Provider) licenses have put the market en route to a new phase. Even Small and Medium Enterprises (SMEs) have been

increasingly realizing the potential of the 'net.

The technological advancements happening in all spheres of life in India will be the driving factors for the spread of e-commerce in this country, as has happened elsewhere in the world. NASSCOM (National Association of Software and Service Companies) has recently released the findings of its survey to evaluate the e-commerce scenario in India.

E-Commerce is dependent to a great extent, on the number of internet users in India. The following tables give the rate of growth of internet users in India\(^{121}\).

<table>
<thead>
<tr>
<th>Year</th>
<th>Internet Subscribers</th>
<th>Internet Users</th>
</tr>
</thead>
<tbody>
<tr>
<td>1997</td>
<td>25</td>
<td>45</td>
</tr>
<tr>
<td>1998</td>
<td>150</td>
<td>200</td>
</tr>
<tr>
<td>1999</td>
<td>359</td>
<td>1000</td>
</tr>
<tr>
<td>2000</td>
<td>650</td>
<td>2000</td>
</tr>
<tr>
<td>2001</td>
<td>1130</td>
<td>6668</td>
</tr>
<tr>
<td>2002</td>
<td>1763</td>
<td>10684</td>
</tr>
<tr>
<td>2003</td>
<td>3661</td>
<td>29000</td>
</tr>
<tr>
<td>2004</td>
<td>4403</td>
<td>31723</td>
</tr>
<tr>
<td>2005</td>
<td>6000</td>
<td>35000</td>
</tr>
<tr>
<td>2006</td>
<td>25000</td>
<td>37000</td>
</tr>
</tbody>
</table>

Source: Secondary data

3.10.2: Triggers and Barriers for the E-Commerce market in India

In addition to the industry size, it is imperative to understand the reasons behind the growth and reasons hampering the growth of the e-commerce industry in the country. This section elaborates the triggers and barriers that impact the adoption of e-commerce by the Internet users. We will start by enlisting the triggers which motivate shoppers to buy products online.

\(^{121}\) http://www.nasscom.org.
Table 3.3
Top 6 reasons given by shoppers in buying through Internet

<table>
<thead>
<tr>
<th>Top 6 reasons given by shoppers in buying through Internet</th>
<th>Rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>Saves time and efforts</td>
<td>1</td>
</tr>
<tr>
<td>Convenience of shopping at home</td>
<td>2</td>
</tr>
<tr>
<td>Wide variety / range of products are available</td>
<td>3</td>
</tr>
<tr>
<td>Good discounts / lower prices</td>
<td>4</td>
</tr>
<tr>
<td>Get detailed information of the product</td>
<td>5</td>
</tr>
<tr>
<td>You can compare various models / brands</td>
<td>6</td>
</tr>
</tbody>
</table>

Source: Secondary data

As evident from the table above, time saving is the major reason that drives Internet users to shop online. It is followed by convenience of anyplace, anytime shopping. Online stores do not have space constraints, thus, a wide variety of products can be put for display. Companies can display their whole range of products being offered. This further enables the buyers to choose from a variety of models after comparing the looks, features, prices of the products on display.

To attract customers to shop online, e-marketers are offering great deals and discounts to the customers. This is facilitated by the elimination of maintenance, real-estate cost of the seller, and selling their products online.

An insight into some of the problems stated by customers while buying through Internet will help us to have a closer look at the issues which need to be addressed by the online community.

Table 3.4
Top 6 concerns while buying online

<table>
<thead>
<tr>
<th>Top 6 concerns while buying online</th>
<th>Rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>Not sure of product quality</td>
<td>1</td>
</tr>
<tr>
<td>Cannot bargain/Negotiate</td>
<td>2</td>
</tr>
<tr>
<td>Not sure of security of transactions /Credit card misuse</td>
<td>3</td>
</tr>
<tr>
<td>Need to touch and feel the product</td>
<td>4</td>
</tr>
<tr>
<td>Significant discounts are not there</td>
<td>5</td>
</tr>
<tr>
<td>Have to wait for delivery</td>
<td>6</td>
</tr>
</tbody>
</table>

Source: Secondary data

The absence of touch-feel-try creates concerns over the quality of the
product being offered. Another road block of E-Commerce is the lack of interactivity so as to allow for negotiations between the buyer and seller.

In addition, the security of online payments is a major issue requiring immediate attention of e-marketers. The increasing rate of cyber crimes has made customers apprehensive of revealing their credit card and bank details online.

Moreover, the duration of selecting, buying and paying for an online product may not take more than 15 minutes; however, delivery of the product to the customer’s doorstep may take about 1-3 weeks.

