A STUDY ON THE APPLICATION OF E-COMMERCE IN TURKISH MINING INDUSTRY

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ABSTRACT

A STUDY ON THE APPLICATION OF E-COMMERCE IN TURKISH MINING INDUSTRY

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In this thesis, a road map/strategy that must be followed by firms that want to utilize e-commerce facilities is established. For this purpose, road map suggestions that were taken from literature were examined and a road map which can be followed by mining companies is developed. First, a questionnaire was applied to mining firms to understand the attitude of mining sector to e-commerce. Then a firm that had involved in the questionnaire and was interested in e-commerce was selected to work with. The studies related to e-commerce accomplished by this firm in the past were evaluated and recommendations for the studies that it should perform in the future were indicated based on the questionnaire taken from literature and questions prepared for this study. In the light of all data obtained from this case study, the initially suggested road map was rearranged and the results were discussed.

Keywords: e-commerce, mining sector, road map for e-commerce, strategy for e-commerce, steps of e-commerce, stages of e-commerce, application of e-commerce

ÖZ

TÜRK MADENCİLİK ENDÜSTRİSİNDE E-TİCARET UYGULAMASI ÜZERİNE BİR ÇALIŞMA

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Bu çalışmada e-ticaret olanaklarından yararlanmak isteyen firmaların takip etmesi gerekli bir yol haritası/strateji oluşturulmuştur. Bu amaç için literatürden derlenen yol haritası önerileri incelenerek madencilik firmalarının takip edeceği bir yol haritası geliştirilmiştir. Önce, madencilik sektörünün e-ticarete yaklaşımını anlamak için madencilik firmalarına anket uygulanmıştır. Sonra ankete katılan ve e-ticarete ilgi duyan bir madencilik firması çalışmak için seçilmiştir. Literatürden derlenen anketler ve bu çalışma için hazırlanmış e-ticaret sorularına dayanarak, geçmişte bu firmanın e-ticaret ile ilgili yaptığı çalışmalar değerlendirilmiş ve gelecekte yapması gerekli çalışmalar konusunda önerilerde bulunulmuştur. Örnek çalışmadan elde edilen bilgiler ışığında, ilk önerilen yol haritası yeniden düzenlenmiş ve sonuçları tartışılmıştır.

Anahtar Kelimeler: e-ticaret, madencilik sektörü, e-ticaret için yol haritası, e-ticaret stratejileri, e-ticaret adımları, e-ticaret aşamaları, e-ticaretin uygulanması

To my best friend

and

dear husband

Hakan İçli

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ABBREVIATIONS

ATM	Automated Teller Machine
ATP	Ankara Trade Point
B2A	Business-to-Administrations
B2B	Business-to-Business
B2C	Business-to-Customer
C2A	Consumer to Administration
C2B	Consumer-to-Business
C2C	Consumer-to-Consumer
CAD	Computer Aided Design
CAMESE	Canadian Association of Mining Equipment and Services for Export
DİE	Republic of Turkey, Prime Ministry State Institute Of Statistics
DTM	Undersecretariat of Foreign Trade
EDI	Electronic Data Interchange
EFT	Electronic Fund Transfer
EU	European Union
GDP	Gross Domestic Production
ISP	Internet Service Provider
KOSGEB	Small and Medium Industry Development Organization
MERNIS	Administration System of Population
METU	Middle East Technical University
NRC	Natural Resources Canada
OECD	The Organization for Economic Cooperation and Development
P2P	Peer-to-Peer
ROI	Return on Investment
SME	Small to Medium Enterprise
SNS	Singapore Network System
TCP/IP	Text Control Protocol/Internet Protocol
TOBB	The Union of Chambers and Commodity Exchanges of Turkey
TOSYÖV	Turkish Foundation for Small and Medium Business
TUENA	Turkish National Information Infrastructure
ULAKBİM	International Academic Data Processing Center
ULAKNET	International Academic Net
UNCTAD	The United Nations Conference on Trade and Development
VANs	Value Added Networks
WTO	World Trade Organization
www	World Wide Web

CHAPTER 1

INTRODUCTION

Electronic commerce or e-commerce is expanding rapidly and continuously as a means of doing business in parallel to the development in hardware and network technologies. The definition of e-commerce is very broad and advantages and disadvantages of it mean different things to different people. However, it can be described as the process of buying and selling or exchanging of products, services and information via computer networks including the Internet.

By using e-commerce, firms can reach easily to new markets/new customers with minimal capital, so that they can increase their revenues. Besides, they can reduce their costs; improve the quality of their products and services with the help of increase in efficiency. Today in business world, customer is an important success factor; keeping existing customers are cheaper then reaching to new customers. e-Commerce gives opportunities to enhance customer relations or provide customers satisfaction. Although e-commerce begins with the support of existing business, it expresses a big transformation in business style or new thinking system based on knowledge and technology.

USA is at the leader position in e-commerce that started commercial applications in middle of 1990's. Mining industry is recognizing the value of e-commerce as other industries and it is utilized widely in accessing commercial databases or services, advertising, ordering goods and services, monitoring prices, and e-mail applications. In Turkey, by the forces of customer demands, an e-commerce market has been established recently. Whereas, there isn't any study identifying the approach of mining sector to either e-commerce and/or its applications.

The aim of this study is to give information about e-commerce to firms that work in mining sector, to determine the attitude of mining firms to e-commerce in Turkey, to prepare the road map that must be followed by firms for utilizing the opportunities of e-commerce, to analyze availability of the prepared road map and its application, and to recommend solution for problems encountered during application.

Beyond this aim, this study covers 4 chapters.

In Chapter 2, general information about e-commerce is given. History, definitions, categories, advantages and disadvantages, payment and security, applications and some statistical data in the world and Turkey, and steps of e-commerce are expressed.

In Chapter 3, the attitude of mining firms to e-commerce in Turkey was analyzed based on the prepared questionnaire. Suggested road maps related to e-commerce have been gathered from

literature to establish a road map as guidance for interested mining firms. A mining firm was worked with as a case study to check the results of application of the suggested road map. General information about e-commerce application in SMEs and mining industry are also given because the studied firm is a small scale firm in mining industry. Lastly, the results for the case study are presented.

In Chapter 4, the conclusions and further recommendations are given.

CHAPTER 2

THEORITICAL FRAMEWORK

2.1 The Concept of Electronic Commerce

2.1.1 History of Electronic Commerce

The history of e-commerce is linked to two phenomena: the Internet and EDI. Both of these date back to the 1960s, when the Internet was largely confined to research laboratories and educational institutes, while EDI became the medium of large corporations through VANs. EDI has enabled millions of structured orders (i.e. standard order form, invoice) to be transmitted to various suppliers in a secure environment with a high level of reliability in expensive way (www.combinet.net, 2003).

The predecessor of Internet was created as a project by the U.S. Department of Defense (Blanning and Bui, 2000). One of the primary goals of the project for the network was to allow multiple users to send and receive information at the same time over the same communications paths. The network was designed to operate without centralized control. This means that if a portion of the Internet should fail, the remaining working portions were still able to route packets which digital data was sent in small packages, from sender to receivers over alternative paths. This led to the development of a new version of the protocol to meet the needs of an open architecture network environment known as TCP/IP. The European Laboratory for Particle Physics developed the www (Deitel et al., 2001), followed by the widespread diffusion of interface technology, such as browser programs. Constant breakthroughs in hardware and network technologies and higher investment in communications helped to accelerate the process (Dryden, 1998).

2.1.2 Definition of e-Commerce

The definition of e-commerce is very broad and e-commerce means different things to different people, although there seems a tendency to predominantly define e-commerce as Internet-commerce (Jentzsch and Miniotas, 1999). Kalakota and Whinston define e-commerce from different perspective (Turban et al., 2000):

- From a communication perspective, the delivery of information, products/services or payments over telephone line, computer networks or any other electronic means.
- From a business perspective, the application of technology toward the automation of business transactions and workflow.
- From a service perspective, addresses the desire of firms, consumers, management to cut service costs while improving the quality of goods and increasing the speed service delivery

- From an online perspective, capability of buying and selling products and information on the Internet and other online services.

e-Commerce is an emerging concept that describes the process of buying and selling or exchanging of products, services and information **via computer networks including the Internet** (Turban et al., 2000).

Zwass (1998) refers to it as the sharing of business information, maintaining business relationship, and conducting business transactions by means of **telecommunications networks** (Chaffey, 2002).

Wokosin (2001) believes that it is **the combination and integration of communication, data management and security**.

Wigand (1997) defines it as **the seamless application of information and communication technology** from its point of origin to its endpoint along the entire value chain of business processes conducted electronically and designed to enable the accomplishment of a business goal. These processes may be partial or complete and may encompass different types of e-commerce (Whiteley, 2000).

According to WTO, it is a new area of trade involves goods crossing borders electronically (www.wto.org, 2004).

According to UN, the broad definition includes the use of Internet and non-Internet communications systems, such as telephone ordering, interactive television and electronic messaging. The broad definition would also include privately owned electronic networks usually run by business and their partners for their own account (r0.untctad.org, 2004).

The common points that different e-commerce definitions stress are (Güneş, 2003):
- e-Commerce is applied via open or closed networks.
- e-Commerce consists of producers, users, public or private organizations.
- The tools of e-commerce are TV, radio, fax, EFT, EDI, ATM, telephone, Internet.

In summary, e-commerce can be formally defined as follows: **technology mediated exchange** between parties (individual or organizations) as well as the electronically based intra or interorganizational activities that facilitate such changes (Rayport and Jaworski, 2004).

e-Commerce can be applied in two ways as direct and indirect e-commerce (Çetinkaya et al., 2003). Goods traded over the net can be either information goods / digitized information (Esteve and Schuknecht, 1999) / soft goods, are characterized by high initial cost to produce the first copy and almost no cost to make additional copies, that can be transported electronically is called as direct e-

commerce or physical goods / hard goods that need physical transportation by a logistic provider is called indirect e-commerce (Mahadevan, 2000; Çetinkaya et al., 2003).

The terms e-business and e-commerce, often confused with one another, are different. e-Commerce involves exchanges among customers, business partners and the vendor. E-business is composed of these same elements, but also includes operations that are handled within the business (i.e. production, development, corporate infrastructure and product management) itself (Deitel et al., 2001).

2.1.3 Categories of e-Commerce

Turban et al (2000) believe that a common classification of e-commerce is by the nature of transaction. Categories of e-commerce are:

- **Business-to-Business (B2B)** includes electronic market transaction between organizations. It has been well established for several years, particularly using EDI over private or VANs (www.europe.eu.int, 2003). It consists of virtual enterprises, virtual cooperatives, virtual markets, or communities of commerce that are combined for mutual benefit (Kienan, 2001).

- **Business-to-Customer (B2C)** is retailing transactions with individual shoppers. This type of e-commerce is typically characterized by high volume, low value transactions across a broad customer base (Jentzsch and Miniotas, 1999).

B2B markets have fewer partners, closer buyer-seller relationships, better technology and better information exchange than B2C markets. Not surprisingly, they form the largest growth sector in terms of e-commerce and somewhere over 80 % of the e-commerce revenues (Pires and Aisbett, 2002).

