CHAPTER ONE

INTRODUCTION

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1.1 Meaning and Definitions of Electronic Commerce

This part of the chapter explains the meaning and definition of e-commerce. From maximum possible sources, an attempt has been made to explain the meaning and definition of e-commerce, which various authors on the subject have provided. This part lists down those meaning.

A popular site www.uow.edu.au, explains e-commerce as literally "doing business electronically" and when the term was first coined it was seen as buying and selling on electronic networks. The traditional view of doing business online includes purchasing products via online services and the Internet as well as electronic-data interchange (EDI), in which one company's computer queries and transmit purchase orders to another company's computer.

Electronic Commerce today includes:

- the buying and selling of information as well as products and services.
- the use of telecommunications networks to link organisations and/or individuals.
- sharing business information and maintaining business relationships.
- intra-company, inter-company, and company-to-consumer processes.
- doing business without paper.
- engagement in a wide range of activities up and down the value-added chain both within and outside the organization.
- all computerized inter-company and intra-company functions (such as marketing, finance, selling, and negotiation)
- the use of electronic mail, EDI, file transfer, fax, video conferencing, workflow, or interaction with a remote computer.

According to Cisco System Ink, the term e-commerce encompasses any commercial transaction conducted electronically. Simply viewing a web site is not e-commerce, but purchasing a product over the Internet is e-commerce so is exchanging vital information with a supplier or business partner. Electronic commerce can occur over means other than the Internet.

Dibel Research Inc Services, explains e-commerce in the following words, it enables businesses to create and manage a dynamic cost-effective Internet stores that provide
customers with a convenient, compelling and secure buying experience when selling products business to business or directly to consumers.

According to site maintained by www.e-envoy.gov.uk, it is the exchange of information across electronic networks, at any stage in the supply chain, whether within an organisation, between businesses and consumers, or between the public and private sectors, whether paid or unpaid. The site www.niacc.cc.ia.us^, explain e-commerce has evolved from its meager notion of electronic shopping to mean all aspects of business and market processes enabled by the Internet and the World Wide Web technologies.

**E-Commerce as Online Selling.** Narrowly defined, e-commerce means doing business online or selling and buying products and services through Web storefronts. Products being traded may be physical products such as used cars or services (e.g. arranging trips, online medical consultation, and remote education). Increasingly, they include digital products such as news, audio and video, database, software and all types of knowledge-based products. It appears then electronic commerce is similar to catalog shopping or home shopping on cable TV.

**E-Commerce as a Market.** E-commerce is not limited to buying and selling products online. For example, a neighborhood store can open a Web store and find the world in its doorstep. But, along with customers, it will also find its suppliers, accountants, payment services, government agencies and competitors online. This online or digital partners demand changes in the way we do business from production to consumption, and they will affect companies who might think they are not part of electronic commerce. Along with online selling, electronic commerce will lead to significant changes in the way products are customized, distributed and exchanged and the way consumers search and bargain for products and services and consume them.

According to the site emsc.co.uk^, e-commerce is the exchange of business information using electronic formats, which includes Electronic Data Interchange, or EDI, Electronic Mail, or Electronic mail, Electronic Bulletin Boards (EBB) and Electronic Funds Transfer (EFT). Paul Timmers^7, defines e-commerce as "any form of business transaction in which the parties interact electronically rather than by physical exchanges or direct
physical contact". Kolakata defines e-commerce is the delivery of information, products/services, or payments via telephone lines, computer networks, or any other means.

Higgins.freeserve.co.uk\(^9\), explains electronic commerce is the description of the business process by which companies trade goods and or services on the Internet. This is done in many ways, the most common of which being the World Wide Web using browser compatible documents e.g. HTML (Hyper Text Mark-up Language). According to Jaiswal\(^10\) e-commerce is the business environment in which information for the buying and selling, and transportation of goods and services moves electronically. Electronic commerce includes any technology that enables a company to do business electronically. According to Kamlesh. K.Bajaj\(^11\), e-commerce refers to the paperless exchange of business information using Electronic Data Interchange, Electronic Mail, Electronic Bulletin Boards, Electronic Funds Transfer and other network based technologies helps organizations move to a fully electronic environment and change the way they operate. Minoli D and, Minoli E\(^12\), define commerce as the interchange of goods or services, especially on a large scale. In the past, trading typically took place face to face between parties. Over the centuries and decades, trading has continued to become more sophisticated. At this time, a large percentage of transactions are no longer done face to face, but are conducted over a telephone or via mail, with the exchange of new plastic money called e-commerce.

According to OECD (Organisation for Economic Cooperation and Development)\(^13\), e-commerce refers to all value transactions involving the transfer of information, products, services or payments via electronic networks. Later they extended the definition and included individuals, organizations, sound and visual image, to their earlier definition. Thereafter once again the definition was extended by the author and terms such as electronic trading of goods, electronic funds transfer, electronic share trading, electronic bills of lading, auctions, direct marketing and after sales services were included in the domain of e-commerce. According to the site www.usc.edu\(^14\), e-commerce is the paperless exchange of business information using EDI, Electronic Data Interchange E-mail, Electronic Bulletin Boards, EFT (Electronic Funds Transfer) and similar
technologies. E-commerce must seek to automate the generation, processing, coordination, distribution, and reconciliation of business transactions.

According to the (Computer Credible Magazine)\(^{15}\), the most common definition of e-commerce is) shopping on the Internet. You can buy almost anything via the Internet including books, appliances, flowers, groceries, and cars, to name a few. However, e-commerce has evolved to encompass more than simply shopping and now includes service-oriented activities such as home banking, buying and selling stocks, online training (distance learning), and even Internet auctions. Perhaps a more comprehensive definition of e-commerce would be) the ability to exchange money for goods or services over the Internet, or to put it more simply, Internet trading. From a business perspective, however, e-commerce is often more broadly defined as) any kind of business-related transaction conducted with the assistance of electronic tools. According to Feinman and Greenstein e-commerce is defined as the use of electronic transmission mediums (telecommunications) to engage in the exchange, including buying and selling, of products and services requiring transportation, either physically or digitally, from location to location.

The site www.polity.org.za\(^{17}\), explains e-commerce as e-commerce encompasses all business conducted by means of computer networks. It reflects a paradigm shift driven by two primary factors:

- a wide range of converging technological developments and
- the emergence of the so-called "knowledge economy".

The site also characterized e-commerce as:

- an emphasis on the human mind, rather than merely physical automation.
- being information- rather than energy intensive.
- sustainability through networks, not single organizations.
- supporting distributed rather than centralised intelligence.
- requiring multiple skills and continuous learning.
- replacing lifetime employment with labour market flexibility.
- customised rather than standardised products.
• being enabled by information and communications technologies (ICTs), whilst simultaneously driving the development of new ICTs.

According to BG George Yeo\(^\text{18}\), e-commerce is commerce conducted through electronic means over open network such as the Internet. It is a dynamic set of technologies, applications and business processes that link enterprises, consumers and communities through electronic transactions and the electronic exchange of goods, services, and information.

The site http://techunix.technion.ac.il/~orena/ec/index.html\(^\text{19}\), explains e-commerce as, e-commerce is a general term applied to the use of computer and telecommunications technologies, particularly on an inter-enterprise basis, to support trading in goods and services, is defined as "the use of information technology to effect the linkages among the functions provided by participants in commerce". E-commerce uses a range of technologies. Some technologies such as electronic data interchange (EDI), electronic mail (e-mail), electronic funds transfer (EFT), are already in wide use. Some of them (e.g. electronic data interchange - EDI), will require agreement between trading partners (buyers and suppliers) in order to govern their electronic trading relationship.

According to the site www.mit-gov-in\(^\text{20}\), while there is no single globally accepted definition of E-Commerce, it is gradually leaning towards "goods and services transacted over Internet". More accepted definition could be the one accepted in the WTO Ministerial Declaration on E-Commerce "the production, distribution, marketing, sales or delivery of goods and services by electronic means". According to site www.ngage.net\(^\text{21}\), e-commerce as means online shopping - workaholics ordering a last minute gift online because they forgot someone’s birthday again. But Internet shopping is only a small part of the e-commerce picture. E-commerce solutions bring the open standards and universal access of the Internet to the core business processes of buying and selling goods and services. More than a transaction or exchange of payment, e-commerce also helps you generate demand for products or services, and improves your fulfillment, order management, payment and ongoing support functions. It can cut expenses by reducing transaction costs and streamlining business processes. With the worldwide reach of the
Internet, an e-commerce solution can help you discover new markets while increasing your speed to market. E-commerce includes:

- Electronic presentation of goods and services
- Online order taking and bill presentation
- Automated customer account inquiries
- Online payment and transaction handling
- Business to business or automated supply chain management (SCM) solutions

www.ispo.be/ecommerce/aboutus.html, explains e-commerce as "any form of business transaction in which the parties interact electronically rather than by physical exchanges or direct physical contact".

Wigand, Rolf T, explains e-commerce denotes the seamless application of information and communication technology from its point of origin to its end point along the entire value chain of business processes conducted electronically and designed to enable the accomplishment of a business goal.

Jan, W.P.F, Kardaun, explains e-commerce as e-commerce is commerce that is dependent upon digital communication. Further he extended definition commerce becomes e-commerce when Internet (or a similar net) has played a crucial role in one or more of the phases of orientation, purchase, delivery or after-sales. According to Thomas L. Mesenbourg, the meaning of e-commerce is

- An individual purchases a book on the Internet.
- A government employee reserves a hotel room over the Internet.
- A business calls a toll free number and orders a computer using the seller's interactive telephone system.
- A business buys office supplies on-line or through an electronic auction.
- A retailer orders merchandise using an EDI network or a supplier's extranet.
- A manufacturing plant orders electronic components from another plant within the company using the company's intranet.
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- An individual withdraws funds from an automatic teller machine (ATM).

Identifying e-commerce transactions often is not as straightforward as the previous examples may make it appear. Some additional examples that demonstrate the complexity of implementing the proposed definition are provided below.

- A consumer visits a bookstore and inquires about the availability of an out-of-stock book. A bookstore employee downloads a digital copy of the book and prints it along with cover. Not an e-commerce retail transaction since agreement to purchase did not occur over an electronic network. However, the right to access the digital archived copy is an e-commerce service transaction.

- **Consumer uses Internet to research the purchase of a computer, but calls a toll free number and places the order with an operator. Not an e-commerce transaction because agreement to transfer ownership did not occur over computer-mediated network; neither telephone was computer-enabled.**

An individual visits retail store and purchases merchandise not currently in stock from a computer-enabled kiosk located inside the shop. An e-commerce transaction since agreement occurred over computer-mediated networks. In contrast, the purchase of a pre-packaged music CD from a computerized kiosk would not be considered an e-commerce transaction. If the kiosk was network linked, the digital music was downloaded, and the CD was mastered within the kiosk this would be an e-commerce transaction.

According to Vasja Vehovar:  

a) E-commerce is a commercial activity conducted over electronic networks, often over the Internet, which leads to the purchase or the sale of goods or services (EITO, 1999)

b) By e-commerce we understand any transmission of business documents (such as payments, orders, and certificates) over computer networks. (RIS, 1999).

According to www.oecd.org e-commerce not only includes actual transaction between buyer and seller but also upstream and downstream activities that made the transaction possible. In other words every activity that facilitates the trade is called e-commerce.
1.2 Brief History of Electronic Commerce

In short history of electronic commerce may be recorded into following stages.

STAGE I

Electronic commerce is a fairly recent mode of conducting commerce. Its history can be traced back to the birth of the internet in the 1960s, the US department of defense became very concerned about the possible effects of nuclear attacks on its computing facilities. The defense department realized that the weapons of the future would require powerful computers for coordination and control. The powerful computers of that time were all large mainframe computers, so the defense department began examining ways to connect these computers to each other and also to weapons installations that were distributed all over the control. The defense department agency charged with the task hired many of the best communications technology researchers, and for many years funded research at leading universities and institutions to expose the task of creating a worldwide networks that could remain operational even if parts of the networks were destroyed by enemy military action or sabotage. These researchers worked hard to dense ways to build networks that could operate independently that is networks that would not require a central computer to control network operations. The worlds telephone companies were the early models for networked computers.

STAGE II

U.S. department of defense and other organizations and individuals working on defense related research projects. The Internet was built to solve the key problem of communications between computers that mine thousands of miles a part but needed to work together. The department of defence eventually opened its networks to educational institutions and then to commercial users.
Fig 1.1: Showing History of Electronic Commerce

<table>
<thead>
<tr>
<th>Year</th>
<th>Event</th>
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<tbody>
<tr>
<td>1969</td>
<td>ARPA Net established</td>
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<tr>
<td>1970s</td>
<td>EFT</td>
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<tr>
<td>1980s</td>
<td>First BC</td>
</tr>
<tr>
<td>1995</td>
<td>Amazon.com</td>
</tr>
<tr>
<td>2000</td>
<td>Internet II</td>
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</table>

In 1969, the US department of defence established the advanced research projects networks (ARPANET). ARPANET was the first really viable inter-organizational network or Internet. In the 1970s, other networks such as Bitnet and Usenet sprang up as the technology become more public.

**STAGE III**

During the 1970s, the introduction of electronic funds transfer (EFT) between banks over secure private networks changed financial markets. Electronic funds transfer optimizes electronic payments with electronically provided remittance information. Today there are many EFT variants, including the debit card whose use is becoming ubiquitous at points of sales (POS) in grocery stores and retail outlets, and direct deposits to employee bank accounts.

**STAGE IV**

In 1972, a researcher wrote a programme that could send and receive message over the networks, E-mail had been born and became widely used very quickly.