Furthermore our past observation has been that in India shopping is an experience in itself. Consumers look forward to it as an opportunity to get out of their homes and interact with other people. The recent growth in the malls and the hypermarkets only corroborate this fact. Thus, e-commerce has to bank on the convenience and discount platform as there is no way that they can compete with the offline platforms on the experience that they provide.

There is no doubt that Internet shopping has a number of benefits to offer. With changing lifestyles, e-commerce is surely the most appealing and convenient means of shopping. However, the grave issues surrounding the market do not make it the “choice” of most of the Internet users. Addressing the above specified issues, has, thus become critical to expand beyond the current user base.\textsuperscript{122}

3.11: E-COMMERCE IN IRAN

Today, information and communication technology (ICT) have been the axes of economic, social and cultural development in different countries. E-

\textsuperscript{122} Krishnan, Mohan and Ray, Subho. (2009). "Consumer E-Commerce Market in India” A Report by eTechnology Group@ IMRBfor Internet and Mobile Association In India(IMAIA), pp 11-15.
Commerce is an outcome of ICT revolution in economic fields. The rise of the internet and its commercialization in recent decades has transformed traditional methods of commerce. The development of e-commerce requires a series of essential activities in technical infrastructure, legal and regulatory and education, private-sector protection, and government support to provide conditions conducive for economic players, i.e., consumers and business, to make extensive use of e-commerce.

Internet use in Iran was first promoted by the government to provide an alternative means of scientific and technological advancements during the troubled economic period that followed the Iran - Iraq war. Iran's domestic internet connections are still based in academia, in the form of the national academic network (IRANET.IPM). Nevertheless, additional outside links have been established by the Iranian post, Telephone and Telegraph (PTT), which provides services to both commercial agencies and governmental organizations.

3.11.1: E-Commerce strategies in Iran

The objectives of the ecommerce memorandum ratified by the council of ministers in Iran in 2002 are as follows:

1- To provide main infrastructure and legal and executive set up required for using e-commerce;

2- To develop training and e-commerce application penetration;

3- To support the development of non-public sectors, preventing monopoly and creating competition;

4- To remove any discrimination boundaries in e-commerce;
5- To expand the use of the internet for e-commerce purposes in the country;

6- To make essential decisions in relation to the health of its content.

According to this ratified law, the Ministry of Commerce and other Ministries such as Economic Affairs and Finance, Science and Research and Technology, Foreign Affairs, Enterprises and Mines, Communication and Information Technology, Central Bank, High Council of Informatics, and Radio and Television Organization are all subject to specific task and responsibilities.

Theoretical and experimental studies at the international level, which are based on experiences of leading countries in e-commerce, show that providing infrastructure is a key requirement for e-commerce development. The task of expansion and maintenance of infrastructure for e-commerce requires harmonized and coordinated participation of all associated government agencies, as well as the private sector.

3.11.2: Why has E-Commerce not made much headway in Iran?

Certain factors hinder e-commerce growth in Iran. These factors are classified into the following:

Lack of Infrastructure

Infrastructure is one of the important prerequisites for the development of e-commerce and it is difficult and expensive. In Iran, the Ministry of ICT, which is a government body, is responsible for developing national infrastructure, but the government's ability is limited. The internet is the most important tool for expanding e-commerce among users. The Ministry of ICT and the Ministry of Commerce try to expand internet usage across the
country but it is difficult and expensive and therefore it is one of the principal constraints for the development of e-commerce in Iran.

**Lack of awareness and knowledge**

Most Iranian users treat the internet as a tool of communication. They love to send e-mail or share information with each other. Most, especially young people use the internet for live communication. They prefer to talk through a chat room. Also people like to search and gather information on various things, especially the news, from the internet. Thus, e-commerce is not yet a part of internet activities among Iranian users although they agree that the internet can help them in many ways. But not many of them realize that the internet can also be a powerful medium for business and transactions. E-Commerce awareness is low among Iranian internet users. The knowledge also plays an important role in e-commerce. Not many Iranians are aware of e-commerce and its benefits. With a narrow knowledge base regarding e-commerce, it is very difficult to establish a business based on e-commerce.123

**3.11.3: Culture and Behavior**

In our discussion it is fruitful to mention that e-commerce is considered to stand in its initial steps of birth in Iran. It should be seen as an infant that needs some care to be widespread throughout the country. Nowadays the computer is taken as a calendar to do the daily accounting. It is also utilized entertain people in their leisure time. In its remarkable application, we can only say that people exploit the computer to sell, buy, promote and order goods and services through the internet. In an overall debate, people prefer to use the computer for their secondary applications instead of the real

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applications of e-commerce.