- **Consumer-to-Consumer (C2C)** includes consumers' sells directly to consumers. Rayport and Jaworski (2004) define the relationship between consumers as peer-to-peer (P2P). Auction is generally used because products are limited (Özgener, 2003).

- **Consumer-to-Business (C2B)** includes individuals who sell products or services to organizations.

- **Non-business e-Commerce** includes academic institutions, not-for-profit organizations, religious organizations, government agencies etc. They use various type of e-commerce to reduce their expenses or to improve their operations and customer services.

- **Intrabusiness (organizational) e-Commerce** includes all internal organizational activities, usually performed on Intranets, that can range from selling corporate products to employees to online training and cost-reduction activities.

EU divides e-commerce into four distinct categories: B2B, B2C, B2A, C2A and defines two new categories not mentioned above (www.europe.eu.int, 2003):

- **Business-to-Administrations (B2A)** covers all transactions between companies and government organizations.

- **Consumer to Administration (C2A)** covers all transactions between individual and government organizations.

2.2 Advantages and Disadvantages of e-Commerce

2.2.1 Advantages of e-Commerce

The spread of e-commerce will depend on the perception of the consumer of its advantages and disadvantages. This perception depends on the individual, their circumstances and the goods that are to be traded (Whiteley, 2000). e-Commerce creates many potential benefits to organizations, individuals, and society (Turban et al., 2000).

2.2.1.1 Benefits to Organizations

- With the minimal capital outlay, a company can easily and quickly expand the marketplace to national, international and locate more customers, suppliers and business partners which mean new opportunities (www.europe.eu.int, 2003), increases sales giving rise to increased revenue (Chaffey, 2002); creating economies of scale (Wilson and Abel, 2002).

- There is a growing realization that profitably producing and selling a top quality product at best price, is not solely a function of the organization alone, but increasingly dependent upon the effectiveness in which the total supply chain is managed. Therefore, business process improvements need to extend beyond organizational boundaries to envelop and integrate with those activities of all trading partners within the supply chain (i.e. consumer and market research, product design, marketing, material planning, procurement, manufacturing, sales, distribution, logistics, accounting and customer services) (Chester et al., 2003; www.undp.org, 2003).

- Chaffey (2002) believes that it is useful to identify both tangible and intangible benefits of e-commerce. Tangible benefit identifies monetary saving or revenues, intangible benefits for which it is more difficult to calculate cost savings.

e-Commerce decreases costs; marketing cost reduction from low cost or no cost market research (Wilson and Abel, 2002), reduced time in customer service, online sales; supply-chain cost reduction from reduced level of inventory; increased competition from suppliers; shorter cycle time in ordering;

administrative cost reduction from more efficient routine business process such as recruitment, invoice payment (Chaffey, 2002), decreasing of creating, processing, distributing, storing, retrieving paper-based information. Organizations, that sell information goods, gravitate towards disintermediation that is the process by which the logistical stream is shortened, leading to better responsiveness a lower cost (Mahadevan, 2000).

Blanning et al. studied and compared e-marketplaces with traditional markets on cost-based economics and they believe that there are economics incentives for e-marketplaces (Chan et al., 2001)

- With the increased competition in e-commerce, Internet-based business applications have migrated from being on-line and cost-saving transactions into full-service Internet commerce. These systems are expected to provide increasing decision support functionalities to traders while reducing biased decisions to increase market transparency, transaction speed (Blanning and Bui, 2000).

- e-Commerce enhances internal and external communication and the transfer of information (The Hong Kong Productivity Council, 2003) which can improve customer relationship (Wilson and Abel, 2002). It has changed the role of customers involved in product and service innovation in all steps of designing, manufacturing, promoting, selling, delivering etc (Çak, 2002). Customer information and feedback from customers on products or data mining can be used to create/improve specialized product that gives competitive advantage of the company (The Hong Kong Productivity Council, 2003).

- Modern business is characterized by ever-increasing supply capabilities, ever-increasing global competition, and ever-increasing customer expectations. In response, businesses throughout the world are changing both their organizations and their operations. They are flattening old hierarchical structures and eradicating the barriers among company divisions (www.europe.eu.int , 2003).

2.2.1.2 Benefits to Customers

- e-Commerce enables customers to shop or do other transactions 24 hours a day, all year round, from any location. Customers can receive detailed information in seconds, rather than days or weeks, and get more choices from many vendors (Ene, 2002).

- e-Commerce facilitates competition, which results in substantial discounts. Goods are bought online may be cheaper or more up-to-date than goods available in a conventional retail shop (Whiteley, 2000). The greatest possibilities for e-commerce to reduce prices exist for goods and services which can be digitised, thereby allowing substantial economies in production and delivery costs (El-Kateb, 2000).

- e-Commerce makes it possible to participate in virtual auctions and allows customers to interact with other customers in electronic communities and exchange ideas and experiences (Turban et al., 2000).

2.2.1.3 Benefits to Society

- e-Commerce will have its greatest effect on the economic well-being of the society. It can only support the growth and development of the national economy, by creating jobs and by opening the global market opportunity to local enterprises (www.combinet.net, 2003). And as it develops, e-commerce could have profound impacts on individual sectors of the economy as well as for macroeconomic performance and economic policies. e-Commerce activities could have effects on the boundary of market output and hence the size of GDP. Goldman Sachs suggests that the rise of B2B e-commerce will in the long run increase the level of GDP by 5 % (El-Kateb, 2000).

- Rapid growth, size and potential of e-commerce have prompted comparisons between this historic development and the Industrial Revolution (www.undp.org, 2003). It is a part of social evolutions depending on globalization of markets, the trend towards economics-based information and utilization every type of technological development. The social evolution process is creating e-society. Knowledge has already been a part of production factors (Çak, 2002).

- e-Commerce facilitates delivery of public services (i.e. education, distribution of government social services) at a reduced cost and/or improved quality (Kepenek, 2000). Control on democracy can be built by e-government (Çak, 2002).

- e-Commerce enables people in Third World countries and rural areas to get products and services that otherwise are not available to them (Turban et al., 2000).

- e-Commerce enables more individuals to work at home (Bozkurt, 2000).

2.2.2 Disadvantages of e-Commerce

- Some researchers believe that some anticipation on e-commerce have no chance to become true, because of legal and technical obstacles. They emphasize that the Internet is an information trash for some societies who haven't innovated and managed the technology. There will be a continuous technology transfer from developed countries to developing and undeveloped countries. It means an increase in foreign trade deficit and welfare differences. Those are a new capital transformation and a new face of globalization. A seminar on "e-Commerce and Development at European Commission" in 1999 explained while much of the technology was open, there were certain technological elements that were still in the hands of a few selected companies (www.wto.org, 2003).

- The digital divide, a common term for socio-economic segregation is becoming an apparent problem with regard to the Internet. It involves the cost of acquiring Internet access, the technical support to maintain it and the proper instruction to bring into homes and school. Many studies indicated that the gap is increasing rather than decreasing (Deitel et al., 2001). It is anticipated that it will play an

effective role in creating social dividing, and in the emergence of a new kind poverty called as knowledge poverty (Küçükpınar et al., 2003).

- The development of e-commerce have both direct and indirect impacts on labour markets as well as the composition of employment (El-Kateb, 2000). Internet is emerging the new working areas, new definitions of working conditions (i.e. more job flexibility, work longer hours; flatten hierarchy) and new duties. e-Commerce will create new job structures and less educated workers will lose their job unless they were educated (Kepenek, 2000).

Technology-savy employees are in high demand (Deitel et al., 2001). Because e-commerce has reached important level in developed countries, it creates brain immigration from developing and undeveloped countries (Yumuşak, 2004).

- The mistaken belief that implementing e-commerce systems is inexpensive, the start up cost of a Web site may seem small, but the ongoing development and maintenance can be expensive and it requires highly skilled/ highly paid workers to operate. Keen states that every dollar spent on information technology, generates 40 cents operational and 20 cents maintenance cost. Information technology seldom reduces cost. It enables more goods and services to be sold without having to increase labour. Without the effective control of costs, an e-commerce project has the potential to become a sinkhole (Whelan and McGrath, 2002).

- e-Commerce is widely expected to improve efficiency due to reduced cost, increased competition and more streamlined business processes. It means lower prices, frequent price modifications, and a narrower dispersion of prices for identical products. Some certain reductions in cost can be offset by higher overheads elsewhere (El-Kateb, 2000). The large agreement among researchers and practitioners about e-commerce's positive impact on prices in the long term has not yet been sided with predictions about the size and timing of this phenomenon. (Mariotti and Sgobbi, 2001)

- It is expressed that e-commerce will increase the level of GDP. There is less macroeconomic evidence to support the argument that information and communication technology in general and Internet usage in particular is adding to trend growth of total factor productivity, or whether it merely represents a way to maintain this growth (El-Kateb, 2000).

- The Internet can be a gateway to questionable material and illegal activity such as pornography, gambling, Internet scams-cybercrimes (i.e. copyright infringement, cyber terrorism, fraud, hacking, and viruses) (Deitel et al., 2001). Some researchers believe that e-commerce will be a new source of money laundry (www.oecd.org, 2003).

- Turban et al. (2000) group the limitation of e-commerce into two categories; technical and nontechnical. The technical limitations are: It is difficult to integrate of the Internet and e-commerce

software with some existing applications and databases. Nontechnical limitation is that e-commerce can result in a breakdown of human relationship. Life is becoming too dependent on the Internet (Deitel et al., 2001).

2.2.3 Open Issues in e-Commerce

While e-commerce has been growing rapidly, there are several open issues that must be resolved. These include (www.europe.eu.int, 2003):

- Legal and financial issues: If a service was sold over the Internet across countries can the transaction be deemed to have occurred? This question may be important from the point of view of consumer protection and establishing the jurisdiction (Hoda, 1999), the legal status of contract, financial regulations over payment, taxes and customs charges applied to the products (www.undp.org, 2003). Electronic transactions require electronic contracts and electronic signatures which have not been provided for in the contract laws of many countries.

e-Commerce could result in the erosion of tax bases. Given the present size of e-commerce, serious erosion of the tax base is not in prospect. In the future, however, it may become more of an issue for tax authorities (El-Kateb, 2000).

- Ownership: Intellectual property is that is owned by the person who thought it up. A copyright is a right of intellectual property, for a limited time, provides the creator of a work (or someone to whom the creator assigns rights) specific, exclusive rights to work (Kienan, 2001). Particularly for goods that can be distributed electronically, and hence can readily be copied, the issue of protecting copyright and intellectual property rights represents a major challenge (www.europe.eu.int, 2003).

- Privacy and security: e-Commerce over open networks demands effective and trusted mechanisms for privacy and security. The lack of security and reliability are the major barriers to expanding e-commerce (Turban et al., 2000). Since the recognized privacy and security mechanism depend upon certification by a trusted third party (such as a government body), global e-commerce will require the establishment of a global certification system (www.europe.eu.int, 2003).

- Infrastructure, interconnectivity and interoperability: Realizing the full potential of e-commerce requires universal access. This in turn demands universal standards for network interconnection and interoperation (www.europe.eu.int , 2003) and decreasing digital divide.