**STAGE V**

During the tale 1970s and early 1980s electronic commerce became wide spread within companies in the form of electronic messaging technology: electronic data interchange (EDI) and electronic mail. Electronic messaging technology streamline business processes by reducing paper work and increasing automation. Business exchanges traditionally conducted with paper such as checks, purchase orders and shipping documents, are conducted electronically. Electronic data interchange allows companies to send/ receive business documents (such as purchase orders) in a standardized electronic form to/from their suppliers. For example, combined with just in time (JIT)
manufacturing, EDI enables suppliers to deliver parts directly to the factory floor, resulting in savings in inventory, wave housing, and handling costs. Electronic mail does much the same for unstructured organizational communications both inside and across the organizational boundaries. Over the years, EDI has evolved into several different technologies called network enabled business practices.

• Technical Data interchange (engineering)
• Mass customization (demand-driven manufacturing)
• Virtual and team based enterprises.
• Outsourcing and coordination of logistics.
• Desktop video conferencing.
• Document workflow systems
• Electronic mail, (Communication)
• Electronic data interchange (procurement)

In the late 1980s and early 1990s electronic messaging technologies became an integral part of workflow or collaborative computing systems (also called groupware).

A prominent example of such system is Lotus Notes groupware focused primarily on taking existing non-electronic methods and grafting them onto an electronic platform for improved business process efficiency. Although hyped as the “Killer app” in the early 1990s groupware efforts resulted in small gains in productivity and efficiency.

In the mid-1980s, a completely different type of electronic commerce technology spread among consumers in the form of online services that provided a new form of online services that provided a new form of social interaction (such as chat rooms and inter-relay chat [IRC]) and knowledge sharing (such as news groups and File Transfer Programs). Social interaction created a sense of virtual community among the cyberspace inhabitants and helped give rise to the concept of a “global village. “ At the same time, information access and exchange have become more affordable. By world at ever-decreasing costs. Despite the presence of these networks, the one key ingredient missing until recently was utility and ease of use.

In the 1990s, the advent of the World Wide Web on the Internet represents a turning point in electronic commerce by providing an easy - to – use technology solution to the problem of information publishing and dissemination. The Web made electronic
commerce a cheaper way of doing business and enabled more diverse business activities. The Web also enabled small business to compete on a more equal technological footing with resource rich multinational companies to keep up with upstarts who can enter the new marketplace of several million customers with a minimal infrastructure investment: a PC, a modem, and an internet account. These new economies are forcing traditional companies to reconceptualize cost structure in order to remain competitive. Among the first entrepreneurs are Amazon and Yahoo.

How fast has Internet grown can be seen from the fact that radio$^{33}$ took 38 years to reach 50 million users, personal computers took 16 years to reach 50 million users, TV took 13 years to reach 50 million users, Internet took 4 years to reach 50 million users.
1.3 Three Pillars of Electronic Commerce

Electronic Commerce is said to rest on three pillars and they are:

- Electronic Information
- Electronic Relationships
- Electronic Transactions

Another electronic business model that builds on traditional market spaces in the three pillars of electronic commerce model is the existing market space. Three electronic pillars support open market processes: electronic information, electronic relationships, and electronic transactions.

The first pillar, **Electronic Information**, is similar to Angehrn’s virtual information space. The www is viewed as a “global repository” of documents and multimedia data. Constructing an electronic pillar is easy: most word processing software packages will be easily convert documents into web-readable format. The challenge is to construct a good solid pillar that will not crumble, or in www terms, the web page does not freeze up or links do not lead the visitor to a dead-end or having them wandering through a maze of links without easily finding the necessary information. Thus, the fashion, or it will not adequately support the objective of an open market. The retrieval of the desired electronic information is the cause of frustration to many web “surfers”. Search engines and other intelligent agents are increasing in popularity to assist users too more efficiently and effectively navigate the www.

The second pillar of, **Electronic Relationship**, is the central pillar, and is similar to Angehrn’s virtual communication space. The saying “If you build it, they will come” does not apply to web site based electronic commerce. Placing information on products and service offerings on a website does not mean that a user will return to the site. The electronic relationships pillar is about building a site that has the feeling of being a “port of entry” into a community. Having entrants pass through this port of entry on a somewhat regular basis is the key to successfully engaging in electronic commerce.

In order to attract users over and again to a site (which also means away from others sites), the site needs to have certain features it must:

- Be innovative
- Add value
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- Provide information and interaction not otherwise available; and
- Create forums for opinion-building activities.

The third pillar is the **Electronic Transaction** pillar. This is similar to Angehnr’s virtual transaction space, and also encompasses Angehnr’s virtual distribution space. Many businesses have built an electronic information pillar and one has built or are building an electronic community pillar, but substantially fewer have constructed the electronic transaction pillar. Two impediments to constructing the pillar exist: the ability to engage in meaningful and sufficient negotiation processes and security of transaction data.
1.4 Benefits of Electronic Commerce

Electronic commerce has recently been a very active field of study. A large number of people and organizations are betting that the electronic marketplace of the future will be immense and want to gain as a large a share of it as possible.

Electronic Commerce has a number of potential benefits, which have been summarised below:

1.4.1 Lower Purchasing Costs

Buying materials or services for a corporation can be a complex, multi-step process. First, purchasers have to find suppliers who make the product and determine whether they meet volume, delivery, quality and price requirements. Once a potential supplier has been chosen, detailed drawings and information are transmitted to the supplier so that the product is built to exact customer specifications. Assuming the product sample has been approved and the supplier’s manufacturing lines are ready for production, the buyer then transmits a purchase order (P.O.) for a specific quantity of goods. The buyer, meanwhile, receives notification from the supplier that the P.O. was received and confirmation that the order can be met. When the product ships from the supplier, the buyer again receives notification, along with an invoice for goods delivered. The buyer’s accounting department matches the invoice with the P.O. and pays the invoice. When changes to the normal order happen—a frequent occurrence in most companies—the process can be much more complicated.

Companies lower procurement costs by consolidating purchases and developing relationships with key suppliers to benefit from volume discounts and tighter integration in the manufacturing process. They also cast a wide net for lower-cost sources of supply. Large companies have been using EDI over private networks to reduce labor, printing and mailing costs in the procurement process. Automating routine procurement means the procurement staff has more time to focus on negotiating better prices and building supplier relationships. Analysts estimate that businesses already trade well over $150 billion in goods and services using EDI over VANs.41 Companies using EDI commonly save 5-10 percent in procurement costs.

The Internet has the potential to further reduce procurement costs. Large companies benefit from lower transmission costs versus private networks. The Internet also opens the door to doing business electronically with new suppliers and with small and
medium-sized suppliers who formerly communicated only via fax or phone. Small companies also benefit.

1.4. ii Reduced Inventory/The Right Products in Stock
The longer it takes for production schedules to reach suppliers, the more inventory a company has to hold to account for delays and errors, and the less quickly it can react to changes in demand. The more inventory a company holds, the higher its operating costs, and the lower its profits. Carrying more inventories does not ensure better customer service, either. Shelves weighed down with size-10 running shoes do not help the customer who wears a size 8. When a customer enters a furniture showroom looking for an armchair with green and white stripes and is told it's on back-order for 12 weeks, he may drive across town to a competitor rather than wait. Managing inventory properly results in better service for the customer and lower operating costs for the company. Increasing the frequency of inventory “turns” (the number of times inventory in existing warehouse or store space is sold or used for production each year) reduces inventory-related interest, handling and storage costs. Reducing inventory levels also means that existing manufacturing capacity is more efficiently utilized. More efficient production can reduce or eliminate the need for additional investments in plant and equipment.

1.4. iii Lower Cycle Times
Cycle time is the total time it takes to build a product. There are certain fixed costs associated with building any product that do not vary with the amount of production, but rather are time dependent. These “fixed” costs include depreciation of equipment, most utility and building costs, and most managerial and supervisory time. If the time to build a product can be reduced to seven days instead of ten, then the fixed costs per product are lower since less time was needed. Electronic commerce allows “cycle times” to be shortened, allowing more to be produced for the same or lower costs.

1.4. iv More Efficient and Effective Customer Service
Companies are beginning to use the Internet for customer service. Having product descriptions, technical support and order status information online not only saves money by freeing up a company’s own customer service staff to handle more complicated questions and manage customer relations, it can also lead to more satisfied customers.
1.4. v  Lower Sales and Marketing Costs

An individual sales person can support as many customer accounts as he can physically visit or contact by telephone. Therefore, as the number of accounts increases, so does the size of the sales force. Even direct marketing companies increase staffing as telephone order volume increases. By contrast, a Web business can add new customers with little or no additional cost. Because its sales function is housed in a computer server rather than physical store locations or sales people, its reach is bounded only by the capacity of the servers to respond to inquiries and orders. The Internet can also make traditional sales organizations, layered distribution channels, catalog sales and advertising more efficient. With automated ordering capabilities, sales representatives no longer have to prepare time-consuming manual orders. Instead, they can spend time building and maintaining customer relationships. Electronic catalogs present far more information and options than their paper counterparts. Direct marketing online can shorten repurchase cycles and increase the ability to sell additional items. Some recent business examples suggest the potential of the Internet as an efficient sales tool.

1.4. vi  New Sales Opportunities

The Internet operates around the clock and around the world. As a result, businesses on the Web can reach new markets they could not reach effectively with an in-person sales force or advertising campaigns.

For instance, a plastics commodity specialist at a large manufacturer can sit down at his PC, click on a Web browser and search for suppliers selling industrial plastics online. A small supplier with a limited sales force can now reach that buyer, getting its first introduction online. Similarly, a vendor's sales force may not be able to reach the millions of home offices and small offices around the country. By having an online presence and creating customized services for the small business market, that vendor may develop a new, lucrative market, both within the U.S. and globally.

1.4. vii  Consumer Benefits

1.4.vii.a  Access to More Information : One important consumer benefit associated with marketing on the Web is the access to greater amounts of dynamic information to support queries for consumer decision making.
1.4.vii.b Easier Market Research and Comparison: The ability of the Web to amass, analyze, and control large quantities of specialized data can enable comparison-shopping and speed the process of finding items. The Web facilitates trial and provides instant gratification; customers can test products online which may stimulate purchase. There is also the potential of wider availability of hard-to-find products and wider selection of items due to the width and efficiency of the channel.

1.4.vii.c Lower Costs & Prices Increased competition in procurement, as more suppliers are able to compete in an electronically open marketplace cause a greater competition, which naturally lowers prices and costs. This increase in competition, leads to better quality and variety of goods through expanded markets and the ability to produce customized goods.

1.4.viii Benefits to the Firm

1.4.viii.a Better Distribution—Firm benefits arise partly from the use of the Web as a distribution channel. First, the Web potentially offers certain classes of providers participation in a market in which distribution costs or cost-of-sales shrink to zero. This is most likely for firms in publishing, information services or digital product categories. For example, digital products can be delivered immediately; hence such businesses may encounter massive disintermediation or even the eventual elimination of middleman. Moreover buyers and sellers can access and contact each other directly, potentially eliminating some of the marketing cost and constraints imposed by such interactions in the terrestrial world. This may also have the effect of shrinking the channel and making distribution much more efficient (mainly due to reduced overhead costs through such outcomes as uniformity, automation, and large-scale integration of management processes). Time to complete business transaction may be reduced as well, translating into additional efficiencies for the firm. However, such potential efficiencies must be tempered with market realities.

Businesses on the Web transfer more of the selling function to the customer, through online ordering and the use of full-out forms, thus helping to bring transactions to a conclusion. This permits a third benefit in the form of capture of customer information. The technology offers the firm the opportunity to gather market
intelligence and monitor consumer choices through customers' revealed preferences in navigational and purchasing behavior in the Web.

1.4.viii.b Marketing Communications - At the present time, most firms use the Web to deliver information about the firm and its offerings for both internal communications with other firms and consumers. The interactive nature of the medium offers another category of firm benefits since it is especially conducive to developing customer relationships. This potential for customer interaction, which is largely asynchronous under current implementations, facilitates relationship marketing and customer support to a greater degree than ever before possible with traditional media.

Web sites are available on demand to consumers 24 hours a day. Marketers to hold the attention of the consumer by engaging the consumer in an asynchronous "dialogue" that occurs at both parties' convenience can use the interactive nature of the medium. This capability of the medium offers unprecedented opportunities to tailor communications precisely to individual customers, allowing individual consumers to request as much information as desired. Further, it allows the marketer to obtain relevant information from customers for the purpose of serving them more effectively in the future.

The simplest implementations involve engaging customers through the use of E-mail buttons located strategically on the site. More sophisticated implementations may involve fill-out forms and other incentives designed to engage customers in ongoing relationships with the firm. The objective of such continuous relationship building is dual-pronged: to give consumers information about the firm and its offers and to receive information from consumers about their needs with respect to such offerings. Hence, effective customized advertising, promotion and customer service is the other benefit.

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

1.4.x Supplier Opportunities and Customer Benefits

1.4.x. a Global Presence / Global Choice
The boundaries of electronic commerce are not defined by geography or national borders, but rather by the coverage of computer networks. Since the most important networks are global in scope, electronic commerce enables even the smallest suppliers to achieve a global presence and to conduct business world-wide.

The corresponding customer benefit is global choice - a customer can select from all potential suppliers of a required product or service, regardless of their geographical location.

1.4.x. b Improved Competitiveness / Quality of Service
Electronic commerce enables suppliers to improve competitiveness by becoming "closer to the customer". As a simple example, many companies are employing electronic commerce technology to offer improved levels of pre-and post-sales support, with increased levels of product information, guidance on product use, and rapid response to customer enquiries. The corresponding customer benefit is improved quality of service.

1.4.x. c Mass Customisation / Personalised Products and Services
With electronic interaction, customers are able to gather detailed information on the needs of each individual customer and automatically tailor products and services to those individual needs. This results in customised products comparable to those offered by specialised suppliers but at mass market prices. One simple example is an on-line magazine that is tailored for the individual reader on each access to emphasise articles likely to be of interest and exclude articles that have already been read.