To equip the computer with the internet is considered to be an enjoying task and people accordingly like shopping as an act of leisure or recreation. Iranians usually prefer going to the shopping center with family or friends. They like to see the goods and make a detailed selection before buying. They like to make themselves sure about the quality of the product they want to buy. In addition most of them think that shopping through the internet is expensive and if they go to shops they may get stunning discounts only available at the shop.

3.12: SECURITY IN E-COMMERCE
3.12.1: Conceptualizing Security

E-commerce began with Electronic Data Interchange (EDI) in the early 1980s, when banks and businesses electronically transferred funds and made payments to one another. With the advent of business-to-consumer e-commerce and the internet in the 1990s, information security became paramount. Several factors have driven this change: global trading far beyond the scope of EDI, which was confined to U.S enterprises, and online, real-time trading. Online, real-time trading means a limited amount of time for consumer and merchant to investigate each other. To delay online transactions, as was the case with delayed EDI business, defeats the whole purpose of real-time business.

The first issue in security is identifying the principals. They are people, processes, machines, and keys that transact (send, receive, access, update, delete) information via databases, computers, and networks. Security concerns generally involve the following issues.
Confidentiality: knowing who can read data and ensuring that information in the network remains private. This is done via encryption.

Authentication: making sure that message senders or principals are who they say they are.

Integrity: making sure that information is not accidentally or maliciously altered or corrupted in transit.

Access control: Restricting the use of a resource to authorized principals.

Non repudiation: Ensuring that principles cannot deny that they sent the message.

Firewalls: A filter between corporate networks and the internet to secure corporate information and files from intruders, but that allows access to authorized principals\textsuperscript{124}.

3.12.2: Dimensions of the E-commerce Security:

E-commerce can be simply defined as conducting business over a data network that in some logical way has access to the all-encompassing Internet. The major market researchers have weighed in with revenue projections to push the fervor higher to new extremes. Gartner Group predicted in August 2000 that the year would end with an Internet retail revenue tally in North America up 75\% of 1999’s figure of $16.8 billion and 15.7\% from 1998. E-commerce security has six key dimensions:

1. **Integrity:**
   It refers to the capability of ensuring the data and information being displayed on a website, or transferred (transmitted or received) over the internet has not been changed by an unauthorized party.

2. **Non-repudiation:**
   This dimension of the e-commerce security refers to the ability to create a situation in which none of the e-commerce participants repudiate or deny their online actions.

3. **Authenticity:**
   It is the e-commerce participants' ability to identify a person or entity with whom they are dealing on the internet. Someone who claims to be someone they are not is "spoofing" or misrepresenting themselves.

4. **Confidentiality:**
   Here, the aim is to create the ability to ensure that messages and data are available for authorized parties to view them.

5. **Privacy:**
   The privacy dimension of e-commerce refers to the ability to control the use of information a customer provides about himself or herself to an e-commerce merchant.

   There are two concerns related to privacy for e-commerce merchants:
• Establishing an internal policy governing their own use of customer information
• Protecting that information from illegitimate or unauthorized use

6. Availability:

Ensuring that an e-commerce site continues to function as intended is referred to as availability.

E-commerce security is designed to protect these six dimensions. When anyone of them is compromised, it is a security issue.125

3.13: WEBSITES AND PROMOTION

Once companies become convinced of the benefits of email for driving sales to existing customers, they often consider the options of developing a website. In a survey, promotion and establishing links with potential new buyers were cited as the most important reasons to construct a company website. For manufacturing and trading companies, websites have proven beneficial in establishing links with prospective buyers, but have seldom led to sight-unseen sales.

The majority of foreign buyers, who already sourced or are planning to source from India, are searching websites to identify potential suppliers whom they will later visit directly. In most cases, these buyers are from small and medium-sized manufacturing or retail operations that purchase in lower volumes than the larger-scale international manufacturers and retail chains, which tend to place big orders at the international trade shows. To gain pricing advantages in lieu of volume discounts, these smaller-scale foreign buyers actively seek out SME suppliers that may not participate in international or Jakarta-based trade fairs. The Internet provides an efficive channel for them to

locate such suppliers.

As mentioned above, selling products sight-unseen through websites is far less common; however, some suppliers of high value, low volume products have been successful in selling directly over the Internet. Some jewelry suppliers in Bali, for example, supply small retailers and individuals in other countries and rely solely on transfers for payment and international express services for delivery.