- Deployment: One factor that could limit the emergence of e-commerce is lack of awareness and skills (www.europe.eu.int, 2003). Hence, there is an urgent need to promote awareness, to publicize examples of best practice, and to provide education and training.

In a seminar on e-commerce and its development in 1999 it is explained that the obstacles to e-commerce were different for developed and developing countries. The major issues identified in developed countries were such as privacy concerns, censorship, navigation difficulties, taxes etc. whereas the main issues in a developing region were slow speed, prices for access to net, ISP prices, and lack of local content etc (www.wto.org, 2003).

2.3 Payment System in e-Commerce

A payment system, as a part of e-commerce application system, is such a system which supports secured payment processes by providing reliable, secured, and efficient transaction services between sellers and buyers (Gao, 2002).

Electronic payment generally is representative of real world exchanges. Payment protocols provide an electronic counterpart to paper-based methods of exchanging goods. An Internet payment service functions as an intermediary between merchant register software and the financial institution. Enabling electronic payments over the Internet for e-commerce business requires establishing an account with a financial institution and an Internet payment company, and also setting up a merchant register to accept payments (Korper and Ellis, 1999).

The basic requirements of a payment system (Gao, 2002):
- Provide secured and confidential transaction processes.
- Conduct authentication and authorization for all involved parties.
- Ensure the integrity of payment instructions for goods and services.
- Availability, cost-effective, efficiency and reliability.
- Global access and international use.

2.4 Security on e-Commerce

The transition from paper-based transactions to electronic communications has therefore generated doubts and concerns regarding the security and privacy of business communications. In paper-based transactions, there are collateral assurances of genuineness: the letterhead, the hand-written signature, the company name and logo on the invoice or purchase order, unique writing or printing styles, special water- marks on the paper and the fact that the communication is a tangible object received. Electronic communications do not have these assurances. Already ‘spoofing’ (impersonation, where a sender gives a 'return' address other than his own), ‘hacking’ (use of hidden computer programs to pry into sensitive personal, especially financial, information and misusing it), attacks into Internet systems introducing unmanageable viruses or ‘spam’ (unsolicited mass advertisements using the Internet), port entrancing (scanning a system’s open ports in an effort to gain entry), password cracking (generating and testing a series of potential letter and number combinations until they determine the correct

password) are creating barriers to the smooth flow of international business (www.combinet.net, 2003).

There are four fundamental requirements of a successful, secure transaction (Deitel et al., 2001):
- Privacy is that the information is transmitted over the Internet has not been captured or passed on a third party without sender knowledge.
- Integrity is that the information is send or received has not been compromised or altered
- Authentication is that each party in a transaction ascertains with certainty the identity of the other party.
- Non-repudiation is that the parties to a transaction cannot subsequently deny their participation.

2.5 Steps of e-Commerce

The trade cycle has to support:
-Finding goods or services appropriate to the requirement and agreeing the terms of trade (referred to as search and negotiation).
-Placing the order, taking delivery and making payment (execution and settlement).
-Post-sales activities such as warranty, service, etc.

There are numerous versions of the trade cycles depending on the factors outlined above and, for many transactions, further complicated by the complexities of international trade (Whiteley, 2000).

e-Commerce encompasses a broad range of activities. The core component is addressing the commercial transaction cycle. e-Commerce can be divided into three stages: first, the pre-purchase stage including advertising, information seeking, the provision of market intelligence and promotion of products and services; second, the purchase stage, including the facilitation of contacts between traders, electronic procurement, support for shared business processes, pre- and post-sales support, purchase and payment and third, the delivery stage (www.europe.eu.int, 2003; Esteve and Schuknecht, 1999).

There are various "levels" at which e-commerce can be conducted, ranging from a simple network presence to electronic support for processes that are jointly owned and enacted by two or more companies. Various levels of e-commerce are shown in Figure 1. Such a figure highlights the distinction between national transactions and international transactions. The sources of this distinction are not technical, but rather legislative. e-Commerce is more complex at the international level than the intra-national level because of such factors as taxation, contract law, customs payments, and differences in banking practices. The lower levels of e-commerce are concerned with a basic network presence, company promotion, and pre- and post-sales support. By using available "off the shelf" technologies, these levels can be both cheap and straightforward to implement, as thousands of small companies can already testify. By contrast, the more advanced forms of e-commerce pose complex

problems that are as much legal and cultural as technological. At these levels there are no "off the shelf" solutions, so companies are forced to develop their own custom systems. Thus at present it tends to be only the larger and richer companies that are pioneering these levels. However, over time the boundary of what is commonplace will gradually move up to encompass the more complex levels of e-commerce, and further "off the shelf" technologies will be established to support these higher levels, just as they have been for the lower levels (www.europe.eu.int, 2003).

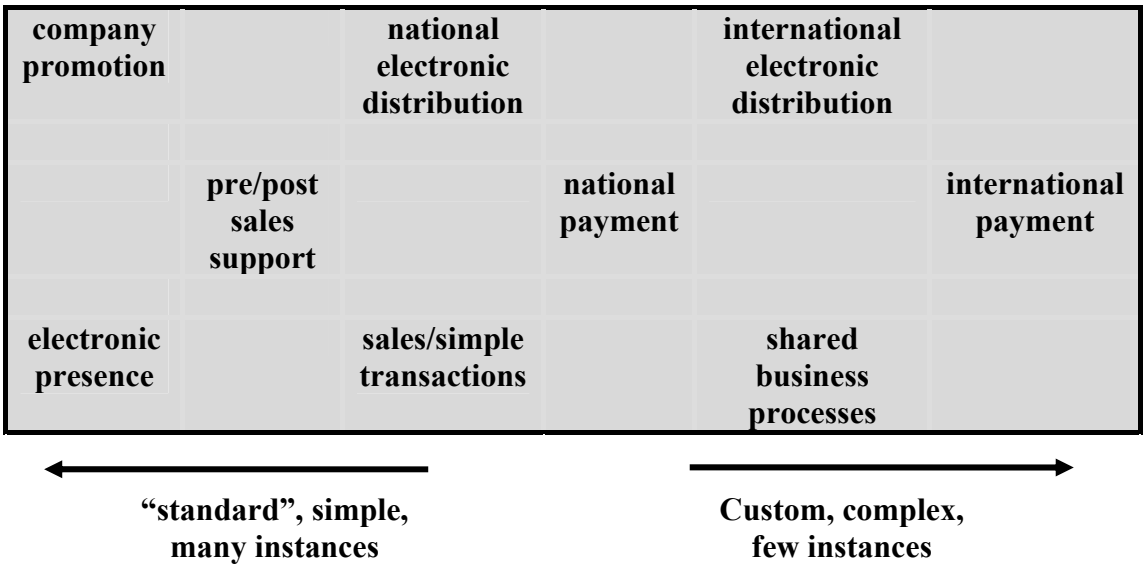

Figure 1 Levels of e-Commerce

There are three distinct steps of the diffusion process: the introduction; the rapid growth following the achievement of the critical mass; and the maturity, when the growth potential is almost saturated (Mariotti and Sgobbi, 2001).

Wokosin defines that there are several steps that should be completed before a company start selling its goods and services online: Generating demand, ordering and fulfillment, process payment, service and support, security (Wokosin, 2001).

Australian Electronic Business Network advices an 8 steps plan to be familiar with computer, Internet and then to enter e-commerce (www.smallbusiness.org.au, 2004). Table 1 related to this plan is given below.

Table 1 The Suggestion of Australian Electronic Business Network

Step	Task	Pre-Requisites	Benefits
1	Buy a computer and office software	Determination of required software	-Improve customer service, -Run office software, -Keep track of bills, invoices, -Simplify invoicing and mail-outs.
2	Use e-mail to replace fax	Computer with a Modem ISP Account	-Faster, more responsive than fax; can transmit whole documents which can be opened and edited elsewhere. -Quick way to get feedback from customers
3	Use Internet to locate useful business information	As above	-Huge range of useful information potentially available for free
4	Set up a company Web site	ISP Web hosting account Authoring tools, eg Front Page 98	-Visibility to customers -Single point of reference for company and product information
5	Provide access to company information on the Web site	Database back-end facilities may require company to run own Web server	-Better customer service, ability to offer customers new services based on searchable access to company information
6	Set up a company Intranet	Dedicated server, access to company databases	-Cross-platform simple access to important company information for all employees
7	Carry out business transactions over the Internet Eg: sell products or services	As above, plus need for transactional software, credit card verification services, secure server.	-Potential to sell goods and services to a very large and international audience -May initiate necessary rethink and re-engineering of business processes
8	Use B2B EDI	EDI software on server.	-More accurate, efficient and timely

Based on The Hong Kong Productivity Council experience in monitoring the evolvement and development of e-commerce in Hong Kong, the deployment of e-commerce can be classified into six ascending levels. Table 2 shows the suggestion of The Hong Kong Productivity Council (The Hong Kong Productivity Council, 2003).

Table 2 The Suggestion of the Hong Kong Productivity Council

Level	Activity	Result
Level 0	No adoption No intention	No plan to adopt within next 6 months
Level 1	Show intention	Have plans to adopt some e-business within next 6 months
Level 2	Basic Adoption	E-mail communication
Level 3	Prospecting	- Webpage to provide company information - E-mail communication
Level 4	Business Integration -Basic Online -Integration transaction	- Webpage to provide company information - E-mail communication
Level 5	Business Transformation	- External integration - Internal integration - Online transaction - Online payment - Webpage to provide company information - E-mail communication

According to Chau, there are four basic groupings of Internet based e-commerce activity adopted by business (Whelan and McGrath, 2002). Table 3 shows four phases of e-commerce below.

Table 3 Four Phases of e-Commerce

Groups	
Group A	Business that have adopted a static presence on the Web presence.
Group B	Business that use e-commerce to supplement their traditional business practices
Group C	Business that embrace e-commerce technologies to substantially re-engineer their conventional business process to increase business productivity.
Group D	Business that fully embrace all major elements of e-commerce (i.e. dot.com).

The suggestion of Electronic Commerce and Telework Trends is given in Table 4 below (www.ebusiness-watch.org , 2003).

Table 4 Process-Stages in e-Commerce

Stage	**Description**
Stage1: General Marketing	Presentation and marketing via Internet; Offers of goods and services in form of static information on Web pages; No individual ordering or other services online; Typical example: online brochure, information services
Stage 2: Interactive Marketing	Presentation and marketing via Internet; Interactive offers with dynamic feedback, individualized product information; Typical examples: real time statistics, database search, product catalogues, e-mail interface
Stage 3: Ordering and Contracting (sale/ purchase)	Presentation, marketing and sales via Internet; Interactive offers with online ordering feature; payment with credit card number or invoice; Typical examples: online shops, online markets; airline or theatre ticket sales; Contracting and payment online, delivery offline
Stage 4: Payment	Presentation, marketing and sales via Internet; Interactive offers with online ordering feature; Payment via Internet payment device; Typical examples: online shops, online markets; With online sales and payment transactions, no online distribution
Stage 5: Delivery	Presentation, marketing, sales and delivery/ distribution via Internet; Interactive offers with online transactions, payment with online payment device or by invoice (in case of long-term delivery contracts); Typical examples: suppliers of music on demand, software distribution; With online sales, transactions and distribution

2.6 e-Commerce in the World

The number of Internet users and hosts are the main indicators as e-commerce penetration. Government policies, technical infrastructure, cost, income, education and age are the main factors determining the profile of Internet users. Technological advances have lowered the cost and improved the quality of accessing the Internet. Productivity gains in the production of computers have led to

sharply lower computer prices. Cheaper computers have stimulated their diffusion into households, although not proportionately across countries especially between developing and developed countries. There are changes 27.2 % world Internet users between 2000 and 2001 and 20 % between 2001 and 2002; and there are changes 32.62 % world Internet host between 2000 and 2001 and 2.36 % between 2001and 2002 (www.unctad.org, 2003)

It has been indicated by many surveys that the number of Internet users increase 33 % every year, the volume of e-commerce increase 80 % every year. According to Visa International study, it is estimated that the volume of e-commerce will reach US$1 trillion by 2003-2005 period (Özbay and Devrim, 2000). Established and estimated volumes of e-commerce are shown in Figure 2 (Çetinkaya et al., 2003).