1.4.x. d Shorten or Eradicate Supply Chains / Rapid Response to Needs
Electronic Commerce often allows traditional supply chains to be shortened dramatically. There are many established examples where goods are shipped directly from the manufacturer to the end consumer, by-passing the traditional staging posts of wholesaler's warehouse, retailer's warehouse and retail outlet. (Typically the contribution of electronic commerce is not in making such direct distribution feasible
since it could also be achieved using paper catalogues and telephone or postal ordering but rather in making it practical in terms of both cost and time delays.)

The extreme example arises in the case of products and services that can be delivered electronically, when the supply chain can be eradicated entirely. This has massive implications for the entertainment industries (film, video, music, magazines, newspapers), for the information and "edutainment" industries (including all forms of publishing), and for companies concerned with the development and distribution of computer software.

The corresponding customer benefit is the ability to rapidly obtain the precise product that is required, without being limited to those currently in stock at local suppliers.

1.4.x.e Substantial Cost Savings / Substantial Price Reductions - One of the major contributions of electronic commerce is a reduction in transaction costs. While the cost of a business transaction that entails human interaction might be measured in dollars, the cost of conducting a similar transaction electronically might be a few cents or less. Hence, any business process involving "routine" interactions between people offers the potential for substantial cost savings, which can in turn be translated into substantial price reductions for customers.

1.4.x.f Novel Business Opportunities / New Products and Services - In addition to re-defining the markets for existing products and services, electronic commerce also provides the opportunity for entirely new products and services. Examples include network supply and support services, directory services, contact services (i.e. establishing initial contact between potential customers and potential suppliers), and many kinds of on-line information services.

While these various opportunities and benefits are all distinct, they are to some extent inter-related. For example, improvements in competitiveness and quality of service may in part be derived from mass customisation, while shortening of supply chains may contribute to cost savings and price reductions.
1.4.xi Other Opportunities and Benefits

Fig 1.2: Showing Opportunity and Benefits

<table>
<thead>
<tr>
<th>Supplier Opportunity</th>
<th>Customer Benefit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Global Presence</td>
<td>Global Choice</td>
</tr>
<tr>
<td>Improved Competitiveness</td>
<td>Quality of Service</td>
</tr>
<tr>
<td>Mass Customisation &amp; Customerisation</td>
<td>Personalised Products &amp; Services</td>
</tr>
<tr>
<td>Shorten or Eradicate Supply Chains</td>
<td>Rapid Response to Needs</td>
</tr>
<tr>
<td>Substantial Cost Savings</td>
<td>Substantial Price Reductions</td>
</tr>
<tr>
<td>Novel Business Opportunities</td>
<td>New Products &amp; Services</td>
</tr>
</tbody>
</table>

Benefits to Sellers:
- Cheap global marketing for products using the means of multimedia.
- The potential for virtual corporations without real stores.
- Relatively small investments make the markets easily penetrable by so called microcorporations.
- Catalogs and other available information can be kept up to date.
- Customer service can be enhanced with email. Easy and responsive communication won't require as many clerks.
- Commerce can be fast and easy and will not be tied to time or place.

Benefits to Buyers

All of the advantages the seller has are also advantages to the buyer. A lighter sales channel can lower prices at the same time it raises the quality of customer service.

- Purchases can be made anywhere with a computer and a network connection.
- The sellers can modify their supply faster to real demand due to easier feedback from the customers through email.
- The roles of the manufacturers and sellers can be redistributed. Support will come from a party that is most capable of doing it. A network-savvy
manufacturer will probably support customers directly. An advanced retailer might on the other hand purchase the support from a third party.

- Communication through Usenet News and mailing lists has already created an independent source of information on products from other users.

Benefits to Other Parties

- Manufacturers want to have their goods on sale at as many points of sale as possible.
- Distributors may think of the new marketplace as a way to differentiate their services from those of their competitors.
- Banks feel that the new methods will increase the amount of financial transactions and the need for financing.
- Computer and software industry will have another field to sell their products and services.

Beyond all these tangible and intangible benefits there are other benefits that will result from its deployment.
1.5 Barriers and Risks of Electronic Commerce

1.5 A Barriers of Electronic Commerce
1.5 B Seven Deadly Sins of Electronic Commerce
1.5 C Party in Risks

If e-commerce is so hot, why it has still not made major impact? There are many reasons:

1.5.A. According to the site www.oecd.org the following are the barriers of e-commerce

1.5.A.i Access to and Use of Infrastructure: Before users can engage in on-line commercial transactions, they must be able to access and use the network infrastructure. This includes access to information technologies such as computers, servers and software, as well as to the network itself, which is composed of a number of different infrastructures: fixed-line communications, cable TV, cellular mobile networks, satellites, broadcasting networks and even electricity distribution networks. The constant and rapid decline in prices and improved information technologies have promoted their widespread diffusion.

1.5.A.ii. Infrastructure Capacity: Regulatory structures provide the market framework and incentives or disincentives to expand infrastructure capacity. At present, most households or business customers are connected to communication networks via a pair of copper wires, called the local loop, which is part of the public switched telecommunication network (PSTN). The speed of local loops and related total network capacity is likely to play a crucial role in how fast electronic commerce applications develop, diffuse through the economy, and are accepted by the public. This is because sophisticated electronic commerce applications will need to rely on relatively high-speed, high-bandwidth data transfers of sufficient quality for services, the development of that bandwidth largely depends on the existence of sufficient competition in the communications market.

1.5.A.iii. Network Convergence: As forms of communication become increasingly digital, allowing the development and integration of generic networks able to provide and support all types of applications, including entertainment, voice telephony, and electronic commerce will be key to expanding network capacity. Such convergence will be fundamental in shifting from regulatory structures and regulations that are specific to
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broadcasting and telecommunication markets and towards frameworks that emphasise open access to networks for all services. Network and service providers would then be subject to fewer regulatory restrictions than at present.

1.5.A.iv. The Local Loop: Local telephone tariffs currently account for more than 60 per cent of the average total cost of Internet access across infrastructure competition that puts pressure on prices and encourages innovation in pricing will largely depend on allowing competition between different network technologies to stimulate local loop competition. This will ensure that users and service providers have a choice in how they access electronic commerce applications or obtain access to their customers. However, incumbent operators have significant market power because of their near universal access to households and to most businesses. Regulatory safeguards are therefore necessary to ensure that new entrants face a level playing field as they develop their infrastructure and build their customer base.

1.5.A.v. The Domain Name System Needs to Evolve: The need for competition is apparent not only as the traditional communications networks are adapted to new conditions but also as new infrastructures are developed to serve a growing information society. The domain name system (DNS) is a case in point. It generates the root of Internet addresses (e.g. .be for Belgium or one of the generic top-level domains such as .com, .org, .net) for Internet hosts and is a crucial component of the Internet routing system.

1.5.A.vi. Building User and Consumer Trust: Trust is central to any commercial transaction. Typically, it is generated through relationships between transacting parties, familiarity with procedures, or redress mechanisms. Developing new kinds of commercial activities in the electronic environment largely hinges on assuring consumers and businesses that their use of network services is secure and reliable, that their transactions are safe, and that they will be able to verify important information about transactions and transacting parties, such as origin, receipt and integrity of information; and identification of parties dealt with. Furthermore, consumers want to have control over the collection and use of their personal data and to have appropriate redress mechanisms available in the event of a problem.
1.5.A.vii. **Security and Authentication:** The importance of information systems for society and the global economy is intensifying as the value and quantity of data transmitted and stored on those systems increases. At the same time, systems and data are increasingly vulnerable to unauthorised access and use, misappropriation, alteration, and destruction. Proliferation of computers increased computing power, interconnectivity, decentralisation, growth of networks and numbers of users, as well as the convergence of information and communications technologies both enhance the utility of these systems and increase their vulnerability.

1.5.A.viii. **Certification:** Secure technologies, most notably cryptography, and a predictable regulatory environment to support them will form the basis for building business and consumer trust in electronic transactions. Digital signatures, electronic signatures, and electronic representations that link individuals and entities to operations in the electronic environment are less meaningful without accompanying certification mechanisms -- means of independently verifying information about transactions and transacting parties. Like the physical world, the electronic world needs means of its own for certifying information. A certification authority (CA) can act as an independent trusted means of determining that factual information is verifiably connected to a transacting party. It could certify at least six types of information to provide a basis for confidence in electronic transactions: identification and registration, user attributes, compliance with standards, authorisation to act, transactional information, or applicable laws. Different kinds of transactions may require different levels of certification, and all transactions may not require verification of all kinds of information.

1.5.A.ix. **Protection of Privacy and Personal Data:** One of the hallmarks of electronic commerce is that, by drastically reducing transaction and search costs, it reduces the distance between buyer and seller, enabling businesses to target very small niches, develop individual customer profiles, and essentially provide a means of marketing on a one-to-one basis. The ability to realise this goal will largely hinge on the climate of confidence businesses are able to create in their relations with consumers. Assurances about protection of consumer privacy and personal data play an important role in building that confidence. Consumers want to know -- and have some control over -- the personal data or information on their on-line activities and electronic transactions that are collected.
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and how they are used. They have become more aware of and concerned about the ease with which data about them can be generated, compiled, accessed, processed, compared, linked, stored and used. Consumers may see the compilation of such statistical profiles as a threatening invasion of privacy, and this may retard the development of electronic commerce. However, trends in traditional commerce, such as participation in fidelity or loyalty shopping plans and the increasing use of payment methods that leave an electronic trail, suggest that consumers may either be ignorant of their erosion of privacy or willing to exchange some privacy for something they value (e.g. lower prices, convenience, personalisation). E-commerce could greatly facilitate this exchange, but informed consent by consumers is essential to its realisation.

1.5.A.x. Consumer Protection: Electronic commerce has many qualities that consumers find attractive: variety, convenience, personalisation and sometimes-lower prices. It also has properties that facilitate fraud and make prosecution difficult. In addition, its international nature means that the laws and regulations a consumer relies on for protection at home may not apply in the merchant’s country. Indeed, even determining jurisdiction may be a problem. Novel redress mechanisms may be needed to reverse problem transactions and give merchants incentives to ensure customer satisfaction.

1.5.A.xi. Minimising Regulatory Uncertainty: Associated with the issue of trust is general uncertainty about how existing regulatory frameworks will be applied or updated, and new regulations drafted, for this new realm. Both businesses and individuals want to know the expected consequences of on-line activities, and government action is one way to respond. Policy papers, such as those produced by Australia, the European Commission, Japan, and the United States, help to promote a predictable regulatory and legal environment by providing guiding principles that government and other bodies abide by. However, electronic commerce is inherently international, and in order to establish a consistent regulatory environment, some consensus must be found at international level. Some of the key problems in this regard are customs and taxation, intellectual property issues, and the updating of commercial codes, in particular those dealing with issues of liability and jurisdiction.

1.5.A.xii. Taxation: Assessment and collection of taxes on e-commerce transactions are an issue that concerns both government and business. Governments are concerned about
the potential loss of revenue and businesses are concerned about the possible impacts of government regulation. In the physical world, collecting taxes is a challenge that, by and large, governments have met. They will probably be equally successful in the "virtual" world insofar as countries interpret and apply existing rules in an internationally consistent fashion. If they succeed in this, they will not need to create new taxes specifically for electronic commerce. The potential for mistrust and uncertainty can be avoided if countries work together to develop a tax framework that protects the tax base but avoids hindering the development of electronic commerce.

1.5.A.xiii. Updating of Commercial Codes: Most rules and regulations for conducting business address a world of paper, physical products, and retailing within national borders. Electronic commerce calls for an evaluation and updating of the commercial codes that govern business transactions. Until these codes incorporate the digital world, e-commerce will be hampered. The situation is complicated by the inconsistency of codes among countries, many of which are a reflection of cultural norms. International harmonisation of these laws will require drafting a model law for commercial practices at international level, which can serve as a common framework. At a minimum, it should address issues such as the legal recognition of electronic signatures; acceptance of electronic documents for paper filing requirements; the formation, validity and enforcement of contracts; the harmonisation of rules that govern commercial communications (e.g. advertising, direct marketing) and commercial pricing practices (e.g. sales, coupons). Responsibilities need to be clarified across the chain of liability that extends from consumers to network access and service providers, software developers, intermediaries such as certification authorities and e-payment providers, and finally, the electronic commerce merchants themselves.

1.5.A.xiv. -Easing logistical problems: The growth of electronic commerce and its potential economic impact could be limited by a number of logistical problems relating to two necessary elements of any commercial transaction: payment and delivery. For electronic commerce to thrive secure and simple electronic payment systems must be in place. Furthermore, efficient and low-cost distribution channels are needed, both for physical delivery of goods ordered electronically and, as discussed under the section on
"access", for timely delivery of digital goods and services over crowded information networks.

1.5.A.xv. Paying Electronically: Wrapped up with issues of information infrastructure, user trust and confidence, and a predictable regulatory environment are the fundamental logistical problem of paying for electronic commerce transactions. Depending on the business model assumed, the problem is either Herculean, requiring a completely new system, or no problem at all, as existing methods of payment suffice.

1.5.A.xvi. The Delivery of Physical Goods: One barrier to electronic commerce is the fact that while on-line transactions are convenient, the immediate off-line delivery of goods is often costly and inefficient. The high cost and inconvenience of international parcel delivery are sufficient to limit the growth of international electronic commerce to luxury goods. Moreover, a recent survey of on-line shoppers by a market research company found that their most important criterion is timely delivery of goods. Of those polled, ". 96 per cent said that if their goods arrive on time they are likely to buy again from the same merchant, and repeat customers on average spend more than 50 per cent more than first time buyers". Two major barriers stand in the way of the inexpensive, convenient, and timely delivery of parcel packages: parcel delivery and customs clearance.