The high cost of funds transfer and express delivery makes it unviable for other smaller-scale buyers (particularly individuals) to purchase lower-value products like books and garments through websites. Hotels are also an exception, and international tourists frequently book rooms by email after viewing a hotel on-line. This is often the case for cost-conscious travelers who prioritize affordable accommodation in appropriate locations. Websites, therefore, have proven highly effective for small-scale hotels in popular tourist areas such as Yogyakarta and Bali.

The effectiveness of a website is directly linked to the quality and simplicity of design, the type of images displayed and the quality of English used to describe products and services. Additionally, websites that are registered with search engines, and therefore easily found by prospective users, perform better than those that are simply placed on the web.

3.14: TRUST IN ELECTRONIC COMMERCE

With the advent of Electronic Commerce many people have become interested in trust issues. Most people agree that in order for Electronic Commerce to become a success the people have to trust it. Trust in Electronic

Commerce is therefore an important issue. An individual will only engage in a transaction if his level of trust exceeds his personal threshold, which depends on the type of transaction and other parties involved in the transaction. Figure 3.4 gives a graphical representation of the generic trust model. In the center of this figure is the trustor's transaction trust; i.e. the mental state of the trustor that determines whether he has sufficient trust to engage in a transaction. The determinants of the trustor’s trust threshold are represented in the lower half of Figure 3.4. Several determinants for a person’s threshold can be distinguished. The potential profit for the person, the risk involved, the person’s attitude towards risk or risk propensity, i.e. risk seeking, risk neutral, risk averse are examples of such determinants. The upper half of Figure 3.4 represents the trust determinants such as the trust that the counter party in a transaction induces in the trustor and the trust that control mechanisms induce in the trustor. By control mechanism we mean procedures and protocols that monitor and control the successful performance of a transaction.\(^\text{127}\).

3.15: PAYMENT SYSTEMS FOR E-COMMERCE

Online stores can accept a variety of forms of payment. Credit, debit and charge cards (payment cards) are the most popular forms of payment on the internet. They are ubiquitous, convenient, and easy to use.

A number of companies have faltered in recent years as they attempted to introduce electronic cash to the online world. Electronic cash is especially useful for making micropayments because the cost of processing payment cards for small transactions is greater than the profit on such transactions. Electronic cash shares several benefits with real cash: it is portable, anonymous, and usable for international transactions. Electronic cash can be stored online or offline. A third party, such as a bank, stores online electronic cash. The consumer holds offline cash in specially designed wallets.

Electronic wallets provide convenience to online shoppers because they hold payment card information, electronic cash, and personal consumer identification. Electronic wallets eliminate the need for consumers to reenter payment card and shopping information at a site's electronic checkout counter. Instead, the electronic wallet automatically fills in form information at sites that recognize the particular wallet software's technology. One persistent problem with electronic wallets is the lack of an internationally accepted standard.

Stored-value cards, including smart cards and magnetic strip cards, are physical devices that hold information, including cash value, for the cardholder. Magnetic strip cards have limited capacity. Smart cards can store greater amounts of data on a microchip embedded in the card and are intended to replace the collection of plastic cards people now carry, including payment
cards, driver's licenses, and insurance cards.

Banks still process most monetary transactions, and a large part of the dollar volume of those transactions is still done by writing checks. Increasingly, banks are using internet technologies to process those checks. Phishing expeditions and identity theft, especially when perpetrated by large criminal organizations, create a significant threat to online financial institutions and their customers. If not controlled, this threat could reduce the general level of confidence that consumers have in online business and hurt the growth of electronic commerce¹²⁸.

3.16: ADVANTAGES AND DISADVANTAGE IN E-COMMERCE

3.16.1: Advantages of e-commerce:

Some of the key strengths of using the internet for businesses include the following:

1. **Cost of acquiring, serving and retaining customers.** It is relatively cheaper to acquire new customers over the net; thanks to 24/7 operations and its global reach. Through innovative tools of 'push' technology, it is also possible to retain customers' loyalty with minimal investments.

2. **Makes opportunity.** Just as e-commerce increases sales opportunities for the seller, it increases purchasing opportunities for the buyer. Businesses can use e-commerce in their purchasing processes to identify new suppliers and business partners. Negotiating price and delivery terms is easier in e-commerce, because the web can provide competitive bid information very efficiently.

3 An extended enterprise is easy to build. In today's world every enterprise is part of the 'connected economy': as such, you need to extend your enterprise all the way to your suppliers and businesses partners like distributors, retailers and ultimately your end customers. The internet provides an effective (often less expensive) way to extend your enterprise beyond the narrow confines of your own organization. Tools like enterprise resource planning (ERP), Supply chain management (SCM) and customer relationship management (CRM), can easily be deployed over the internet, permitting amazing efficiency in time needed to market, customer loyalty, on–time delivery and eventually profitability.