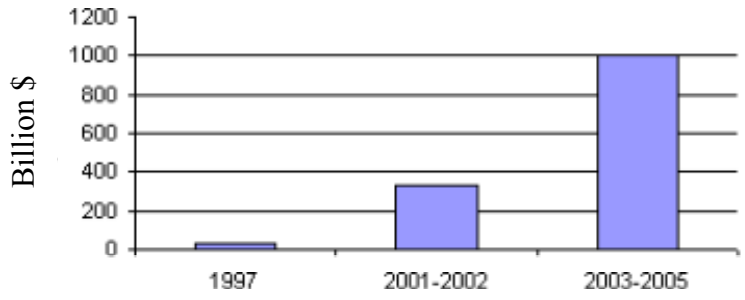

Figure 2 The Estimation of OECD on e-Commerce

Quoting data from surveys compiled by OECD concerning its member countries for 2000-2001, the report says that the share of Internet users buying online was highest in the Nordic countries, the United Kingdom and the United States, where 38 % of users had made purchases online; it was lowest in Mexico, where fewer than 0.6 % had done so. The share of sales to households in total Internet sales ranged from a maximum of about 30 % (Finland and Luxembourg) to a minimum of about 1 % (Singapore). Internet retail sales remain a small part of total retail figures (around 1.5 % in the United States and the European Union), although many more consumers use the Internet to research purchases that they later make in stores. Estimates of total online retail sales for 2002 were US$43.47 billion for the United States (US$73 billion including travel), $28.29 billion for the European Union, US$15 billion for the Asia-Pacific region, US$2.3 for Latin America and as little as US$4 million for Africa. As regards B2B e-commerce transactions, official USA statistics show the dominance of B2B transactions in the total of e-commerce. In 2001, annual B2B online sales in the USA amounted to US$995 billion, or 93.3 % of all USA e-commerce. Private-sector estimates of the value of B2B trade in the European Union put it at between nearly US$185 billion and 200 billion for the year 2002. In Central and Eastern Europe, some projections show that B2B e-commerce will amount to around $4 billion in 2003. In the Asia-Pacific region, it should grow rapidly, from about US$120 billion in 2002

to around US$200 billion in 2003 and US$300 billion by 2004. In Latin America US$6.5 billion worth of online B2B transactions are forecast for 2002 and US$12.5 billion for 2003, although far more optimistic estimates are also available. According to 2001 forecasts, African B2B e-commerce in 2002 was expected to amount to US$0.5 billion in 2002 and US$0.9 billion in 2003, with South Africa accounting for 80 to 85 % of these amounts (www.unctad.org, 2003).

A survey conducted by PriceWaterhouseCooper World Economic Forum revealed that, sample of 377 CEOs of world's largest 2000 companies, 80 % of global CEOs expect that e-commerce significantly reshape competition in their industry, 28 % of European and Asian CEOs and 16 % of North American CEOs expect that e-commerce completely transform their industry (Senn, 2000).

e-Commerce is growing fastest among big businesses. It is used for coordination between the purchasing operations of a company and its suppliers; by logistics planners and transportation companies that warehouse and move products; by sales organisations and wholesalers or retailers which sell the products; and in customer service and maintenance operations (www.combinet.net, 2003).

e-Commerce already plays an important part in economic activity and its relevance will continue to grow. According to WTO estimates, the share of value added that potentially lends itself to electronic trade represents around 30 % of GDP in services sectors (i.e. information, electronic, financial, retail, tourism sectors, music, publication, bank services). Three quarters of this is attributed to distribution, finance and business services. As far as the delivery of products is concerned, the impact of e-commerce will fall mainly on trade in services rather than trade in goods. Trade of potentially digitizable media goods currently represents less than 1 % of total world trade. Of this, 60 % corresponds to printed matter, recorded tapes, CDs and packaged software (Pérez at al, 1999). Although the percentage of e-commerce corresponds 10 % of international commerce, products such as software, computer, music, book, entertainment that can be supplied electronically reach an important percentage, and brings to an end traditional methods of commerce. Travel, gift, clothe, investment, electronic products, and automobile can be added to these categories (Yumuşak, 2004).

It is too early to think that e-commerce has reached a global acceptation, because more than half of estimated trade volume will have occurred in USA (Akın, 2003). A survey of 30,000 consumers in 30 nations found that the USA not only has the fastest-growing number of Internet users, but the largest proportion of e-commerce consumers (www.undp.org, 2003). There is a big gap between USA and EU in e-business and e-commerce. In USA, many industries have decreased cost, reached to new markets by facilitating Internet. USA's achievement is based on entrepreneurship, abundance of investment capital, unique language and currency (Özbay and Devrim, 2000). The Yankee Group published the results of its research indicating that the future of 'paperless' commerce in the USA is situated in the B2B segment. 1996 turnover was extremely limited. Over the next two years growth was exponential. Housing and automobiles used to drive the US economy**.** Now, information and

communication technology accounts for a quarter to a third of economic growth (Uyttendaele, 2004). Information technology has contributed to nearly one-third of real GDP growth in the USA; the decline in price of information technology products and services has reduced USA inflation by one-third (Burr, 1999).

2.7 e-Commerce in Turkey

Turkish customers and entrepreneurs are very successful in following on recent developments. But the transition process of e-commerce is accomplished by the force of customers. While B2B is increasing gradually in USA, B2C is developing similarly in Turkey (Kepenek, 2000).

Because e-commerce is in initially stage in Turkey now, statistical data has not been collected yet by the government organizations. That's why some data have to be obtained from international organizations and private firms which are in information and communication technologies and / or banking service. Table 5 shows estimated e-commerce volume to give an idea about e-commerce level in Turkey (www.ykb.com.tr, 2004).

Table 5 The Estimated e-Commerce Volumes in the World and Turkey

	2000	**2001**	**2002**	**2003**	**2004**
The Number of Internet Users in Turkey (million)	1,8	3,5	6,1	7,5	10
The Number of PC in Turkey (million)	2,5	3,6	6,1	7,7	11
B2C e-Commerce in Turkey (million $)	20,1	67,7	177	365,2	614,3
B2C e-Commerce in the World (billion $)	56	78	29	48,7	61,4
Online Expense per Person in One Year in Turkey ($)	11,2	19,9	29	48,7	61,4
B2B e-Commerce in Turkey (million $)		298	656	1457	3235
B2B e-Commerce in USA (billion $)		522	782	1113	1500

According to The Roper Reparts worldwide survey that includes 30 countries in the world in 1999-2000, Turkey is indicated as a country that the number of Internet users increase the most. In the rank of countries that gain income in computer and Internet markets, Turkey is in the second place after Japan. Turkey is followed by Taiwan, Germany, Saudi Arabia (Özbay and Devrim, 2000).

As shown in Table 5, the volume or the percentages of e-commerce in Turkey is a small part of the total, but it is increasing. Table 6 shows the percentage of e-commerce in GDP in Turkey. According to IBS Research Consulting, some firms have become interested in new economics and e-commerce and some of them have made plans to enter to e-commerce in Turkey. The results of the survey are given in Table 7 (www.kobiline.com, 2004).

Table 6 The Percentage of e-Commerce in GDP in Turkey

	2000	2001	2002	2003	2004	2005
The percentage of e-Commerce in GDP	0	0,1	0,2	0,3	1	2,3

Table 7 The Results of IBS Research Consulting Survey in 2000

	June (%)	November (%)
Big part of our business will be related to e-commerce in 5 years.	51	77
I believe that our top management has a positive attitude to e-commerce.	47	66
e-Commerce is needed to get education and develop skill.	60	63

Although the number of Internet users and the volume of e-commerce increase in Turkey, still Turkey is behind many countries. The Figure 3 shows comparison of countries based on the number of Internet users and online buying habit (Yumuşak, 2004).

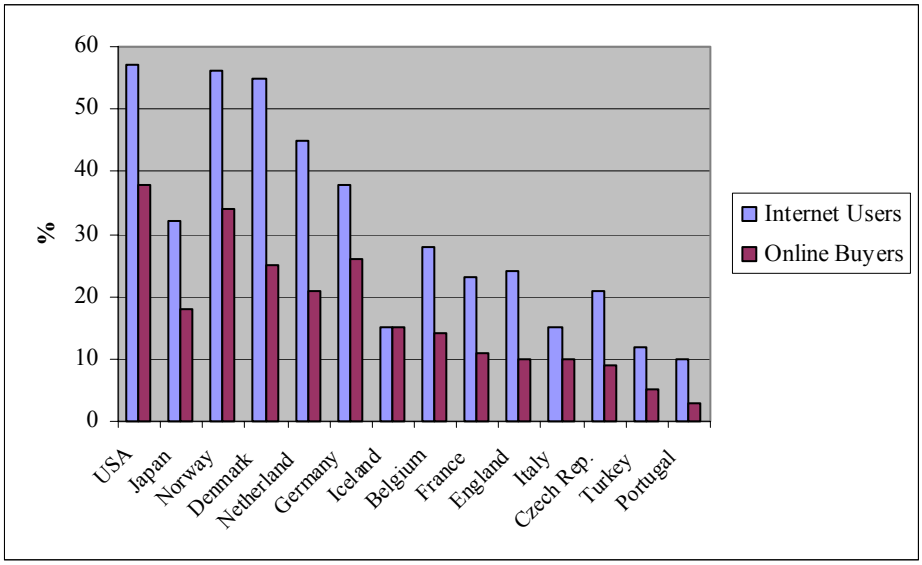

Figure 3 Online Buying Habits of Adults in 2000

The type of products that are sold extensively in the world and Turkey are showed in Figures 4 and 5 respectively (Çetinkaya et al., 2003).