1.5.B According to David Geller the seven deadly sins of e-commerce

1.5.B.i: Over-Engineering

A common mistake is to attempt to develop a site that turns out to be too complex to ever be implemented. Often, well-intentioned projects never get off the ground due to unrealistic and convoluted plans. In many cases, the challenges created by new and unfamiliar technologies may be too great to overcome initially, and the new online store can be greatly delayed or abandoned altogether, as technical costs mount. To avoid over-engineering your online store, start simply by identifying the most basic goals of your online store and first implement those. When the basic system is in place, you can always add on all the bells and whistles.
1.5.B.ii: Biting off More Than You Can Chew

E-commerce can involve a highly complex combination of equipment choices, website building and hosting issues, as well as security and billing technologies, and the list goes on, it is easy to attempt to resolve all these issues when setting up shop, but the smarter strategy may be different. Instead of biting off more than anyone can chew, choose hosting services that provide turnkey solutions. In this way, you can concentrate on selling your product while delegating much of the technical chores to others.

1.5.B.iii: Forcing a Square Peg into a Round Hole

It is not to sell many of the products over the Internet because of factors like high shipping costs, high product liability issues, or the need for personal salesmanship. Before opening your online store to the public, evaluate your products suitability for online sales. Ask yourself some questions like:

...Would your prices entice shoppers to purchase your product... online rather than from retail stores?
...How costly will the shipping and handling be?
...Will the consumer trust your online service guarantees?

An objective assessment of your shares of success online can save you much time and expenses in the long run.

1.5.B.iv: Neglecting Security Issues

Network security should be a top priority when hosting an e-commerce site even before it goes live. Computer network experts are probably already aware of the pressing need to install the Windows NT service pack and of the dangers of leaving the packaged scripts in place.

If you are an intermediate user, you should seriously consider retaining the services of a network security consultant as well as installing specialized security software. If you are a beginner you should probably let an experienced hosting service take care of security issues.

1.5.B.v: “Going It” Alone

E-commerce pioneers generally share an innovative and entrepreneurial spirit, which may well, be the underlying secret of their success. However, when considering the vast complexity of e-commerce issues, it would be a mistake not to outsource some of the e-
commerce setup tasks, as needed. In many cases, even when using a turnkey hosting service like Yahoo! Store or Geo Shops, many new e-commerce stores never succeed due to a lack of professional design and marketing know-how. Consider retaining an e-commerce oriented Web development agency. Don’t go it alone, if you have the option of having professional, experienced backup.

1.5.B.vi: Design Faux Pas
To run an online store, sophisticated technologies are installed on the host Web server, or as it is often termed, the “back-end”. However ultimately, the prospective online shopper only sees the “front-end”, i.e., what is displayed in the shopper’s Web browser. For this reason, a well-designed interface is needed.

Without a professional, marketing oriented and easy-to-use page layout, even the most sophisticated back-end technologies will be of no use in deriving sales. Likewise, cluttered Web pages that make it difficult to navigate your site, or make it difficult for the shopper to know how to place an order, can cause an online store to fail. If you are serious about building a successful e-commerce site, make sure that your site works to your advantage, rather than a cause of lost sales opportunities.

1.5.B.vii: Neglecting the Telephone Number
It is a little-known fact that for many online stores the point-of-sale is not online, at all. Rather, a typical scenario might be that the shopper browses through the site, researches and compares values, but then finally places the actual purchase order over the phone. Yet, many sites fail to make a phone number available for ordering. To respond to shopper’s preferences a phone number should be listed prominently on every page of the site.

1.5.C Party Risks - According to the site www.Wgains.com the growth of the Internet as a medium for all types of commerce is by now well documented. Consumer products ranging from books and jewelry to furniture and cars are all being sold via Internet. Time-sensitive financial services like stock trading are fast becoming ubiquitous. Business-to-business commerce on the Web ranges from the sale of office supplies to computers and much more. Risk management science divides this topic into
two related areas: First Party risks to property or business interruption and Third Party risks of a liability nature.

1.5.1 - First Party exposures, otherwise described as direct loss and loss of use of information technology assets, can be caused by an expanding list of perils including:

- Physical damage to host computer equipment and network equipment
- Breaches of security by employees, former employees or contract professionals
- Breaches of security by outsiders (hackers)
- Destruction of information technology assets by employees, former employees or contract employees
- Destruction of information technology assets by outsiders (hackers)
- Disruption of computer networks due to computer viruses, e.g., Melissa virus
- Destruction of credit card or other credit information from customers leading to lost sales
- Credit injury to customers whose credit card numbers may be misused by unauthorized parties
- Lost E-Commerce revenues due to technological disruption (including telephone, data or internet service disruption on or off premises), particularly for time-sensitive industries like on-line brokerage firms
- Lost E-Commerce advertising revenues due to website disruption
- Disruption of E-Commerce due to "smurf" or "spam" attacks or incidents
- Lost new E-Commerce customers due to various forms of disruption
- Non-repudiation for various forms of disruption of time-sensitive E-Commerce
- Theft of intellectual property, trade secrets and other confidential information stored on company networks
- Cost of litigating against those who have infringed on company intellectual property
- Cost to restore damaged websites or networks
- Cost to repair or upgrade security systems/firewalls security.
- Extra expenses arising out of disruptions to Intranets and Extranets

These risk exposures are difficult to quantify in terms of frequency or severity. Their quantification is difficult primarily because: (1) Most companies do not reveal losses and the extent of their economic impact; and, (2) Since E-commerce is a young industry, insurers have not gained enough experience to formulate meaningful actuarial data.

However, a recent study by the CSI/FBI entitled, "Issues and Trends: 1999 CSI/FBI Computer Crime and Security Survey," indicates that 62% of the 521 companies surveyed reported one or more security breaches over the past year. While some losses may be small, undoubtedly some serious breaches occur as well.
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1.5.C.ii. - Third Party Risks Companies engaged in facilitating E-Commerce, including those who sell or service software that facilitates E-Commerce, face several exposures to financial loss. Among them are third party property damage, as well as liability arising out of the failure to deliver products or services. (Risk exposures like these are not very different from those of firms that provide software and related services for applications outside of E-Commerce.)

Another group of risk exposures encompasses all types of companies engaging in E-Commerce including legal liability for:

Wrongful access by hackers to credit card numbers or credit history information of a website’s customers

- Transmission of computer viruses
- Copyright, trademark, trade dress, patent infringement, piracy, plagiarism, misappropriation and other forms of intellectual property violations
- E-Commerce and web-casting related personal injury including libel and slander
- E-Commerce related advertising injury including false or misleading advertising
- Inappropriate access or control of regulated products/services such as sale of pornography to minors, sale of guns to convicted felons or sale of liquor across state lines
- Unfair blocking or screening of a website by an Internet Service Provider
- False light (public disclosure of private facts)
- Over redemption of internet coupons, contests or games of chance
- Harassment of "any and all" forms in chat rooms
- Misleading information posted in chat rooms
- Hacker access to a website with wrongful information, e.g., PairGain on Bloomberg; and failure to remove this information promptly
- Failure of hotlinks to function

These examples merely outline some of the apparent risks of E-Commerce, and others will become evident as the Internet and E-Commerce mature.
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1.6 Views and Trust in Electronic Commerce

According to the Professor J. Barrie Thomson, electronic commerce is changing the way business is being carried out. Globalisation and disappearing trade barriers means that worldwide commerce can take place without much difficulty. However, there are difficulties in deciding with whom one can trust and safely do business with. Kelman identifies the new electronic business age with the inevitable deployment of smart cards, digital signatures, digital certificates, trusted third parties and other electronic equivalents to conventional commercial systems. New risks will have to be assessed and understood and trading will no longer be able to rely on conventional trust enhancing mechanisms. New players, consumers and traders will feel vulnerable until they understand the risk factors and see them under some control. Requirements and components of trust will have to be introduced to enable electronic business transactions to be fully trusted. Companies also need trust statements, good commercial policies, and plausible ethical codes backed up by professional practices that will both increase and sustain trust.

Considering trust in Electronic Commerce two differing viewpoints can be identified - customer orientated, and organisational orientated.

1.6. A The Customer Orientated View

According to Ratnasingham, trust increases the amount of information sharing between trading partners thus enabling relationships to develop between businesses and customers. She goes on to describe trust as an essential ingredient for electronic commerce that should create loyal satisfied customers. However, she is also concerned with the perception of risk involved in the current electronic commerce environment. In the faceless online-commercial world participants need assurance that risks are reduced to an acceptable level. This could involve objective third parties looking after the interests of consumers. Possibilities that could be considered would be using authenticated seals on web sites and trusted digital certification with web sites subscribing to and adhering to a code of operating principles. These are likely to include the distinct elements:

1.6.A.1 (i) Business Practice Disclosures

Disclosing company information and stating business practices for online electronic commerce.
1.6.A.ii (ii) Transaction Integrity

The entities that are designed to maintain effective controls over customer orders to ensure they are billed and delivered as agreed.

1.6.A.iii (iii) Information Protection

Ensures that private customer information is protected, from uses unrelated to the business transactions with which they have undertaken with a particular Electronic Commerce company.

1.6.B The Organisational Orientated View

McCullagh\(^45\) considers that trust inspires confidence, but confidence in Electronic Commerce is not yet established, as he believes that "Trust" as a concept is often misunderstood. He considers that trust relating to electronic commerce has four major components:

i. Technology Trust
ii. Behavioural Trust
iii. Product Trust
iv. Legal Trust

1.6.B.i Technology Trust

Establishing trust in technology would be likely to involve assessment and understanding of computer systems and the security mechanisms present. This may result in trusting the outcome created by the process. Technology trust involves the use of fundamental Trusted Computing Security Evaluation Criteria, which as identified by McCullagh has six requirements:

1.6.B.i-a (i) Security Policy

There must be a well-defined and explicit security policy, which is enforced by the system.

1.6.B.i-b (ii) Marking

Labelled access control, which must be associated with objects.

1.6.B.i-c (iii) Identification

Identification of individual users must be specific.
1.6.B.i-d (iv) Accountability

A reliable system able to trace actions affecting security to responsible parties, incorporating selectively kept audit information that is protected.

1.6.B.i-e (v) Assurance

Hardware and software mechanisms contained in computer systems that enforce the security requirements must have enough assurance and be capable of being independently evaluated.

1.6.B.i-f (vi) Continuous Protection

Continuous protection of trusted mechanisms must be in place to prevent tampering such as unauthorised changes.

1.6.B.ii Behavioural Trust

Different types of societies have different attitudes to trust. According to McCullagh the Chinese, French and Italians have low trust cultures, where as, the USA, UK and Japan have high trust cultures. This is likely to affect electronic commerce in several ways through: legislative mechanisms, statutory bodies or third parties, and enforcement functions that assure that information is accurate, true, and complete. Information about the performance of an electronic commerce company and its ownership will effect the establishment of trust in different societies. For example, trust in state owned organisations might be higher in China than in Italy or France. However, high trust may be placed in well-established multinationals in the USA, UK or Japan but they may not be as trusted in China, France or Italy where a strong familistic (high trust only inside family) culture exists. For successful advancement of electronic commerce in low trust countries a better understanding of their low trust culture is desirable.

1.6.B.iii Product Trust

Trust is dependent on goodwill in relation to brand loyalty where the consumer trusts the name/brand of the product and establishes an emotional trust-bond with that company or its products. McCullagh states that the brand is the trust mechanism. Where a brand establishes good positive qualities it is positively trusted, although consumer trust can soon lost if the brand is tarnished by, for example, negative publicity. The protection of the consumer in this area is usually governed by
consumer protection either in law or consumer bodies. However, when we consider the immense global network available to electronic commerce companies and the diverse country to country standards for consumer protection we can see that product trust is likely to be problematic. Establishing consumer trust is not always easy or straightforward and can be very hard to maintain.

1.6.B.iv Legal Trust

McCullagh supports the case that there will not be a sufficient amount of trust established in electronic commerce without an adequate legal framework. He further states that it is not possible to reach absolute trust on the Internet. The problem with global electronic commerce is the enactment of legislation that provides assurance. Assurance through legislation will always be questionable and what is likely to happen is a balance of established trust and enacted legislation. The latter will need to be designed so that it will encourage people to take advantage of electronic commerce both domestically and globally. However, it is unlikely that there will be legal conformity across the globe on any one issue. Therefore the reliance on information provided by web-sites for specific country legislative issues will be paramount in establishing global electronic commerce trust from the consumer’s perspective.

Types of Trust

Ratnasingham looks at types of trust where one form of trust leads to another form of trust also implying that there are 3 basic forms of trust:

(i) Deterrence Based Trust

This deals with the threat of punishment, which could be a stronger motivator than promises of reward. It is not entirely based on punishment but on the rewards gained from not violating trust. An example of this is the preservation of trading reputation, which has been built up, by trading partners behaving in a trustworthy manner. This links the willingness to trust to the threat of resultant consequences.

(ii) Knowledge Based Trust

A type of trust linked to how much is known about a trading partner. Thetrustor is able to understand and predict the behaviour of the other trading partner (the trustee). This is likely to be derived over time as a trading relationship develops and the reliability of behaviour can be predicted.
(iii) Identification Based Trust

Based on common values, this type of trust involves common tasks not on individual intimations from trading partners. This is likely to be in the form of standard processes developed over time and where one party takes on the needs and desires of others as policy, which would also include joint gains for both parties.
1.7 Types of Electronic Commerce

Electronic commerce is said to bring about paradigm of change in the world of trading and that can be classified into four basic types. (For detailed note on B2B and B2C please see Appendix-II from page number 233-243).

1.7.A - Business – Consumer
1.7.B - Business – Business
1.7.C - Business – Administration
1.7.D - Consumer – Administration

1.7.A The Business-Consumer\(^{47}\) category largely equates to electronic retailing. This category has expanded greatly with the advent of the World Wide Web. There are now shopping walls all over the Internet offering all manner of consumer goods, from cakes and wine to computers and motorcars.

1.7.B The Business-Business category would be company that uses a network for ordering its suppliers, receiving invoices and making payments. This category has been established for several years, particularly using electronic data interchange (EDI) over private or value-added networks.