4 Power to provide the 'best of both the worlds'. It benefits the traditional business side-by-side with the internet tools.

5 Improved customer service to your clients. It results in higher satisfaction and more sales.

6 Disintermediation. Using the internet, one can directly approach the customers and suppliers, cutting down on the number of levels and in the process, cutting down the costs\textsuperscript{129}.

3.16.2: Disadvantages of e-commerce

Some business processes may never lend themselves to electronic commerce, e.g. perishable foods, and high-cost items (such as jewelers, antiques, and the like), may be difficult to inspect from a remote location, regardless of any technologies that might be devised in the future. Most of the disadvantages of electronic commerce today, however, stem from the newness

and rapidly developing pace of the underlying technologies. These disadvantages will disappear as e-commerce matures and becomes more and more available to and gets accepted by the general population. Many products and services require a critical mass of potential buyers who are well-equipped and willing to buy through the internet. Businesses often calculate the return-on-investment before committing to any new technology. This has been difficult to do with e-commerce, since the costs and benefits have been hard to quantify. Costs, which are a function of technology, can change dramatically even during short-lived e-commerce implementation projects, because the underlying technologies are changing rapidly. Many firms have had trouble in recruiting and retaining employees with technological, design, and business process skills needed to create an effective e-commerce atmosphere. Another problem facing firms that want to do business on the internet is the difficulty of integrating existing databases and transaction-processing software designed for traditional commerce into a software that enables e-commerce.

In addition to technology and software, many business face cultural and legal obstacles in conducting e-commerce. Some consumers are still somewhat fearful of sending their credit card numbers over the internet. Other consumers are simply resistant to change and are uncomfortable viewing merchandise on a computer screen rather than in person. The legal environment in which e-commerce is conducted is full of unclear and conflicting laws. In many cases, government regulators have not kept up with the trends in technologies.\(^\text{130}\).

3.17: THE FUTURE OF E-COMMERCE

E-Commerce and its underlying technologies are developing so quickly, it is a dangerous game to guess where they are going. Nevertheless, some clear trends are apparent. Mobile e-commerce is a key growth area. Already it is possible to browse the web and buy things with a mobile telephone. How this will pan out and what the removal of the applications will be are not clear now. But businesses and investors are excited about the possibilities, and new mobile E-Commerce ventures are popping up every day. More importantly, there are more mobile telephones than PC computers in Europe. So, there can be little doubt that in five years time, a European browsing the net is more likely to be doing so via a mobile device than a computer. Indeed, this is already the case in Japan. Clearly, when the consumer is mobile in a Europe without frontiers, there will be some complex regulatory issues in the areas of applicable law, jurisdiction and VAT that will need resolving.

Ubiquitous Internet and computing is another growth area. This involves devices other than a PC computer connected to the Internet. These devices could be anything from the climate control system of a house which can be controlled from the Owner’s mobile telephone, to a rubbish bin that notices when certain food containers are thrown away and reorders from the local supermarket. More elaborately, intelligent agents in a house’s central computer might negotiate with various electrical generation and supply sources to obtain the best electricity deal for the owner.

When household agents negotiate with intelligent agents belonging to an electrical company (or Telecommunications Company or any other service),
there are some interesting liability and contractual questions that will need to be resolved. At the same time, many other exciting avenues of e-business are being explored and likely some commonplace technologies of tomorrow have yet to be envisioned today.

In any event, the European Commission is preparing a legal framework for electronic commerce that will ensure consistent laws across the EU, thereby facilitating trade. This should largely be in place in the next few years. Then it will only be a matter of ensuring that legislation keeps up with the technological developments – or at least doesn’t fall too far behind them\textsuperscript{131}.

3.18: SUMMARY

E-commerce with the stunning technology it presented to the world of business opened a new approach for both customers and sellers. Both the vast structure of the internet and the low cost of utilizing it introduced the interconnection of new and existing information and communication technologies. Such a chance not only offers businesses and consumers a new and powerful information system but also a new form of communication. This makes it possible for buyers and sellers to come together in more efficient ways. In the same way, it is creating new marketplaces and opportunities for the reorganization of economic processes. It is also changing the way products are customized, distributed and exchanged and how businesses and consumers search.

\textsuperscript{131} Schulze, Corinna and Baumgartner, Jeffrey. (2000)." A Beginner’s Guide to European Law Affecting E-commerce "Published by the European Commission’s Electronic Commerce Team (Information Society Directorate General).