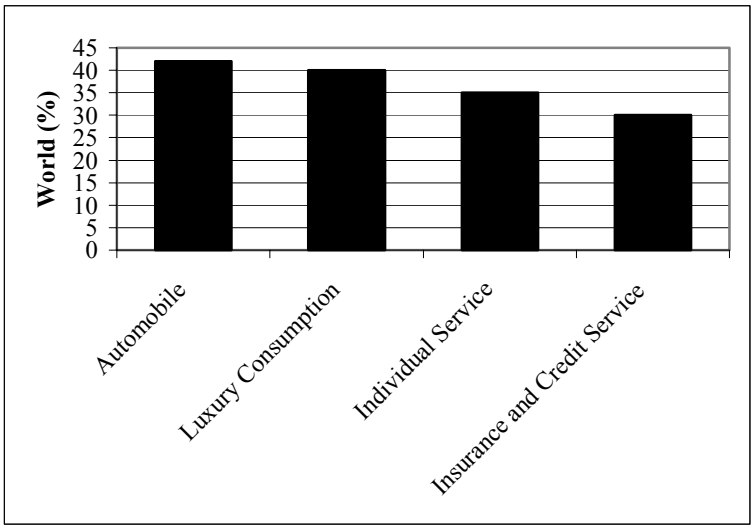

Figure 4 Products that are Sold in the World

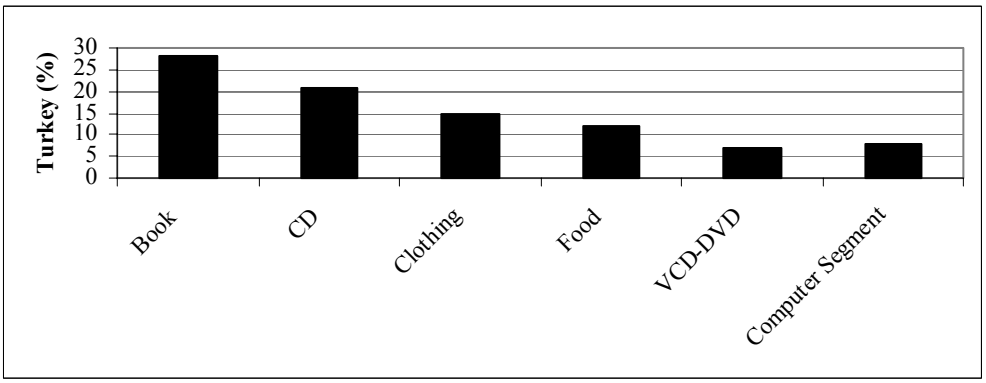

Figure 5 Products that are Sold in Turkey

The results of research on e-commerce show that Turkish people shopping items are different because of Internet users' properties. Although the age of Internet users are much younger (about 28) and their income levels are lower than Internet users on the world, their education levels are higher (Çetinkaya et al., 2003).

EFT is the most known and wide spread used tool of B2B e-commerce especially by banks in Turkey. It has been in use between Central Bank and banks since 1992.

The experience of e-commerce in Turkey started with applications in only a few areas, in 1997. New areas added during the time. A few banks such as Garanti Bankası, Vakıfbank, can be considered as the pioneers of e-commerce, giving Internet banking service or creating virtual products. Although many famous firms prefer to open virtual shops in cyberspace, many relatively small firms prefer to rent shops in malls via Internet service providers (Civan and Bal, 2003).

To get information on development of e-commerce in Turkey, the development of Internet in Turkey must be looked at. TUVAKA was built and financed by universities and research companies in 1986, but it became inadequate during the time because of technological development. The first Internet connection was accomplished in 1992 by a joint project of METU and TÜBİTAK cooperation. The first international Internet connection was started in 1993 and TR-NET was built. TURNET was built as national spinal columns to increase using facilities from Internet, to solve capacity problems etc. by TR-NET team and Telekom A.Ş. ULAKBİM was built for universities and research organizations to reach information resources in national or international levels. ULAKNET was created with a cooperation of Telekom A.Ş on ULAKBİM project in 1997. Some inadequacies in TURNET have emerged and Ttnet project has been developed. Board of Internet has been formed to identify aims, make strategic decisions, advice etc. to Ministry of Transportation in 1998 (Çak, 2002).

The first official studies on e-commerce in Turkey was started in 1997 by Board of Science and Technology; consequently Undersecretariat of Foreign Trade was assigned to improve and coordinating the e-commerce. Board of Electronic Trade has been formed related and responsible to Undersecretariat of Foreign Trade (www.e-ticaret.gov.tr, 2003). Technical, legal, and financial study groups were formed by Board of Electronic Trade. Export Promotion Center of Turkey and The Scientific and Technical Research Council of Turkey have supported all studies (İyibozkurt, 2000). An Electronic Commerce Coordination Committee, involving government departments, public and private companies, was set up in 1998 to make recommendations on national policy on e-commerce. Its report was adopted by the Government as the official state policy on e-commerce. Highlights of the policy were (Arıkan, 1999):

- Providing a technical and administrative infrastructure for improving access to e-commerce;
- Creating a legal infrastructure to support e-commerce;
- Promoting awareness of e-commerce among industry and citizens;
- Close cooperation at the international level including harmonizing national policies with the rest of the world, complying with international standards and participating actively in international organizations.

The main achievements of the Government of Turkey with respect to e-commerce as:

- Preparation of a Turkish National Information Infrastructure Master Plan (August 97-February 99): Turkish National Information Infrastructure (TUENA) explored the status of information communication technologies with a nationwide survey to provide the policy makers with detailed information for long-term strategic planning involving four work packages, “the monitoring of the

local and global environments", "the infrastructure planning", "the national value-added instruments", and "the institutional restructuring" (www.bilten.metu.edu.tr, 2004).

- The setting up of an online export promotion centre in Ankara under UNCTAD's Trade Point Programme (1997): The Global Trade Point Network is a huge network of business information, developed under the UN-supported Electronic Trade Efficiency Programme, especially for developing and undeveloped countries and their SMEs to enter international markets in 1992 (www.unicc.org, 2004; Ersoy, 2000). By interfacing to established national databases, the network aims to supply key trading data (i.e. market information, transportation options and prices, insurance facilities, credit availability, customs requirements, and import/export regulations) for countries across the world. Further, through its "Electronic Trading Opportunities" system, the network serves as a meeting place for buyers and sellers world-wide to contact directly. Potential matches between buyers and sellers are identified by using both geographical details and information on products offered or required (www.unicc.org, 2004).

At the beginning of The Global Trade Point Project, Trade Points were constituted in 16 countries and connected to each other, and then new trade points were added during years. In relation with Project, Ankara Trade Point (ATP) was built in Turkey in 1999 by Export Promotion Center of Turkey (Ersoy, 2000).

- The establishment of SME-Net, an information and Internet service for SMEs (1997): KOSGEB has established its own intranet, called as KOBI-NET, using Internet infrastructure in Turkey to expand its services and access to more wide spread SMEs in the country. There are 20 information providers (i.e. unions, associations, banks, foundations, chambers) within KOBI-NET. It offers basic services to Turkish SMEs for e-commerce such as e-mail services (id, password, e-mail address), preparation of Web pages in 6 languages (Turkish, English, French, German, Italian and Spanish), communication software to all members and opportunity to access to KOSGEB and other SME institutions' services easily as free of charge. Some statistics about KOBI-NET and e-commerce services in 2000 are as follows (www.kobinet.org.tr, 2004):

- Total number of KOBI-NET members reached to 8,900
-About 3,000 web pages prepared or updated on Web site,
-e-Mail traffic reached to about 250 e-mails/day and 5 e-mails/member/day,
-Number of visitors of KOBI-NET Web site reached to 100,000 and 5,000 visitors/month

KOSGEB has established "Internet Cafes" in the industrial areas especially "Organised Industrial Zones" to promote Internet, e-commerce. In this respect, an Internet Cafe in Mersin Small Industrial Site has been in service since 1999. In year 2000 the number of Internet Cafes has reached to 18 in various provinces (www.kobinet.org.tr, 2004).

- Customs automation project that promoted the use of EDI in Turkish customs operations (Arıkan, 1999): Singapore is the first country that used EDI for all trade process. SNS was established by more

than 20 organizations such as exporter, importer, transporter etc. in 1998. SNS has supplied a single electronic document that travels over the net to get approval from related public organizations. The duration of approval process was 23 days, now it is 15-20 minutes (Özbay and Devrim, 2000). The aim of Customs Automation Project is to promote the use of EDI in Turkish customs operations similar to Singapore applications.

- The Act of Electronic Signature (2004) was enacted approved by the Parliament, but some new regulations are necessary to apply it.

EU initiative deserves extra attention to transfer of SME awareness-creation for e- commerce to the emerging economies in neighboring countries. Two Mediterranean countries, Tunisia and Turkey, have already taken up know-how in e-business (Uyttendaele, 2004). EU has started the e-Europe project in 1999 to make European market as the most dynamic and competitive market in the world and to built the Internet infrastructure for new economics. The project that is called as e-Europe+ covers candidate countries, e-Turkey project, which is a part of e-Europe+ project, should be complete important subprojects to reach 12 aims from 2002 to the end of 2006. MERNIS is one of the most famous parts of e-Turkey (Elektrik Mühendisliği, 2003).

Harvard University and IBM have prepared a study to determine the readiness level of countries for e-commerce. The general evaluation of test for Turkey is that Turkey has a developing potential with the average 2.9 over 4. The results of test for Turkey are given below in Figure 6 (Demir, 2001).

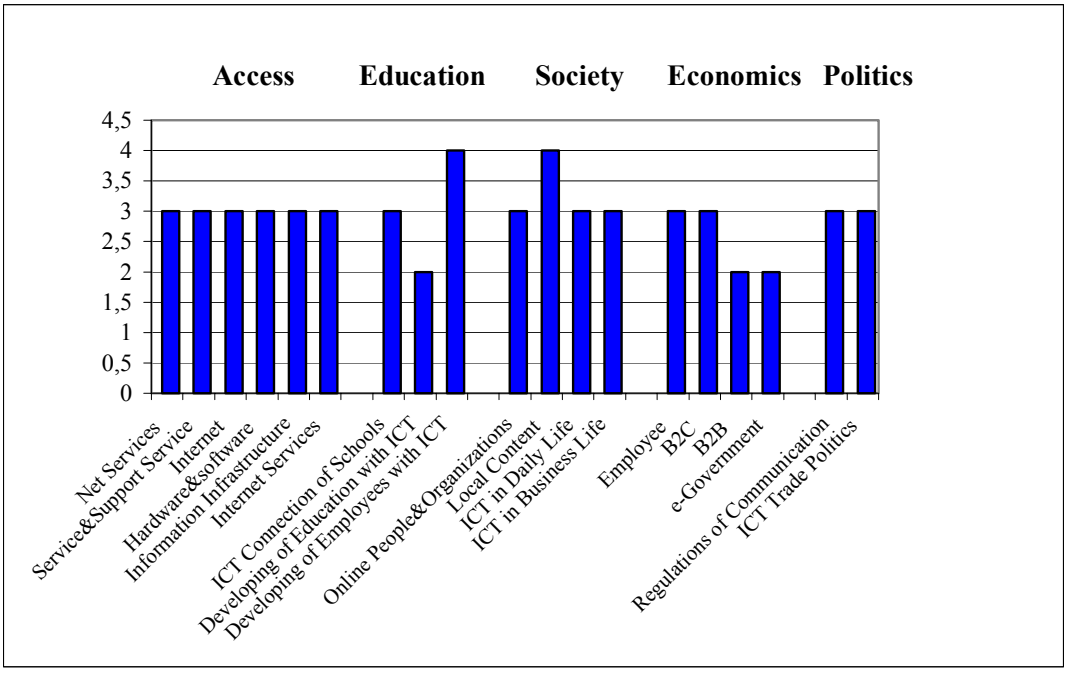

Figure 6 General Evaluation Based on Categories

2.8 Two Successful e-Commerce Examples

After general information about e-commerce was given, now it becomes suitable for giving success examples to understand the subject better. The examples chosen belong to B2B and B2C categories because both of them have very important percentages in e-commerce applications (Turban et al., 2000).