1.7.B.i The Inter-O rganizational\(^{42}\) (business-business) perspective, electronic commerce facilities the following the following business application.

1.7.B.i.a Suppliers Management – Electronic applications help companies reduce the number of suppliers and facilitate business partnerships reducing purchase order (PO) Processing Costs and cycle times, and by increasing the number of PQ processed with fewer people.

1.7.B.i.b Inventory Management – Electronic applications shorten the order – ship bill cycle. If the majority of a business partners are electronically linked, information once sent by fax or mail can now be instantly transmitted businesses can also track their documents to ensure that they were received, then by improving auditing capabilities this also helps to reduce inventory levels, improve inventor turns, and eliminate out of stock occurrences.

1.7.B.i.c Distribution Management – electronic applications facilitate the transmission of shipping documents such as bills of lading, purchase orders, advance ship notices, and
manifest claims, and enable better resource management by ensuring that the documents themselves contain more accurate date.

1.7.B.i.d Channel Management – Electronic applications quickly disseminate information about changing operational conditions to trading partners. Technical, product, and pricing information that once required repeated telephone calls and countless labor hours can now be posted to electronic bulletin boards. By electronically linking production-related information with international distributor and reseller networks, companies can eliminate thousands of labor hours and ensure accurate information sharing.

1.7.B.i.e Payment management – electronic applications link companies with suppliers and distributors so that payments can be sent and received electronically. Electronic payment reduces clerical error, increases the speed at which companies compute invoices, and lowers transactions fees and costs.

1.7.B.ii Intra–Organizational Electronic Commerce – the purpose of intra-organizational applications that are critical to declining superior customer value. The E-commerce facilitates the following business applications.

1.7.B.ii.a Workgroup Communications – these applications enable managers to communicate with employees using electronic mail, video conferencing bulletin board. The goal is to use technology to increase the dissemination of information, resulting in better informed employees.

1.7.B.ii.b Electronic Publishing- These applications enable companies to organize, publish, and disseminate human resources in annuals, product specifications, and meeting minutes using tools such as the World Wide Web. The goal is to provide the information to enable better strategic and tactical decision making throughout the firm.

1.7.B.ii.c Sales force Productivity- These applications improve flow of information between the production and sales forces, and between the firms and customers.

1.7.C Business Administration The Business-Administration category covers all transactions between companies and joint ventures organizations. Uncouthly this category is in its infancy, but it could expand quite rapidly as governments use their own operations to promote a waviness and growth of electronic converse.
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1.7.D Consumer- Administration- the consumer administration category has not yet emerged. However, in the wake of a growth of both the business consumer and business administration categories, government may extend electronic interaction to such areas as welfare payments and self assessed tax returns.

All these of commerce consist of many types of transactions and business fruition which can be completed via different of e-commerce common types include.

- EDI electronic data interchange
- EFT electronic fund transfer
- purchases
- marketing and promotions.
- customer service and billing
- inventory management for global and multi-location entities.
- organizational communications usually intranet.
1.8 Types of Relations in Electronic Commerce

The type of relationship determines the accessibility of information, acceptance and reliability of messages and transactions received or sent from one party to another, resulting business reactions.

The main four categories are:

1.8.a **IntraEnterprise** - between employees or organizational units of the same enterprise or institution. Such relationships can be inside a distributed organization which needs a constant flow of information between its separate sections. In this type of relationship the accessibility should be almost complete - there's no interest of hiding information, but more of sharing it.

1.8.b **Partner** - between "trusted" allies or between businesses with strongly common interests in the use of the linkage. Business partners, that co-operate in design or producing or marketing, might wish to share most of the information which is relevant for their shared fields of interest, yet they might wish to descrete other information, which may be "classified" or just irrelevant for the relationship. In this type of relationship both sides rely on each other, and therefore, the information that's being transferred should be reliable.

1.8.c **Stranger** - between two business parties, who have no agreed upon or mutual interests. Two parties or more might wish to combine their resources for a specific mission or deal, in a non-committing relationship. In such cases the transaction-information is carefully selected, and usually being double-checked by the reciever.

1.8.d **Customer** - might have conflicting interests. In a customer-seller relationship the information is presented only by one side - the seller. Naturally the presented information is not always reliable, since it fulfils only the interests of the seller. The transactions on the other way (from the customer to the seller) is usually reduced to service/product orders, and should be verified by the seller.
1.9 Application of Electronic Commerce Models

There are a number of services that electronically provide users with: world, national, local news, sport, weather, entertainment news including movie and television reviews, financial information including stock and bond prices, interest rates and foreign exchange rates, and books, encyclopedias, and journals, such as may be founding public library. Personal shopping services electronically transfer description of items from a retailer to a shopper, to the retailer. Other examples can home finance, home banking exchange messages; electronically (have to as electronically) carry on conversations between two or more individuals. Complex data structures both upon the basic forms of data will be transferred by electronic commerce application e-commerce may be used to transfer education information. Another potential application of e-commerce is cooperation development and many more. This part explains some of the applications of commerce model.

1.9 A-Corporate Purchasing

Corporate purchasing solution reduce paperwork and streamline purchasing processes by empowering employees to conveniently purchase and route appropriate approvals for their own office business supplies and other goods over the internet. Supply chain management solution link inventory, billing, and shipping between customers and suppliers to ensure more efficient supply/demand coordination.

1.9 B-Marketing and Promotions

Corporate identity and awareness programs, product and service marketing campaigns and electronic product and service literature publishing are just a few examples of now e-commerce support electronic marketing and promotions. Organizations can use the web to accomplish the following:

- Attract new customers through marketing and advertising
- Serve existing customers via customer service and support functions
- Develop new markets and distribution channels for existing products
- Develop new information based products for business to business and business to consumer e-commerce, organization do need to consider, however, who they’re likely to reach via the Web, particularly with respect to consumers. Many consumers, particularly those new to the webs know the specific names of the web sites for which they’re searching. Traditional advertising, such as print, television, and radio, can help build awareness for business-to-business web sites
as well. Expectations are also changing, and organizations must be able to meet
the new expectations they promote through e-commerce marketing.

1.9 C-Brand Management and Awareness
The web enables organizations to get the world out faster and to longer audiences than
ever before. However, merely marking people aware of your organization's existence is
not enough, you need to present relevant information that gets the point across.
Implementing E-commerce using a digital nervous system can help organizations with
marketing and advertising, brand name management, and dissemination of product
catalogs and sales information. E-commerce also makes product announcements easier
and faster to deliver. Everyone from the raw material supplier to the ultimate seller in the
chain must be able to products and services. Business partners must decide together
which areas they will try to link firs. Each partner then focuses on key internal groups
that have the most to gain by adopting Electronic Commerce. These groups will provide
early successes and by in, which are the keys to driving adoption throughout the entire
organization. Electronic commerce affects everyone's role in the supply chain and acts as
a customer in others commerce helps the supply chain work more effectively and
efficiently by lowering the cost of SCM activities, which can ultimately reduce prices to
consumers. Because of the expanded marketing opportunities, Electronic Commerce
increases options available in products and service and speeds the delivery of products
and services to the ultimate consumer. Electronic Commerce also makes purchasing
products easier for all customers along the chain. Effective supply chain management
involves integrating all supply chain activities into one solid system.

Electronic commerce can help supply chain management teams determine how much of
each raw material or intermediate or finished product should be processed at each facility,
e-commerce can also help organizations decide which supply sources should be chosen.
Working with their business partners, each player in the supply chain interactively
determine the best production schedule, size, and sequence, Electronic Commerce helps
business partners share information that enables them to forecast demand most accurately
for each individual customer.
1.9 D-Customer Relationship Management

Electronic commerce provides business with a growing, dynamic channel for efficient delivery of goods and services, electronic to business commerce. E-commerce enables organizations to market goods and services to consumers and businesses alike online in a more personalized, dynamic environment and will increasingly include the delivery of digital goods and software, electronic media, and information. Customers, (business to business and business to consumer) have a dramatic impact on the way goods and services are managed, purchased, and sold from producer to customer/consumer. Electronic commerce provides organizations with these benefits.

- Increased speed and accuracy of information sharing between organization and their customers.
- Improved relationships with customers. Organizations make fewer errors when taking orders and are able to deliver goods and services to customers more quickly and efficiently.
- Better management of the customer relationship using E-mail, online FAQ (frequently asked question) lists, and automated problem-resolution systems.
- Faster response to customer orders, requests and problems, which ultimately help increase customer satisfaction.

A digital nervous system puts the customer at the center of this process. By using technology to deal directly with customers, business has the potential to deliver improved methods of customer service and the ability to help customers solve their own problems. As an organization's digital nervous system is extended beyond its walls, the organization begins to realize the benefits of using such a system for customer relationship management. One major benefit of using technology in this manner is close customer interaction, enabled by the web. Connecting all parts of the organization (and its business partners) and sharing customer information enable rapid collaboration and response around new customer opportunities of potential customer losses. By using the Internet to connect to information, and act quickly on customers and partners, provide improved access to information, and act quickly on customer/market feedback, an organization can better manage the customer relationship.
1.9 E-Customer Billing and Payment
As E-commerce grows, more organizations are looking to save time and money by billing and receiving payments from customer via the web. The seller can save time and money by generating bills directly from its accounts receivable system, which can cut the estimated cost of billing between 35 and 50 percent. Web based bill delivery and payment require a unique combination of corporate and consumer software expertise along with efficient transaction processing and proven operating capacity.

1.9 F-Online Help Desks
Online help desks are another useful feature of electronic commerce. Organizations can save huge amounts of money by providing online, automated help 24 hours a day, rather than using employees to answer individual customer questions. Since many customers ask common questions, providing a FAQ (frequently asked questions) section can save an organization significant time and money. During off hours, customers can check the status of orders, get answers to frequently asked questions, and have access to knowledge base than can help them solve problems.

1.9 G-Product Catalogs and Online Buying
Online, information-only catalog web sites were one of the first uses of E-commerce on the web. Today, catalog companies provide full-color catalogs, online purchase and return services, and 24-hour general customer service.

1.9 H-Purchase Orders/Order Entry
According to an Electronic Commerce Association (ECA) study, only 5-10 percent of organizations are actually doing E-commerce based purchasing in the business-to-business arena.

1.9 I-Customer Service
A digital nervous system can provide a fast easy way for an organization to help customers.

Examples
There are many well-established examples of electronic commerce in a wide range of industry sectors and a wide range of application areas. A few of these will serve to illustrate the nature of current activity.
Retail

ibs (http://www.bookshop.co.uk)
The Internet Bookshop exists only as a site on the World Wide Web - it has no physical outlets. The shop specialises in technical books and currently offers more than 780000 titles. Customers visiting iBS can browse, search using keywords, and obtain detailed information on individual titles, including a descriptive text, bibliographic information, contents list, reviews, and suggested readership. They can order and pay for books, which are then delivered through publishers' established international delivery channels.

Virtual Vineyards (http://www.virtualvin.com)
Like iBS, Virtual Vineyards exists only as a site on the Web. It offers wines and gourmet foods, providing an outlet for a number of small Californian wine producers. There is detailed on-line information on the various wines and foods, and also an on-line query service (using e-mail). Customers can order and pay using either credit cards or electronic cash. Customer orders are transferred electronically from Virtual Vineyards' San Jose office to their Napa Valley warehouse, along with instructions from printing the shipping label and enclosures (such as tasting notes). The goods are shipped by Federal Express. Customers can track the progress of the delivery on-line by accessing the Federal Express site.

Finance

Barclays Bank (http://www.barclays.co.uk)
Many banks have offered on-line querying of accounts for some time. Following relaxation of controls on the export of security technologies from the USA, Barclays has extended this to a large scale trial offering customers full banking services from their home computers.

ESI (http://www.esi.co.uk)
Electronic Share Information Ltd offers an on-line share information and trading facility. Customers can view London Stock Exchange prices and the FTSE 100 index, buy and sell shares on-line via ShareLink, use a range of technical analysis and research tools, obtain company profiles and share tips, request automatic notification of share price changes, and obtain real-time portfolio valuations. Launched in September 1995, the service now has 15000 registered users and attracts 1.25 million visits per month.
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Distribution

DIPA
DIPA GmbH supplies high quality photographic images. Customers can browse an extensive photographic library and order the required images which are then delivered over satellite links.

Oracle (http://www.oracle.com)
Potential customers can now access Oracle's Web site and browse information on the company's products. They can then download free trial versions of various products, or pay on-line and download full versions. Because of potential legal and financial problems, the on-line purchasing and delivery service is currently limited to United States customers only.

Pre/post Sales Support

Hewlett Packard (http://www.hp.com)
Hewlett Packard's "Access HP" Web site provides thousands of pages of information, including general company information, news, worldwide contact points, new product announcements, and details of HP's wide range of products and services.

GE Plastics (http://www.ge.com/cep)
GE Plastics is an industry leader in the field of engineering plastics. The company's Web site provides an overview of the company's products, detailed profiles of the properties of each material, and guidance and recommendations for designing applications using the company's materials. There is also an on-line "Technical Tip Of The Week" contest whereby any visitor can submit a tip for working with GE materials. The company selects the best tips for incorporation into its "Past Technical Tips" pages.

Engineering design

Ford
Ford engineering teams worldwide collaborate in the design of new car engines using Ford's private network. The design support system is a combination of a real-time videoconferencing system and a shared "design whiteboard". Any participant in a design conference can draw or write on the whiteboard, drag objects onto the whiteboard, and edit objects on the whiteboard. All changes to the whiteboard are immediately visible to
all other participants. The object types supported include CAD drawings, text documents, and video clips.

**GEN** ([http://www.gen.net](http://www.gen.net))

The Global Engineering network is co-ordinated by Siemens Nixdorf and has participants from many European countries. GEN is a "marketplace for engineering knowledge", bringing together the suppliers of components and sub-assemblies and those who might incorporate those components or assemblies into their own new products. The suppliers enter detailed technical information (perhaps including 3D CAD drawings) into the GEN network. Potential customers can then search the supplier information looking for "best fit" components or assemblies, and can experiment with incorporating those components or assemblies into the early stages of their own product designs.

**Business Support**

**CitiusNet** (e-mail: mailto:citius@mail.citius.fr)

CitiusNet is a well-established system for supporting business-to-business electronic commerce. It currently has three major elements - altius, citius and fortius. Altius is an electronic catalogue of industry and office supplies. Citius is a system for handling trading transactions. Fortius supports electronic payment by EDI, and is used not only for payment of goods selected from altius and traded over citius, but also for routine transactions such as pension and insurance payments. citiusNet is a multi-language service that is offered internationally. The systems were developed by DDP from Lyon, France, with the co-operation of various partners from Spain, Belgium, Germany and Italy. DDP now plans to extend its services to offer general business support ("Intermediation"). DPP will handle all routine operations (banking, administration, pension funds, etc.) on behalf of its subscribers, thus allowing those subscribers to concentrate on their core businesses.

**Publishing**

**The Times** ([http://www.the-times.co.uk](http://www.the-times.co.uk))

The Times and the Sunday Times are now published on-line. The complete content of the newspapers is available, and access is free. Using the "Interactive Times" facilities, users of the on-line service can tailor the newspaper to their own personal interests and tastes or perform a search for past articles that include specified keywords.
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Professional Services

De Kreek (http://www.dds.nl/dekreek)

Mr Jeroen de Kreek, a lawyer from Amsterdam, provides a legal question answering service that is available 24 hours a day. Users of this service are led through a hierarchy of menus that aids them in ultimately formulating their question as a text message. Mr de Kreek then responds to this question, normally within two hours. The response to the first question is free, but subsequent questions incur charges.

International contact

Global Tradepoint Network (http://www.unicc.org/untpdc)

The Global Trade point Network is a huge network of business information, developed under the UN-supported Electronic Trade Efficiency Programme. By interfacing to established national databases, the network aims to supply key trading data for countries across the world. Such data might cover, for example, market information, transportation options and prices, insurance facilities, credit availability, customs requirements, and import/export regulations. Further, through its "electronic trading opportunities" system, the network serves as a meeting place for buyers and sellers world-wide. Potential matches between buyers and sellers are identified by using both geographical details and information on products offered or required, the latter being expressed using the Harmonised Customs Tariff codes. Once a potential match has been identified, the buyer and seller establish contact directly.

Shared business processes

Tesco

Tesco operates around 540 supermarkets in the UK. The company has a "sales based ordering" system whereby information on product sales at individual supermarkets, as collected by the checkout scanners, is forwarded electronically to the computers at the company's Store Control Centre. These computers determine the goods needed to replenish the stock at each store, and send this information electronically to the computers at the Tesco depot serving that store. For many products Tesco itself holds no stock, so orders are generated automatically and forwarded to Tesco's suppliers using EDI. On delivery to the Tesco depot, the replacement stock is immediately shipped on to the appropriate stores. Within 24 hours of an item being sold by the supermarket its
replacement is back on the shelves. The re-stocking system relies on electronic communication and on close co-operation between Tesco and its suppliers, who in effect are partners in a shared business process of replenishing products on the supermarket shelves.
1.10 Electronic Commerce Project Life Cycle

Below are the seven stages of the Electronic Commerce life cycle. Each is linked to resources that are useful in managing each stage.

1.10.a- Awareness Training
1.10.b- Business Analysis
1.10.c- Requirements Analysis
1.10.d- Design
1.10.e- Implementation
1.10.f- Integration and Validation
1.10.g- Maintenance

1.10.a Awareness Training- is done to give key people in a company a basic understanding of what a technology is, what it can do for them, and where resources can be found (e.g. consultants, training) to make decisions about implementation. Working at this stage assumes that people know nothing or little about the technology and feel a need to know more. It provides people with a framework for intelligent discussion and planning about a particular form of electronic commerce.

1.10.b Business Analysis- Once there is awareness it is all to easy to jump to the detailed planning of stage 3 - requirements analysis. But business analysis is critical if Electronic Commerce is to provide maximum value to an organization. The worst case is that without business analysis, electronic commerce will be counterproductive. The more likely possibility is that without deliberate business analysis electronic commerce will have some benefits, but with greater expense and less return than should be the case. The goal of business analysis is to move a company toward the best case, i.e. an electronic commerce environment that will make the company more efficient, more productive, and more competitive.

1.10.c Requirements Analysis- is identification of the electronic commerce system that will meet the previously defined business needs. As an example a business need may be to keep customers informed of ever changing products availability, costs, and terms. The requirement to meet this need might be a Web based catalogue linked to a data base on prices and availability; and set in a new organization where a single group maintains a common data base for the Sales and Purchasing Departments. Requirements analysis can be seen as a "wish list", or as an envelope of electronic commerce system functioning within which solutions can meet business need. In the real world it is impractical to build systems that will meet all requirements. On the
other hand it is impossible to build a system that will meet any requirements unless those requirements are clearly articulated.

1.10.d Design - is an activity which sets out the specifics of system. Questions to be resolved at this stage include:

- What will the system do?
- What is the system's design?
- Who are my potential vendors?
- By when do I need different parts of the system up and running?
- What tasks need to be done, and by when, to get the system implemented?
- What will the system cost?
- How will the system be integrated into other existing systems?
- What people have to be involved in the process, and for how much time?
- What are the needs for training?
- What teams need to be formed to implement the system?
- What organizational changes are needed to take advantage of the system?

1.10.e Implementation - The purpose of the implementation phase is to acquire and implement the system. This is the phase when new technology comes in the door, training is conducted, reporting relationships change, and new electronic commerce processes begin to function. Making this work involves careful management of activities and resources to move from the previously developed "paper-based" plans to the reality of implementing new systems in a company that at the same time is trying to satisfy its customers and respond to ever changing business conditions.

1.10.f Integration and Validation Testing - makes sure that the system performs in accordance with its specifications. In other words, that it does what it is supposed to do and does not do what it is not supposed to do. First, individual modules are tested in isolation. Then integration testing begins as modules are hooked together. Finally the entire system is tested with the participation of the users. At this point the system may be put into service, but testing can be said to continue for a few months to assure that users are able to accept the system as a tool to assist in their routine work.

1.10.g Maintenance - the last phase of the project life cycle is what happens to the system after it has become operational. It includes changes to the hardware, software, and procedures for using the system. This phase includes keeping the system going, adapting it to unforeseen circumstances, and planning for the evolution to new systems to meet changing business needs and the potential offered by new technology.
1.11 Infrastructure of Electronic Commerce

Just as in traditional commerce electronic commerce requires a substantial infrastructure composed of intermediaries that allow sellers to transact business with buyers.

The infrastructure of e-commerce may be broken down into four parts.

1.11.a. Network service providers (eg. Internet access)
1.11.b. Hardware (eg PCs, routers servers etc)
1.11.c. Software to run this hardware and electronic commerce packages.
1.11.d. Enabling services (e.g. e-payment, authentication, certification, services, advertising).

1.11.a The foundation is the intermeshed and wide -area telecommunications networks, extended by the metropolitan and local area nets. Deploying both guided (such as the fiber-optic and coaxial cable and wireless transmission media (such as the satellite microwave and the radio under computerized control, these networks span the globe.

Thus E-commerce is inherently global. Yet there are, and will persist major differences in national and regional development of the infrastructure as well as in the national governance of telecommunications, with government monopolies in a number of countries limiting the deployment and imposing high telecommunications costs.

The telecommunications capabilities are delivered for business use through two essential means. The older order is that of proprietary value added networks (VANS) established by the vendors to deliver services over and above those of common carriers that are licensed by government to provide communications services to the public. The new order is that of the Internet, which has become the principal vehicle of E-commerce. The following are essential for creating successful e-commerce network.

1.11.a.i. Speed is of utmost importance in the list of e-commerce requirements. Studies show that Internet users will wait no longer than 30 seconds for a page to load and no longer than two minutes for a system to return information. Internal users want consistency in speed to know, for instance, that it will always take 10 seconds to retrieve e-mail, not five seconds this time and 70 seconds next time. External
customers will not tolerate delays. If they wait too long, they'll move to a competitor's site.

1.11.a.ii. **Security** is a major issue to manage when dealing with the Internet. In spite of a firewall and pass-through to the database and line-of-business applications, there's always a chance that business data will be compromised. Access policies, IP tunneling, IP masking, and encryption are commonly used security measures.

1.11.a.iii. **Reliability** is also essential. Many Internet users are forgiving of occasional outages and downtime, but there are too many factors outside of your control that affect this. Internal corporate users, however, are less forgiving. With more vital-to-business information stored on remote servers and applications, downtime and delay-causing congestion means an operating loss.

1.11.a.iv. **Scalability** is a requirement from day one. The number of users can never compromise the speed of the e-commerce application. The site you build should have room to grow by a factor or 1,000 as your online business grows; thus, if you are now supporting 100 transactions per day, you should prepare to handle as many as 100,000.

1.11.a.v. **Ease of Management** keeps the network traffic flowing at a smooth pace at all times. Few Internet applications provide tools to measure performance, which is necessary to ensure network efficiency.

To support the rapidly growing commercial Internet landscape an entirely new industry called Internet services Providers (ISPs) has emerged in the last five years. The Internet service Provider industry offers a wide variety of technologies and services.

- Internet access for consumers and organization
- Network Management
- Client and server software for managing and publishing
- Payment Systems

1.11.b **Hardware** means a personal computer with modem and telephone line. Routers they exchange information between themselves so that they know the conditions on the network, which links are active and which nodes are available. Servers are special Internet computers web server can host one or more web sites.
1.1.1.c. Software means those packages or programme that allows people to access World Wide Web. Internet Explorer and Netscape Navigator are the two most popular web browsers.

1.1.1.d. E-services means those services, which are there on Internet either via credit card or any other means as offered by the organizations.

1.1.1.i Industry Framework of E-commerce

Electronic commerce not only affects transactions between parties, it also influences the way markets will be structured. The Information Superhighway

The Information Superhighway has many different types of transport systems and does not function, as a monolithic entity is no single interstate highway that connects the digital equivalent of Los Angeles to Miami. Instead, the architecture is a mixture to many forms of high-speed network transport, whether it be land-based telephone, air based wireless, modem-based PC, or satellite-based. For instance, mail sent from a portable PC in the French Riviera to a computer in Los Angeles might travel across several different types of transport networks interconnected with each other before it reaches its destination.

The players in this industry segment can be called information transport providers. They include: telecommunication companies that provide phone lines, cable TV systems that provide coaxial cables and direct broadcast satellite (DBS) networks; wireless companies that provide mobile radio and satellite networks; and computer, including private networks like CompuServe or America Online, and public data network like the Internet.

This industry segment also includes hardware and software tools that provide an interface with the various network options, and to the customer premises equipment (CPE), or terminal equipment which is a generic term for privately owned communications equipment that is attached to the network. This category of subscriber terminal equipment can be divided into three parts: cable TV set-top boxes, computer based telephony, and networking hardware (hubs, wiring closets, and routers or digital switches). The terminal equipment is in fact the gateway to information services, commercial transactions, and 500 digitally compressed channels.
The biggest area of growth over the last five years has been in the router business. Routers and digital switches help to connect large networks (or internet works). Routers are devices that can connect the local area networks (LANs) inside various organizations with the wide area networks (WANs) of various network providers. This interconnection enables easy communication between separate networks across geographical distances and providers access to distributed computing resources. The router industry is a multibillion dollar industry that is dominated by players such as Cisco, Bay Networks, and #COM, all three of which supply equipment that links data communications networks through the internet. In a recent valuation by Business Week, Cisco was rated as the fortieth largest company in America, with a market value of $26 billion. Not bad for a company with an extremely specialized product.

1.11.i.a Multimedia Content and Network Publishing

The Information Superhighway is the transportation foundation that enables the transmission of content. The electronic system through which content is transmitted is analogous to the non electronic world in which different types of product (content) are stored in distribution centers (network publishing servers) before they are loaded onto various vehicles for transport.

Currently, the most prevalent architecture that enables network publishing is the world wide web. The web allows small businesses and individuals to develop content in the form of Hyper Text Market Language (HTML) and publish it on a web server. In short, the web provides a means to create product information (content) and a means to publish it in a distribution center (network server).

1.11.i.b Messaging and Information Distribution

The information content transferred over the network consists of text, numbers, picture, audio, and video. However, the network does not differentiate among content, as everything is digital that is, combinations of ones and zeros. Once content has been created and stored on a server, vehicles, or messaging and information distribution methods, carry that content across the network. The messaging vehicles is called middleware software that sits between the web...
servers and the end user applications and masks the peculiarities of the environment. Messaging and information distribution also includes translators that interpret and transform data formats.

Messaging vehicles provide ways for communicating non formatted (unstructured) as well as formatted (structured) data. Unstructured messaging vehicles are fax, electronic mail (Elec-mail), and form-based systems like Lotus Notes. Structured documents messaging consists of the automated interchange of standardized and approved messages between computer applications via telecommunications lines. Purchase orders, shipping notices, and invoices are examples of structured document messaging.

For the purpose of electronic commerce, existing messaging mechanisms must be extended to incorporate reliable, unalterable message delivery that is not subject to repudiation, to be able to acknowledge and give proof of delivery when required. The challenge in the development of messaging software is to make it work across a variety of communications devices (PCs, workstations, set-top boxes, and wireless communications), interfaces (characters, graphics, and virtual reality), and networks (satellites, cable, twisted pair, fiber optics, and wireless).

Common Business Services Infrastructure

Doing business online has received attention for its potential, as well as for such shortcomings as inadequate directories, inadequate online payment instruments, and inadequate information security. The common business service infrastructure attempts to address these shortcomings.