2.8.1 The Example of B2B, General Electric Case

General Electric's material costs increased 16 % between 1982 and 1992, while General Electric's products prices remained flat for a few years and then started to decline. In response to these cost increase, General Electric began an all-out effort to improve its purchasing system. The company analyzed its procurement process and discovered that its purchasing was inefficient, involved too many transactions, and did not leverage General Electric's large volumes to get the best price. In addition, more than one-quarter of its 1.25 million invoices per year had to be reworked because the purchase order, receipt, and invoice did not match.

General Electric has taken a number of steps to improve its purchasing, and the most recent one involves the Internet. Factories at General Electric Lighting used to send hundreds of requisitions for quotations (RFQ) to the corporate sourcing department each day for low-value machine parts. For each requisition, the accompanying blueprints had to be requested from storage, retrieved from the vault, transported to the processing site, photocopied, folded, and attached to paper requisition forms with quote sheets, stuffed into envelopes, and mailed out. This process took at least seven days and was so complex and time-consuming that the sourcing department normally sent out bid packages only to two or three suppliers at a time.

In 1996, General Electric Lighting piloted the company's first online procurement system, the Trading Process Network. Now, the sourcing department receives the requisitions electronically from its internal customers and can send off a bid package to suppliers around the world over the Internet. The system automatically pulls the correct drawings and attaches them to the electronic requisition forms. Within two hours from the time the sourcing department starts the process, suppliers are notified of incoming requisitions for quotations by e-mail, fax or EDI and are given seven days to prepare a bid and send it back over the extranet to General Electric Lighting. The bid is transferred over the intranet to the appropriate evaluator and a contract can be awarded the same day.

As a result of implementing the Trading Process Network, General Electric has realized a number of benefits:

- Labor involved in the procurement process declined by 30 %. At the same time, materials costs declined 5 % to 20 % due to the ability to reach a wider base of suppliers online.

- Of the staff involved in the procurement process, 60 % have been redeployed. The sourcing department has at least six to eight free days a month to concentrate on strategic activities rather than on the process was manual.
- It used to take 18 to 23 days to identify suppliers, prepare a request for bid, negotiate a price, and award the contract to a supplier. It now takes 9 to 11 days.
- With the transaction handled electronically from beginning to end, invoices are automatically reconciled with purchase orders, reflecting any modifications that happen along the way.
- General Electric procurement departments across the world now share information about their best suppliers. In February 1997 alone, General Electric Lightning found seven new suppliers through the Internet, including one that charged 20 % less than the second lowest.

General Electric reports that the Trading Process Network benefits extend beyond its own walls. A computer reseller, Hartford Computer group, reports that since joining Trading Process Network, it has increased exposure across the different General Electric business units so that its business with the company has grown by over 250 %.

2.8.2 The Example of B2C, Happy Puppy Case

Making a reasonable profit from creating electronic games can be a difficult task, especially for independent game writers. The games go through several marketing channels, each taking a share of the profits, leaving very little to the creators. Happy Puppy's founders had this experience until they decided to use the Internet to sell their games directly to customers. Within a year the firm became a success story.

Established in 1995, the site is a pioneer e-commerce marketer. This is how the Internet works for Happy Puppy: Demonstration software of computer games, written by both the company's founders and other companies, are placed on the company's Web site as shareware, demos, or freeware. Game-related downloads are also available. Customers can download the demos and try them free of cost. If customers like a game, they can purchase its full version. The site also includes a weekly newsletter, bulletin board, and chat room.

The Happy Puppy Web site is well known. Several million copies of games are downloaded every month. It is referred to by more than 10,000 links available in other Web sites. The company's employees search e-commerce bulletin boards and newsgroups for queries or discussion related to electronic games. When they find a relevant item, they send e-mail to the parties involved or post a note on the bulletin board referencing Happy Puppy's Web site.

Happy Puppy's owners make money not only from selling own and others' games but also from selling advertising to other companies on their popular Web site. In addition, they allow customers to download demo software only after completing a questionnaire. The results are analyzed and sold to

electronic game manufacturers. Because the site is visited by more than 4 million users a month, it has become a popular place for developers, game companies, job seekers and many others to advertise.

CHAPTER 3

CONTEXTUAL FRAMEWORK

3.1 The Nature of Study

There has been commerce for centuries. Developments in information and communication technologies have carried commerce to a new dimension in 1990s. E-commerce is a new concept which many discussions are made on. However, it is indisputable fact that the volume of e-commerce increases rapidly over than estimated and firms that don't take advantages the opportunity of e-commerce will be at a disadvantageous position against their competitors.

The aim of this study is to give information about e-commerce to firms in mining sector, to show the road map that must be followed by firms, and to recommend solution(s) for problems encountered.

In this study, a questionnaire was prepared about e-commerce in order to bring out the approach of mining sector to e-commerce and its applications. When the questionnaire was evaluated, a small scale mining firm interested in e-commerce was determined and decided to work together.

For those which want to use e-commerce that should be followed a road map was established by the compilation of road map suggestions from literature, questionnaires were collected from literature and new questions were prepared related to the new suggested road map. Private and governmental organizations were interviewed, which serve in information technology sector. The suggested road map was discussed with employees of the firm and the related organizations, the necessary changes were made based on discussions and properties of the firm such as to be a small scale firm and working in mining sector. Previous studies done were reviewed, and the further studies that should be done by the firm were determined. So, a road map was prepared for the firm, which wants to do e-commerce, and the deficiencies of the firm were determined. Some customers of the firm were reached and their ideas about e-commerce and its applications were asked.

The results of the study were commented based on the approach of mining sector to e-commerce in general, and in the special properties of the firm and its customers; a general road map was determined for a firm, which wants to do e-commerce.

3.2 e-Commerce and Small to Medium Enterprises

It is impossible to separate the problems of a mining firm from general problems of SMEs, industry or sector that works in and country that it is located in. Although the aim of this study is not to focus on SMEs, it is necessary to deal with them to make comments.

From a global perspective, the definition of SMEs is a difficult one as it depends largely on the country. Each country has its own definition that recognises the importance that SMEs play in the country's particular economic growth and development (Jentzsch and Miniotas, 1999). Although there are many definitions of SMEs based on different criteria such as investment value, the level of technology, the capacity of firm, endorsement, profit, created value added in different countries, sectors or regions; the number of employees can be used to define SMEs (Güneş, 2003). They generally employ less than 250 employees (www.combinet.net, 2003).

SMEs are the pillars of the economy of any country and their competitiveness is strictly tight to the one of country (Özgener, 2003). Their continued growth is therefore important in a world that is fast changing as a result of free trade agreements, advancements in computers and e-commerce. Unlike so many other business developments in the past, e-commerce is not an opportunity for only the large or multinational firms, rather, the smallest entrepreneurial organizations can establish and build their business around e-commerce. As they do so, geographic distance disappears as a business barrier, for the global reach of underlying communications technologies becomes an easily accessible resource for all firms (Senn, 2000). SMEs with their flexibility can challenge a well-established multinational company. In fact, small businesses are already replacing big established players in the global market. They are able to keep overheads to a minimum, and by taking advantage of their presence on the Internet, they can react quickly to market changes with differentiated products, creating multiple niches in the market. In important segments of global markets, mass-produced products, the preserve of large players able to maximise low unit overheads, can no longer dominate. Customised products catering to diverse tastes in each country are the requirements for success today (www.combinet.net, 2003).

The use of computers is not a new phenomenon for SMEs, especially in areas such as accounting. However, a coupling of computers with Internet technologies holds numerous potential advantages for SMEs, such as to intensify communications, access new information, stretch the reach of marketing and sourcing, reduce costs and as a result boost productivity and profits. For example, the Internet can help SMEs in marketing and advertising to attract new customers, in servicing and supporting existing customers, a unique opportunity to identifying, tracking, targeting, and staying close to the customers, in accessing new markets and devising new distribution channels for goods and services. The positive impact of Internet technologies extends equally to internal operations, such as education, management, organization and decision making (www.undp.org, 2003). Producers and traders no longer need to maintain physical establishments requiring large capital outlays. Virtual shops and

contact points on the Internet may enable storage close to the production site and distribution can be made directly to the consumer. e-Commerce may also enable such firms to eliminate middlemen while trying to sell their products abroad (Hoda, 1999).

The small office/home office (SOHO) workforce is expected to play a central role in the global economy of the 21st century. e-Commerce offers then opportunities for SMEs in developing countries to enter global markets and become successful actors (www.undp.org, 2003).

There is a potential role for business among SMEs, and more particularly in the way in which this potential role may be influenced by the opportunities resulting from developments in e-commerce technologies (Pollalis, 2000). It represents an opportunity to compensate for their traditional weaknesses in areas such as access to new markets (www.smallbusiness.org.au, 2004). However, one can argue that while in the short run the power of the Internet may favor SMEs, the growth in e-commerce raises the danger of greater domination by transnationals and of reduced openings for SMEs. Nevertheless, appropriate public policies may avert this danger and lead to new opportunities (Pollalis, 2000).

There are many researches on SMEs and their problems on e-commerce applications. The results of researches can be summarized as below (Bozkurt, 2003):
-Being unaware of e-commerce: Huge part of them doesn't know what e-commerce is. They must be informed by national governments, public or private institutions, or international organizations. Authorities can limit their role to awareness-creation, administrative simplification, setting the right example by electronic tendering and procurement, by tele-administration, by avoiding a dual society, by encouraging more entrepreneurship, more venture capitalism and more fundamental research (Uyttendaele, 2004). SMEs show substantial differences for e-commerce usage by regions and in different industries. The USA market is much more advanced in the use of new technologies and media, therefore SMEs are aware of the possibilities and support from public and private institutions is provided. The lack of awareness is closely linked to the fact that SMEs in Europe usually are slower in adopting new technologies given the often high investments necessary and the fact that new technology is often not required for their internal business activities, "fax is sometimes considered innovative"(Pollalis, 2000). By May 1998, 15,000 out of a total of 200,000 SME managers attended practical demonstrations of information-business and information-innovation to be immediately implemented by SMEs. As a result Internet penetration jumped from 25 % to 75 % (Uyttendaele, 2004). In Europe, 30 % of SMEs have had Intranet and 71 % of them have had a computer connection since 2001. At the time 57 % SMEs, that have Internet connection, have had their own Web sites, 77 % of them can facilitate e-mail and EDI (Özgener, 2003). A survey showed that SMEs connected to the Internet are more successful than those which are not. In USA, SMEs using the Internet are commanding average revenue of US$3.79 million compared to those SMEs offline whose average revenue is US$2.72 million (www.undp.org, 2003).

-Uncertainty of advantages of e-commerce: They impress more concrete examples than theoretical information.
-Security and risk aspects
-Complexity of e-commerce process and lack of qualified personnel: It means that knowledge and skills are required to make use of e-business models.

SMEs fall into two categories: technology competent/research performing SMEs; and medium and low-tech SMEs. The majority of SMEs belong to the latter category; they are customer-focused rather than supplier-focused in their use of e-commerce. Very often, despite the encouragement they receive from customers, SMEs pull out of Extranets because they find the technology supporting electronic processes difficult to use and do not perceive any real benefit in doing business in this way. Only very few SMEs – those that are technology developers themselves – support electronic cash, electronic cheque and micro-payment (www.servicemachine.org, 2004).

The issues that can be added to adopt SMEs of e-commerce are as follows:
-Costs/Benefit perception of using computer and networking technologies: Costs to any business are critical to their success. The cost of being involved in e-commerce is based on the initial outlays and on-going expenses. For most SMEs, the initial investment and operation cost of e-commerce are high when compared to the rate of return or benefits gained. Although start up cost (email and web site) is low, the cost for installing more advanced e-Commerce tools and security system are not affordable by most companies. The full cost to an SME can be as much with 10 to 20 times the initial costs in annual maintenance and keeping their systems up-to-date (Jentzsch and Miniotas, 1999).

-Low use of e-commerce by customers and suppliers: A critical mass of buyers is needed for e-commerce to survive. The fixed cost of deploying e-commerce could be high. Without a large number of buyers, sellers will not make money. In addition to the cost/benefit issue, critical mass of both buyers and sellers is needed for markets to be truly efficient, where strong and fair competition can be developed (www.smallbusiness.org.au, 2004).

For many SMEs, e-commerce remains a curious notion; in their view it has little significance for their own enterprises and business plans. SMEs are less likely to use the Internet to take or place orders, and pay for or receive payment for products or services (www.smallbusiness.org.au, 2004). A research on 113 firms in 16 developing countries made by IFC has emphasized that SMEs in developing countries have utilized Internet as communicating or marketing tool. Although 45 % of industry firms and all financial firms have their own Web sites, they have been using them to represent their firms and their products instead of the application of commerce over Internet (Güneş, 2003). Gulledge (2002) explains that many suppliers are SMEs, and the reaction of them to e-marketplaces has been less enthusiastic. Suppliers have been "squeezed in at least two ways. First, there are economic disincentives for suppliers' participation. If the exchange objective is supply chain cost reduction, it translates directly to reduction in supplier's profit margin, suppliers will use traditional distribution

channel. Second, suppliers are faced with a plethora of standards and technologies, so from a technology point of view, participation is difficult.

Bianchi and Bivona (2002) add that SMEs face structural difficulties in pursuing Internet-based strategies, owing to their own specific complexity features such as:

- Lack of professional management;
- Weak information and management control systems;
- Decision-making processes mainly based on flair for business and gut feeling;
- Lack of equity and financial resources;
- A weaker competitive position against larger firms.

3.2.1 SMEs and e-Commerce in Turkey

The definitions of SMEs in Turkey are given below based on different criteria (Güneş, 2003).

Table 8 The Different SME Definitions Accepted by Different Institutions in Turkey

Organization	**Scale**	**Scale**
	Small	Middle
DİE	10-49 workers	50-99 workers
Halk Bankası	1-99 +1	10-250 +2
TOSYÖV	5-200	
KOSGEB	10-50	51-150
TOBB	10-49	50-150
EXIM	1-250	
DTM	1-200 +3	

+1= 15 Billion TL balance, +2=30 Billion TL balance, +3=2 Million $ balance

SMEs are thus engines of growth in any country (www.combinet.net, 2003). Turkish economy, despite the recent global and national crisis it has gone through, is still amongst the top twenty developed economies in the world. Much of this success is owed to the Turkish SMEs, which constitute 99.5 % of the enterprises and 61.1 % of employment in manufacturing sector. In opposition to that, value added by SMEs in the manufacturing sector is limited to 27.3 %. Although the ratio of SMEs in total number of enterprises in manufacturing sector is quite similar in various countries, Turkish SMEs significantly under perform in their stake in investment, export and loan pie (www.kobiline.com, 2004).

SMEs in Turkey look like (Haspolat, 2003):
- Working by using traditional methods,
-Inadequate in technologic hardware and their use,
-Randomly established firm structures,
-Disseminated and disordered mass.

A research on 49,400 different SMEs in Istanbul has stressed that they can't utilize information technologies effectively. 94 % of them have used computer for keeping addresses and writing label, 80 % of them for account. The rate of usage of e-commerce, database, and CAD is too low (Güneş, 2003).

A research on e-commerce applications of SMEs in Gaziantep has shown that 56 %of firms haven't heard KOBİ-NET portal before. Although approximately all of them have Internet connection, there isn't effective e-commerce application. They use Internet in market research (58 %), communication with other firms (14 %), adoption to electronic changes (14 %), supplying material (8 %), others (6 %) (Civan and Bal, 2003).

A research, that the aim was to determine the level of use of information technologies in Turkish SMEs, made by TOSYÖV emerged the fact that education degree of owners have not given hope for future; major of them (42 %) graduated from secondary school, only a small part of them (14 %) have university or over education degree.

The president of Chamber of Izmir Trade expressed that they had to cancel education program on e-commerce that had been continued for three years, because there were not enough interest in the education program (Haspolat, 2003).

The survey conducted on PC-literate SMEs by ProCon GFK on behalf of Microsoft Turkey in 2000, brings up several points to consider on information technology penetration of SMEs (www.kobiline.com, 2004):
- Only 2 % of SMEs use e-commerce presently and 23 % plan to use it next year.
- The PC penetration is higher in the newly established companies. Maximum PC penetration is in finance and foreign trade sectors.
- 78 % of SMEs having PCs have Internet access, 56 % of them consider getting an Internet access in the upcoming year.
- 40 % of SMEs have Web sites. 94 % of SME Web sites are used as brochure and 32 % are used to deliver service and customer support.

A research on transferring process of information technology, "Problems of SMEs on Basic Production and Management: Aksaray Case" emerged that there were strong relationships between Internet connection and export, and ownership of Web site and export; Internet connection and quality

identification document; ownership of Web site and quality identification document. 81.4 % of firms have facilitated computer, 55.8 % of them have Internet connection, 21.4 % of them have e-mail address, 32.6 % of them have Web site, 39.5 % of them are export firms, and 44.2 % of them have quality identification document (Karadal et al., 2003).

The e-commerce facilitate ratio of SMEs is high especially in Finland, Italy, Sweden, England, the ratio of SMEs that sell products using Web and relative technologies in Turkey is too low (Civan and Bal, 2003). The share of the Turkish SMEs in the total export of the country is 8 %. If they start making use of e-commerce, it is estimated that the rate will reach 30 % (Özbay and Devrim, 2000).

3.2.2 Success Factors in e-Commerce for SMEs

Yeh-Yun Lin draws five major lessons in her analysis of success factors of SMEs (Feindt et al., 2002):
- Parallel progress in activities related to **structure, technology, and people** is crucial for success.
- Successful SMEs place greater emphasis on soft issue (people) than hard issue (technology, structure).
- The management skills and concepts of the founders are deemed much more important than their technical skills.
- Employee skills are of crucial concern and can be most effectively developed in a nurturing working environment.
- The impact of business founders on organizational success remains the leading factors.

Hay's study on why some firms grow and others don't can contribute to five lessons mentioned. He says that over the long term it is the internal rather than external barrier to growth that exerts the decisive influence upon SMEs rate of growth. The key internal growth constraint is managerial capacity and the unwillingness on the part of the owner-managers to incur risks associated with growth (Feindt et al., 2002).

Strader and Shaw (2000) explained that there are some factors that determine the impacts of e-commerce on some industries. They identified six factors that each falls within one of four categories: **product, industry, seller and consumer characteristics**. They emphasized the importance of product and the magnitude of the product price, standards that exist for describing products in industry and additional risk associated with buying online. On the other hand, **readiness to experiment with new concepts, business structures and networked virtual environments** is a decisive factor for success in e-commerce (www.servicemachine.org, 2004). Another important success factor which was detected in a survey is the need for **a long-term perspective to evaluate the financial profile of e-commerce investments** (Bianchi and Bivona, 2002).

A research undertaken in the framework of the ESPIRIT project KITE of EU which collected information about 150 SMEs e-commerce ventures world-wide demonstrating the range of ideas and activities to identify success factors for rapid growth in SMS e-commerce. The idea of critical success factors was developed to help executives for information need and defined as the limited number of areas in which results, if they are satisfactory, will ensure successful competitive performance for the organization by Rockart. According to a questionnaire drawn up, SMEs had been wanted to express 3 objectives within a particular time scale, with each objective supported by between 3 and 8 critical success factors. The set of critical success factors had been based on initial desk research into the factors relevant to the competitive performance of small business entering the e-commerce market. The critical success factors were classified on the industry in which the firm operates, the company itself, time dependent organizational areas, e-commerce space itself. The KITE research has identified 11 critical success factors that **content, convenience, control, interaction for all companies involved in e-commerce; community, price sensitivity for all companies within a particular industry sector; brand image, commitment, partnership, process improvement, integration for individual companies**. As a conclusion small firms at the start of their business with a cost focus will need to consider seven essential critical success factors: content, convenience, interaction, control, commitment, price sensitivity, brand image. As their e-commerce business grows, they need to add the critical success factors community, partnership, process improvement and integration. In order to pursue sustainable e-commerce strategies, the entrepreneur ought to take a systemic view of the above critical success factors. Each of them is dynamically linked with others and arises from the accumulation and depletion processes affecting strategic assets. This implies that successful growth may not be achieved if decision makers are prone to react emotionally to contingent events. This phenomenon is quite common when new e-commerce ventures are started by SME entrepreneurs (Feindt et al., 2002).

3.3 e-Commerce in Mining Industry

Following the rapid development of the Internet in the last few years, the year 2000 saw the global mining industry begin to seize opportunities to use this new technology in several aspects of its business (www.camese.org, 2004). Although finance, legal and other service industries have higher Internet penetration rates than those in manufacturing and mining, the main uses of the Internet by firms include accessing commercial databases or services, advertising, ordering goods and services, monitoring prices, and e-mail applications (El-Kateb, 2000).

e-Commerce in the mining industry is no longer being treated, regarded suspiciously by traditional channel buyers and sellers alike as a risk business without clear benefit. Innovations and expanding interest in both public and private exchanges have prompted the industry to embrace the e-commerce business model (Carter, 2003).

The techniques are being used in other industries, and their value to the mineral industries is becoming more recognized. The value of this new business paradigm is increased efficiency in researching, negotiating and completing transactions. Other advantages are improved order and inventory management, better tracking of transaction, consolidated information collection and the ability to make informed decisions. A main business objective is to make purchasing and sales more efficient, productive and timely (Gibbs, 2001).

Mining companies only sell their products or survive when they remain competitive within the global framework of prices in their commodity sector. Smaller companies fall prey to larger competitors buying market share and the larger companies merge and dispose of non-core activities and reduction of manufacturing capacity. It is essential for companies, especially SMEs, to identify and qualify all possible opportunities for sales and to provide service and support to customers who clearly distinguish their business from the competition (Thompson, 1999). Managing cost and using technology to help reduce those costs is a way of survival. Saving will come from lower transaction costs, streamlined procurement, reduced inventories, more standardization, greater transparency and more automated ordering (Barker, 2002).