This infrastructure includes the different methods for facilitating online buying and selling processes. In online commerce, the buyer sends an electronic payment (a form of electronic check to digital cash) as well as some remittance information to the seller. Settlement occurs the payment and remittance are authenticated by the seller and accepted as valid.

In order to enable online payment for information and ensure its safe delivery, the payment services infrastructure needs to develop encryption (making contents
indecipherable except for the intended recipient) and authentication (making sure that customers are who they say they are) methods that ensure security of contents traveling on the network. In addition to generic payment services, electronic commerce will need to accommodate other desirable payment related service such as currency exchange, cash management, escrow, investment and brokerage, financial information and reporting, and billing and payment. The development of secure transactions and secure online payment instruments (such as digital cash and electronic checks) is currently one of the most active areas of electronic commerce research/development.
Chapter 1

1.12 Legal Issues of Electronic Commerce

Issues concerning Electronic Commerce: There are few Issues concerning Electronic Commerce, which can be summarised below.

Legal issues regarding e-commerce one of the difficulties to resolve because cyberspace doesn't really exist as a physical place, where should legal issues be resolved, and who have the right to adjudicate those cases. The case law for e-commerce is still immature and incomplete. Both national and world courts can set any standard laws governing e-com. The Internet is frequently referred to as the new "wildwest". Unbridled by law. As business flock to the Internet the private citizens, including children, increasing use the internal, its environment is facing scrutinizing by government agencies, consumer groups, and business coalitions. Depending on the issue, some groups want lawmakers to intervene, impose and enforce "laws of the land "to this new wild west. However, on other issues, the very same group can vehemently oppose any legislation acts and proper self-regulation. For those issues where intervention is designed, the problem is to decide what law for what land in this global environment. Each country has three categories of Internet users to serve.

1.12.i Government and Law Enforcement Agencies
1.12.ii Businesses
1.12.iii Private Citizens.

The primary issues forced by these three groups are

1.12.a Encryption Regulation
1.12.b Privacy Rights of Citizens
1.12.c Impropriate Web Linking Practices
1.12.d Domain Name Disputes
1.12.e Tax Polices
1.12.f Electronic Agreements
1.12.g Laws and the Responsibility of Internet Service Providers.

1.12.a -Cryptography Issues- Cryptography is a method of mathematical encoding used to transform messages into an unreadable format in an effort to maintain confidentiality of data. The important point to understand is that the encryption process transforms a clear text message into non- deciperhable known as cipher text. Encryption and decryption keys are necessary to transform clear text into cipher text and vice-versa. Good encryption methods mask the underlying message, and deciphering well-encoded
message should be virtually impossible without the decryption key. The strength of the description process is largely dependent in the key size. The larger the key size, the stronger the encryption process. Because of the inability to decipher well-encoded message, government bodies and law enforcement agencies are very concerned with issues surrounding the length of the key. Two very controversial legal issues arise regarding keys.

- how large a key length will the government allow to be exported outside the country.
- what kind of access privileges, if any, to decryption keys should law enforcement agencies be granted.

1.12.b- Privacy Issues- Became of the vast amount of data that can be collected on the Duernet and because of its global nature, private citizens worldwide have expressed concerns over their rights to privacy. Shoppers browsing through various stores in a physical shopping mall, stopping to glance at a specification in as specific store, do not have to worry that their energy move is recorded. The available technology, however, used in electronic commerce and internet sites makes it perfectly feasible for data to be recorded about every item “clicked-on” by a user browsing through an web site privacy groups around the world have formed in the interest of protecting the privacy night of India duals. A few of these groups are.

- center for Democracy and technology
- electronic Frontier foundation.
- electronic privacy information center.
- privacy rights leaving house.
- outline privacy Alliance.

The information privacy very generally to be the night to have one’s personal or business data kept confidential.

The five core principles of privacy protection that are generally widely accepted.

-Notice consumers should be made aware of an entity’s information practices before any personal information is gathered.
-Choice consumer should be given the opportunity to cost on denying any secondary uses (uses other than the processing of a transaction) of information. Secondary uses include mailing notice or transfer data to third parties.
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Access-consumer should be able to access the personal data and review it without significant delays. Further, consumers should be able to easily correct inaccurate personal information in a timely manner.

Integrity and security the data regarding consumer’s personal information should be processed in a fashion so that the data is accurate. Further, the data need to be kept confidential as it is transmitted, processed and stored by the entity.

Enforcement consumers should have recourse if any of the above care principles are violated.

There are other several categories of concerns arise relating to privacy issues depended upon the self-regulation of different countries.

1.12.c Web Linking Issues- The Internet is built on the concept of hypertext or an image, which has the address or location of another web page attached to it. When a user clicks on the hypertext link they are instantly transported to the attached location and the associated web page is automatically loaded. The links are frequently to web pages that reside on quarter site. These a user that clicks on the hypertext link at one site may “jump to author site. This ability to place, at no cost other than many simple programming a link to any web site in the world allows users to traverse the internet, following paths that will hopefully lead them one useful voyage.

Legal issues arise however, as business organizations, and individual web sites begin to inset links to sites from their web sites. Some practices that have already caused disputes include.

- Inappropriately referencing a linked site.
- Retrieving and displaying information from a linked site without proper reference.
- Retrieving and displaying information from a linked commercial site with advertising
- Frames without displaying the site’s advertisements along with the retrieved document
- Unauthorized use of trademark in meta tags.
- Unauthorized display of registered trade marks.

1.12.d Domain Home Disputes Prior to 1992, the U.S government directly the administration of top level domain names such as “com” (commercial) or “org” (organization). In 1992, the U.S government contracted with a corporation, network solution inc. (NCI), to administer the top-level domains.
called inter NIC, which is located at NCI and funded in part by the national science foundation in October 1998, the U.S government intended to hand over this task to an international move profit corporation, Internet corporation for assigned names and numbers.

As many business entities and services organizations have expanded their cities to the www, the assignment and use of top-level domain names has resulted in turf battles over domain names, many of which involve the use of trademarks. Thirdly domain names were to be method posed some problems.

- Companies with similar or identical trademarks for different products, both using to use the same domain move.
- Individuals or business registering for domain of competitors to use as a marketing device.
- Individuals or businesses registering domain names for which they personally have no use and holding them “hostage “ for a ransom.

Today domain names are still issued on a first-come, first serve basis, but applicants are explicitly informed that in issuing the requested domain name that no other equality has registered with the same name.

### 1.12.e Internet Tax Issues

Companies that do business on the web are subject to the same taxes as any other company. However, even the smallest web business can become subject to taxes in many sates and countries instantly because of the Internet’s worldwide scope. Traditional businesses may operate in one location and be subject only to one set of tax laws for years. By the time those businesses are operating in multiple states or countries, they have developed the internal staff and record-keeping infrastructure needed to comply with multiple tax laws. Firms that engage in electronic commerce must comply with these multiple tax laws from their first day of existence. An online business is potentially subject to several types of taxes, including income taxes, transaction taxes, and property taxes. Income taxes are levied by national, state and local government on the net income generated by business activities. Transaction taxes, which include sales taxes, use axes, and customs duties, are levied on the products or services that the company sells or uses.
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Customs duties are taxes levied by the United States on certain commodities when they are imported into the country. States and local governments on the personal property and real estate used in the business levy property taxes. In general, the taxes that cause the greatest concern for web business and income taxes and sales taxes. The number of taxing authorities in the United States exceeds 30,000.

1.12.f Electronic Agreements- Traditionally legal agreements have been made in a written, hard copy format that bears the handwritten (or equivalent, such as a thumb or footprint) signatures of the parties involved. Transactions conducted on the Internet typically occur in real-time. The process of utilizing hard copy agreements negates many of the desired attributes of electronic commerce, such as speed of transacting and reduced paperwork. Thus, new methods of delivering enforceable legal agreements (contracts) and producing valid signatures in a digital format are necessary for most aspects of completing electronic sales, transactions. The delivery of electronic legal agreements on the Internet is typically via an electronic form with a delivered statement that the user (signer) reads and “clicks” on an “I Accept” button. This type of agreement has been upheld in a few court cases. Computer programs called electronic or intellect agents are entering into another form of electronic contract. The computer programmed agents are essentially “Authorised” to contract on behalf of the party owing and operating the programs, such as these that have the capability to locate potential transaction partners and negotiate on their computer programs necessitates new legal guidelines for enforceable agreements.

The American Bar Association (ABA) discusses some important attributes of signatures.

- Signer authentication – a signature should indicate who signed a document, message or record, and should be difficult for another person to produce without authorization.
- Document authentication – a signature should identify what is signed, making in impracticable to falsify or alter either the signed matter or the signature without detection.
- Affirmative act – the affixing of the signature should be an affirmative act which serves the ceremonial and approval functions of a signature and establishes the sense of having legally consumed a transaction.
- Efficiency – optimally, a signature and its creation and verification process should produce the greatest possible assurances of both signer authencity and document authencity, with the least possible expenditure of resources.
The ABA also contends that the use of digital signatures, when performed correct, not only meets these attributes, but also can surpass the handwritten signature on paper technology.

1.12.g -Internet Service Providers and International Libel Laws

The Internet, because of its global expanse, raises some interesting legal issues about international conflicts over freedom of speech laws and what constitutes libel. In general libel refers to the act of publishing a false and defamatory statement about and their person that damages that person's reputation.
The Strategic Challenges of Electronic Commerce

According to the site www.enix.co.uk, the rise of the Internet (electronic commerce), since the advent of the World Wide Web, has provided an easy to use communication channel for businesses to contact current and potential customers. The emergence of the Internet as a general communication channel has also given rise to the possibility of widespread electronic commerce. Even though there is still much debate relating to electronic payment for commercial activities, this is clearly an area of growth. These technologies include:

- Organisational support systems, such as workflow and groupware making businesses more efficient.
- Customer contact databases - helping capture information about customers and facilitate new methods of marketing
- Electronic payment systems for goods and services - these are emerging, although the majority of payments are still based on relatively expensive traditional cheque clearance.

Collectively and individually, these areas will contribute to major changes in the way a company conducts its business. Enix have coined the term Workware to describe the combination of these technologies.

The emergence of Electronic Commerce will be underpinned by three key components.

1.13A - Marketing (Customer Satisfaction)
1.13B - Organisation (Process Support)
1.13C - Banking (Payment Systems)

1.13A - Marketing

Champy, Buday and Nohria, argue that the rise of electronic commerce and the changing consumer processes brought about through electronic communities are likely to lead to a new wave of reengineering, mergers and acquisitions. Moreover, organisations may expand into new business areas, taking on roles unforeseen prior to the rise of the Web. For example: a magazine publisher, Condé Naste, has moved into the travel business; Bill Gates is now an electronic real estate agent; and a recruitment
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advertising agency, Bernard Hodes, has now become an electronic recruitment company.

The emergence of electronic commerce will significantly impact what we currently call ‘marketing’. Clearly, the appearance of electronic communities Armstrong and Hagel implies that marketing professionals must expand their horizons, as the advent of this technology will threaten existing channels of business. Those involved in marketing need to understand the full range of products and services required by the electronic community. They must learn to take advantage of the technology that allows customers to move seamlessly from information gathering to completion of a transaction, interacting with the various providers of products and services as necessary. Armstrong and Hagel propose four types of non-exclusive electronic communities, those: interested in transactions; sharing common interests; indulging in fantasy games; and with a shared life experience. The business opportunity is for those who support and interact with these communities, building customer loyalty on an ongoing basis. By satisfying the requirements of relational marketing and transactions, companies may gain important insights into their customers’ nature and needs. For example, a baby products company could entice customers to order items from an associated on-line catalogue by providing bulletin boards for new parents.

The desire to establish long-term customer relationships with increasingly sophisticated demands has led companies to seek new ways of acquiring, managing and utilising customer information Peters and Fletcher. Furthermore, advances in information technology have fundamentally altered the channels through which companies and customers maintain their relationships. The capacity to obtain and apply customer information within processes has become a key strategic issue. This often places the company in the position of requiring sensitive personal information from customers. Gummesson views marketing as a set of relationships, networks and interactions and lists 30Rs (relationships) in contrast to McCarthy, 4Ps (Product, Price, Place & Promotion). Gummesson highlights the fact that the electronic relationship is not discussed in the marketing literature even though it is practised widely by many businesses. He links relationship marketing to the imaginary (similar to a virtual or network) organisation. He argues that by increasingly applying IT,
more relationships are established. They create a new type of bond to customers and between employees.

The electronic relationship extends beyond the bounds of the organisation into the market as seen in the example of airline, hotel and car rental reservation systems. The communities established have a re-enforcing effect. These insights force us to re-examine traditional theories of economics, systems, organisations, marketing, competition and transaction cost analysis. As the boundaries between firms and markets dissolve, a characteristic of relationship marketing and network organisations, a new image of interaction and business is needed.

The importance of information exchange in relationship marketing (particularly using an electronic channel) requires a clear understanding and recognition of the potential problems. Privacy is also an issue - what is a private change from one person to another as well as between different cultures. Those who use the Internet are likely to be better-educated and less willing to give information, unless they trust the recipient. Companies need to realise that the only reason they hold information on a customer is because they have a relationship with that customer - something which is not transferable. Those using electronic channels to reach customers are likely to target better-educated and more affluent customers. They need, therefore, to ensure that their customer information systems are appropriate. An understanding of the trust building process is also required. Firms need to make a feature of their trustworthiness (a unique selling point!). Trust is best developed through processes. Processes tend to be customer facing - within each customer interaction trust is built-up or eroded. Companies must be absolutely clear about the value and intended use of information. Collecting information because it is technically possible (and one day might be useful) is likely to weaken trust development.

Hoffman and Novak, assert that the Web heralds an evolution in marketing concepts. In order for marketing efforts to succeed in this new medium, a new business paradigm is required in which the marketing function is reconstructed to facilitate electronic commerce in the emerging electronic society underlying the Web.

The "manytomany" communication model of the Web (in fact many instances of many-to-one) turns traditional principles of mass media advertising inside out (a one-
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to-many model) (Hoffinan and Novak, 1994). The application of advertising approaches, which assume a passive, captive consumers are redundant on the Web.

Surprisingly, as it is currently evolving, there is little activity aimed at including the consumer in the development of emerging media (Dennis & Pease). In order to adopt a market orientation, firms must understand their customers and engage in consumer research. Potential customers are most effectively engaged through new conversational marketing approaches. Anecdotal evidence suggests there are two types of customers - 'convenience shoppers' and 'explorers' (those street-smart consumers who are happy to surf the Web looking for the best deal or most appropriate product combination). Furthermore, the sheer size of the Web (trillions of documents and growing exponentially) means finding relevant information is becoming more and more difficult - despite the best efforts of search engines such as Yahoo. Our research suggests that the large proportion of Web users would rather rely on an intermediary (community operator) to sift and select information on their behalf. Web sites not endorsed will require knowledge of the address (URL) and are unlikely to be accessed when similar information, products or services are readily available inside the community. Contributing to the rise of intermediaries are associated issues of privacy, trust and security (Schell). Whilst there is much discussion on the issues of Internet privacy and security, in the context of normal business activities, many millions of people trust others with their personal financial information. Examples include ordering over the telephone, passing a credit card to an unknown waiter, even signing direct debit mandates. If an error occurs in these types of transactions we trust the service provider to correct the error. So why is it that we expect the Internet to support a level of trust and security which we do not observe in everyday life? There is no reason why similar trust relationships cannot be established in electronically mediated discussions. If anything, it becomes easier for an individual (or group of individuals) to seek retribution on those that break the rules within an electronic community. Evidence of this can be found in the tendency to attack those that try to advertise on academic discussion groups (mail bombs) and community policing against pornographers in the Netherlands.

Marketers must reconstruct their advertising models for the interactive, consumer-controlled medium. The traditional customer loyalty ladder (Suspect, Prospect,
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Customer, Client, Partner, Advocate) is still applicable, but now operates in a
different fashion. The first three stages are often instantaneous in electronic
commerce. The transition from customer to advocate relies on loyalty earned through
trust. The instantaneous nature of the Internet makes this more difficult.

1.13 B Communicating Across the Value Chain

It should be recognised that processes are not confined within one organisation - they
cross the value chain as demonstrated by the following example. Steinfeld, et al.\(^5\)
describe a large, multinational, electrical appliance and consumer electronics
manufacturer that used France Telecom's Teletel system to support EDI-like
connections to approximately 10,000 separate retailers and independent service
engineers throughout France (accessed through Minitel terminals). The ubiquitous
Teletel service and the commercial applications, which emerged to exploit it, provide
insights into the development of commerce on a worldwide Internet.

The after-sales service subsidiary of this manufacturer provided replacement parts and
training to its widely dispersed customer base. The Teletel system permitted
electronic transactions, even with the smallest trading partners. Through the use of on­
line ordering, coupled with courier service for rapid delivery, the firm was able to
eliminate regional parts warehouses and reduce the average repair time from two
weeks to two days. In the past, service engineers waited until they had a sufficient
need for parts before driving to a regional warehouse. Once the system was
implemented, they used the Teletel based "just-in-time" stocking practice for
replacement parts.

Moving to a centralised warehouse reduced the need for replicated inventories and
extra personnel around the country, creating substantial savings. Moreover, service
engineers were further bound-in following the introduction of a revenue producing,
expert system-based, training application. Technicians connected to the expert system,
which asked a series of questions designed to diagnose the fault and indicate the
repairs needed.

This "just-in-time" training service meant that technicians no longer required
expensive and lengthy in-person training - a difficult task given the short life cycle of
new electronics products. Service engineers were charged a fee for connecting to the service, but it clearly helped them to provide a faster service to the end customer whilst also further enforcing their dependence on the supplying firm. The expert system also accumulated data on repair problems and provided valuable feedback to the design and manufacturing divisions of the company. A primary motivation for this service was to dissuade service engineers from obtaining parts and services from other suppliers. The ubiquity of Minitel merely created the environment within which the supplier could manage relationships with a very large set of buyers, without opening their service to other suppliers.

1.13 C-Payment Systems

Commerce on the Internet is already a reality. Whilst there are strategic challenges for all businesses, they are especially ominous for financial services and banking organisations. The inherent communication facilities offered are rapidly being integrated into every day usage Cronin, Business transactions carried out over the Internet were estimated at $500 million in 1995 and projected at $1 billion in 1996 Waraker. This is still significantly less than 1% of retail sales in the US. According to INPUT IT Intelligence Services, interactive retailing via the Web will grow to $165 billion by the year 2000. To date the emphasis has been on the Internet as a vehicle for communications with customers and other companies operating on collaborative ventures (mostly e-mail). As the capabilities of the medium are better understood, an ever-increasing number of organisations are concentrating on capturing business transactions and on-line sales. The Internet Mall lists some 240 companies offering everything from books to flowers to travel Banking Technology. A recent report gave a representative sample of 14 electronic malls offering everything from cars and office equipment to brewery supplies and vitamins Deloitte & Touche. In a separate study Deloitte & Touche Consulting found that 44% of PC owners (that subscribe to an on-line service provider) have made an on-line purchase in the last 12 months. When looking at the buying habits of young people they found that 77% of those consumers under the age of 25 were shopping on-line (Deloitte & Touche, 1996). However, despite the hype, commerce on the Internet has suffered from the lack of readily available and appropriate payment mechanisms. Today, payment is generally made via credit card but concerns over security have lead many users to rely on fax or
telephone for authorisation details. Furthermore, knowledge based services are currently inhibited through lack of clarity over IPR issues and inappropriate payment norms - what is needed is the capability to handle micro-transactions. Knudson et al.\textsuperscript{50}

Says that traditional businesses, such as banking are under several fronts:

Low barriers to entry - challengers are appearing from all directions. Examples include the investment and leasing arms of car manufacturers, large retail organisations, other financial organisations such as building societies and insurance companies as well as totally new players who are 'farming' an existing brand name (e.g. Virgin). None of these examples carry the costs of a dedicated branch-banking network.

Poor management (misunderstanding) of modern financial instruments along with the mishandling of control and empowerment issues. Examples of failure include Herstatt Bank (Germany), Barings Bank, BCCI, Daiwa and various American Savings & Loans organisations.

Payment systems have traditionally been based on complex supply chains and processes. Modern communications capabilities allow new players to bypass the traditional system Business Week magazine noted, "Banking is essential to a modern economy, Banks are not", (quoted in Financial Times\textsuperscript{81}). This statement is supported by a recent report from Booz Allen & Hamilton Warner\textsuperscript{82}. BAH claim the Internet poses a very serious threat both to the customer base of the traditional banking oligopoly and to its profits. Their belief is that the Internet promises a revolution in retail banking of monumental proportions. High street banks as we know them, may largely disappear.

The unbundling of banking services will enable unfettered promiscuity of custom. Banks will lose their grip on the customer base. This will reverse the present position where customers are made to feel grateful to their bank for the services provided. Instead, the customer's financial profile will become the property of middlemen and software providers, with the result that banks will genuinely have to compete. In short, retail banking will become much more like wholesale banking.
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Other threats exist in the form of new conceptions of electronic money and attempts to overturn the payment methods currently employed - CyberCash, DigiCash, First Virtual and NetBill. Others are experimenting with smart card technology where the user carries an electronic purse (Mondex).

Telephone banking was the first blow to the UK clearers and they responded by setting up their own telephone banking subsidiaries rather than changing their main operations. Internet banking is the next big challenge. Once the advantages of geographical proximity go, all brand loyalty and value falls away. This will further pressurise traditional marketing and supporting systems that collect information on customers.

Organisational Support Systems

Underpinning the activities of companies are their business processes and information support systems. A major development in computerised support systems is the advent of process support software that allows work to be routed (similar to a paper file) around the business. These products use a variety of methods to integrate with information systems, delivering the context for action to the appropriate user. Generally referred to as workflow software, there is still considerable confusion in the marketplace. The problem is that there are no consistent meanings for the terms used (workflow, process, task, activity, etc.).

There are a considerable number of products available (at the last count some 240) which are described by their vendors as workflow tools. Each product reflects the views on organisational behaviour of the developers, with vendors interpreting the term to suit their own needs. Some see workflow as a mechanism for providing better methods to control workers. Others see it as an opportunity to enable organisational learning, allowing workers to exercise their own judgement, responding to the requirements of the case in hand rather than following predefined paths of activity. In reality, most conceptions revolve around the routing of work from one user to another in a predefined fashion.

It is clear that the term workflow is no longer appropriate - 'work' does not necessarily flow that much Miers & Montgomery. The concept of work 'flowing' is just one aspect of the wider
problem of managing information related processes. A new conceptual framework was introduced to support an improved understanding of the issues affecting process support systems. This model is used within Process Product Watch (PPW) Reports which provide detailed evaluations of process support systems. The model presented underpins the organisational support aspects of the electronic commerce definition of Workware.

For most commercial businesses the strategy making process means looking at your own market positioning - evaluating how to overtake others or protect an entrenched position in the value chain. For banks and financial services companies, that means coming to grips with the unfolding saga of electronic payment systems and managing customer relationships. Certainly, all enterprises should evaluate how their strategies for customer engagement transfer to cyberspace.
1.14 Future of Electronic Commerce

The future of electronic commerce is dependent on fast and reliable on-line access. It is expected that mature versions of Internet commerce applications will depend largely on the use of public key certificates. These will enable secure e-mail communication between most leading-edge organisations, business-to-business electronic trade, and access and payment for Internet consumers. Smart cards will be well established in all industrialized countries for corporate security and secure Internet access. All new personal computers will include smart card readers and support the new computer/smart card interface. Fingerprint and voice recognition technology will be established in high-value, leading-edge applications. Strong cryptography will be widely adopted, supported by the relaxation of export controls on the dispersion of this technology. Increases in processing power will make it possible to use bulk encryption for confidentiality at high speeds over host-to-host links. Leading-edge organisations will have enterprise-wide trust infrastructures based on public key cryptography and digital certificates and trusted third-party agreements will proliferate.

The range and depth of applications will also continue to expand. By 2005, it is expected that most e-mail traffic will be secure at application and network level; most supply chains will trade electronically; some leading-edge organisations will have been re-engineered into virtual companies; consumer certificates will be in widespread use; smart cards will be in ubiquitous use worldwide for everything from Internet access and electronic commerce to ticketing in theatres and public transport; client personal computers and network computers will be marketed with built-in fingerprint scanners in the mouse or keyboard; and cryptography and the Internet trust model will be accepted facts. A workable framework for global trust infrastructure will begin to emerge, and trusted third-party licensing and data protection laws will have been harmonised internationally. There will be recognised policy standards for issuing or revoking certificates, and international laws on liability.
Mitchell Levy explains ten predictions of e-commerce as:

1. While consumer-based security concerns continue to decrease, privacy concerns will increase leading companies for focus on the non-monetary forms of currency (time, attention & trust).

2. Companies will begin to recognize that the value-added activity begins after the customer hits 'submit order' and that Customer service will become the point of differentiation.

3. Movement of Electronic Commerce to a service industry rather than purely product or technology driven... Outsourcing Electronic Commerce functions becomes very popular.

4. More top-level executives will focus on and be responsible for Electronic Commerce.

5. Dramatic increase in access speeds and appliances (mobile devices, ATMs, home/office appliances, etc.) connecting to the Web and integrated into Electronic Commerce applications.

6. Continue growth of affinity groups (e.g. Chemdex, Metalsite, Rosettanet, etc.)

7. Continued price transparency with auctions and other real-time pricing vehicles... will see prices for scarce items increase and prices for commodities decrease.

8. SHOPPING: a) Wallets and "impulse buying" will take root, b) Price-driven buying: looking for the best deals will be a big play and c) Special Electronic Commerce function keys will appear on keyboards.

9. Will see a non US-based player dominating some Electronic Commerce space.

10. Essential companies will continue to demonstrate success with Electronic Commerce while small to medium enterprises (SME's) flock to the net.

The countries that are leading in this field are USA, European Union and Australia. Malaysia, Mexico, Singapore and India are among the countries that are striving hard to follow the leaders and evolve mechanisms and technologies of electronic commerce specific to their business environment. A number of others are yet to join the revolution.

At macrolevel, if one looks at the opportunities for India, “Outsourcing Software and IT Services” from USA and other advanced countries have emerged as one
of the means to reduce the cost today and in this regard, India has emerged as a preferred destination. Therefore, Indian Software Export Industry could target for a significant share of global e-business/e-commerce market in the years to come.

In the emerging digital economy, it would be necessary for Indian firms to follow the same online b2b practices as done by others in the world to be a stakeholder. E-commerce would give opportunity to Indian small and medium enterprises to project their capability globally and thus participate more proactively in such ventures. Many traditional sectors such as handicrafts, textiles, art, natural medicines which could not tap the global markets due to lack of marketing resources should find an ideal medium in Internet. Indian cultural heritage, monuments, temples, classical music etc. could be made known widely to the world and could be further leveraged in enhancing tourism. E-commerce is one IT tool that could do wonders to the Indian economy in many fields.

In Nasscom-Mckinsey study Indian IT strategy, these opportunities are covered under the broad sector of IT Services (E-commerce as “extended enterprise” applications) and E-businesses. As per this study, India has the potential to create e-business worth $1.5 billion by 2004 and around $10 billion by 2008 with opportunities in both b2b (ePSM, Commodity trading marketplaces and payment systems) and b2c arenas (connectivity, online retaining and portals/communities targeting NRIs).

Gartner Group forecasts worldwide B2B E-commerce to reach $7.29 Trillion in 2004. According the research from Forrester Institute, the exchange of money across the Internet is will reach a skyrocketing figure.
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