For producers of raw material whose financial health depends largely on cost of production, the change in attitude is simple to explain: Time is money, and the less time spent on internal and external transactions, the lower the cost of doing business. The emerge of private and public e-marketplaces that enable quick procurement of products and services is especially useful to mine operators because of the critical role that spare parts availability and maintenance play in the production process. In particular, companies that operate mines in remote locations, far from supply centers and transportation hubs, are finding that e-business can eliminate or reduce supply chain-kinks (Carter, 2003). e-Commerce can help locate equipment and reduce procurement time. Many claim the ability to find and have equipment delivered quickly is the main advantage of e-commerce (Kane, 2000).

B2B e-commerce has created opportunities to reduce cost and create value for mining companies (Gibbs, 2001). Procurement is the activity that links the production side of the mining industry to its suppliers (www.camese.org, 2004). The supply chain in mining industry is highly fragmented and contains much inefficiency in the procurement process. If electronic procurement means that mining companies deal directly with manufacturers instead of through representatives, the saving in commission could offset fees to the e-procurement facilitator. The relationship between the manufacturer, the representative and the customer is likely to change significantly (Gibbs, 2001).

The amount of money that e-commerce might save is significant .Will Berends, director of e-business at Hatch Engineering, estimates that procurement process account for 1 % to 2 % of total capital cost, and John Heskin, manager of information system for Placer Dome, calculates a possible 3 % saving on procurement spend. INCO's Wayne Smith, manager of purchasing, warehousing and traffic, estimated the total amount spent annually by the industry worldwide on procurement to be US$200

billion. Combined, those estimates indicate an industry-wide saving of US$60 to 120 million. A company such as Noranda, with an annual global procurement spend of about $2 billion, might expect to save $600,000 (Borland, 2001).

Goods traded over the net broadly fall into two categories: experience goods and economy goods. Experience goods require greater personal involvement in the buying process (Mahadevan, 2000). Engineered equipments or ore or concentrates that are more difficult to purchase online since, it typically requires inspections, testing and reviews by several internal departments and often coordination with an outside contractor (Kane, 2000). Trading metals has different requirement than purchasing equipment and depends on extensive interaction between the producers and buyer (Gibbs, 2001). Some oil and gas professionals believe widespread adoption of e-commerce will diminish personnel relationships that took years to build. Some suppliers fear they will lose control over how they present and provide their products to customers. Still others are concerned about the security of doing business on the Web (Chambers, 2001). Most e-commerce experts agree that fundamental changes in the way a company conducts business may be necessary to achieve maximum value from e-business systems and tool. But experienced e-business practioners warn that some fundamentals, including customer relations, can't be ignored (Carter, 2003).

The mining industry B2B e-marketplaces fall into two classes (Ludeman, 2001):
-those primarily focused on consumable supplies and equipment
-those focused on commodity sales

Management of information from remote exploration projects and mining operations, automation of production and procurement can be added classes to the mentioned above (www.camese.org, 2004).

Hatch Consulting, a global consulting engineering firm, sees two major trends in the mining industry. The one involves the creation of something called "collaborative" Web sites for improved communications and use of reverse electronic auction on certain transactions (Barker, 2002).

The newest e-procurement and metal trading sites are growing rapidly and there will be continued development and exciting new advances in the technology. Besides e-procurement, mineral ore and metal trading sites are running on the Internet and more are appearing regularly. The capabilities of trading sites range from simple information and links to full auction and transaction service sites (Gibbs, 2001). Some use simple website portals to allow interested parties to locate them. Others use their sites for direct sales. Exchanges are being established to provide global buyers and sellers with a place to meet and auction their products.

Commodity marketplaces in mining industry are focusing on a particular metal or market segment, raw metals and value-added products, such as brass, aluminum products. All intend to incorporate value-added products, such as transportation and financing, to their income streams (Ludeman, 2001).

Mineral and metal trading sites use B2B software systems that enable complex transactions. Computer, software and customization start-up cost for a trading site very high, so third party developers and facilitators are becoming a preferred solution for online trading (Gibbs, 2001).

All industries are embracing and enjoying the power of the Internet. Robert Wilson, Chairman of Rio Tinto, believes that the Internet seems to have already passed through the obligatory four stages marking the arrival of any great new idea; ignore it, ridicule it, fight it, take it for granted (Barker, 2002). Currently very little use is made of Internet technology for buy-sell transactions between mining companies and their suppliers of equipment and services (www.camese.org, 2004).

A conference on "e-Commerce in The Mining Industry" is organized by CAMESE in Vancouver and Toronto in 2001, its focus is on e-commerce in the procurement process (Borland, 2001). Surveys conducted by CAMESE reveal that most Canadian mining suppliers see a high level of potential opportunity in e-commerce, could adopt when the time is right and about 75 % believe that they have the resources to adapt appropriately. As yet, however, few mining suppliers are buying or selling via the Internet and there is a great deal of uncertainty about how to proceed. Mining companies and suppliers alike are wondering how to integrate new strategies for e-commerce. Most senior managers of mining companies and their suppliers accept, in principle, that the Internet can facilitate buy-sell transactions, including searching for appropriate products and services, tendering, ordering, warehousing, shipping and other matters. However, most of them have serious concerns about how such an important change in commercial processes might affect them in practice. There is a great need for SMEs to integrate information technology processes within their entire operations as a prerequisite to engaging fully in e-procurement (www.camese.org, 2004).

Patrick Molin-a-'Hulisseir, associated director, NRC, believes that the risk of not participating in e-commerce is seen as potentially very high, but the risk of participating and doing the wrong thing is also high .The gap of information must be closed. Bonita Russell, purchasing manager for Cominco Ltd.'s Trail, B.C., points out that in lower population areas, where mines are often found, local suppliers are very important, price is not the only factor, and she adds it will be some time before it realizes that potential, it just makes the job harder for now (Borland, 2001).

Some examples show or explain e-commerce application in mining industry, they are:
Compagnie des Bauxites de Guinea (CBG) is a 26 year old joint venture between a USA multinational and the Government of Guinea for extracting bauxite for export to the USA, Canada and Germany. The company had an annual turnover of US$350 million with exports totaling 13 million metric tones per year. CBG is used its own telecommunications network to facilitate communication between various units of the company within and outside the country as well as with its purchasers in Germany and Canada. This network was independent of the domestic telecommunications network of Guinea which was very poor. The company's independent telecommunications network enabled it to

communicate with its buyers abroad, order supplies of equipment and spare parts needed for the company's 24-hour operations, conduct all the logistics operations of the company including processing of orders, inventory management, financial management with the company headquarters in Pittsburgh, USA and the processing headquarters in Brussels, and provide e-mail service to company personnel. CBG's telecommunication infrastructure was basically an Intranet making use of the Intelsat Business Service (IBS). The company's mining and processing units in Guinea were connected via satellite to the United States and thence by sea cable to Brussels. The Company headquarters at Pittsburgh used a teleport that provided a gateway to the rest of the world. The superior communications service provided through the intranet saved time spent in trying to keep in touch with clients, suppliers of primary material for the company (heavy fuel), and equipment suppliers. It also enabled quick monitoring of ships that arrived and left Guinea carrying the company's produce, which otherwise could be delayed, leading to large financial losses for the company (Ly, 1999).

Quadrem has been created as one of the most powerful e-marketplaces in mining in 2000 with 14 original members, now claims more than 1,800. It represents a consortium of the world's largest mining companies with phenomenal purchasing power. The growing involvement in e-commerce by mining companies and their suppliers was underscored recently when Quadrem announced that its major buyer customers had committed to more than US$1.5 billion in trading volume for 2003 (Barker, 2002). Ludowici Mineral Processing Equipment Pty Ltd (LMPE), an Australian public company established in 1858, decided to join Quadrem because most of their customers were members or founders of the e-market. They also thought that by having their product catalogue listed in Quadrem, they could possibly win some new customers and also increase their sales with their existing customers. LMPE first attended a couple of seminars about Quadrem. The seminars had significant involvement from BHP, WMC and Newmont and were well run. Then they decided to take part in a pilot program funded by BHP and WMC, which was designed to connect suppliers. The pilot involved building their product catalogue and hosting it on the Quadrem e-market. It didn't cost them anything to get connected, because some of the company shareholders of Quadrem sponsored the pilot supplier enablement program in which they participated. They see Quadrem and e-markets as pivotal to their global strategy and a cost effective means of servicing a global market. In looking to expand their international operations they are considering upgrading the services that they have on their own company website to allow their international customers to access their account information online, check shipments, drawings and technical information (www.emarketservices.com, 2004).

NRC has developed Canadian Mining Technology Network (CM-Net); an interactive Website intended to provide its visitors with up-to-date information regarding new technological development. NRC has been divided the area of mineral and metal processing into five stages. The mining and quarrying, smelting and refining, and products assembly stages are typically made up of larger companies, with easier access to R&D and capital than the fabricated parts and simple products stages. The strategy is intended to focus mainly on smaller companies, which tend to be concentrated

in the middle of the simple and fabricated products. They provide close to half of the employment of the sector (Dauphin, 1999). As a part of developing Federal Government value-added strategy, that is aimed to foster the development and identify the barriers in the area of mineral and metal processing, NRC trading partners and has registered an average monthly increase of 30 % in transaction over the past year, representing a 20-fold growing in trading dollar volume during the same period (Carter, 2003).

FreeMarkets creates B2B online auctions for industrial parts, raw materials, services, and construction. They accomplish this by carefully researching the markets and providing the software necessary to create efficient auctions.

Some mining sites can be added:
www.aluminium.com, www.globalcoal.com (Ludeman, 2001),
www.copperconcentrate.com, , www.miningsurplus.com (Gibbs, 2001).

3.4 The Analysis of e-Commerce in Turkish Mining Sector

Statistical data related to e-commerce has not been collected up to now by the governmental organizations. There isn't any study identifying the approach of mining sector to e-commerce and its applications, either. That's why a questionnaire had been prepared to measure the attitude of mining sector to e-commerce; it was applied to firms that had participated in Mining Fair that had been realized in Istanbul at June 2004. The questionnaire consists of three parts and topics mentioned below were searched:

- In the first part, general information about the firms that had been interested in and answered the questionnaire,
- In the second part, the computer and Internet facilities; and Web site ownership of firms,
- In the third part, the approaches of firms to e-commerce and reasons behind these.

The number of firms, which had answered to the questionnaire, is 43. Among them only 40 firms had been evaluated. The answers given by firms were expressed as percentage; however, no statistical evaluation had been done. The questionnaire and the results about the approach of mining sector to e-commerce is given in appendix A, results and recommendations achieved after the evaluation of questionnaire are given below:

1. In market and trade part, the things analyzed were the properties of customers, market conditions that had worked in, marketing techniques and tools that were utilized to get information about the readiness to e-commerce of the environment (business style, relations and habits etc.) of firms. Because firms could check more than one choice, sum of choices is not equal to 100 %.
2. The customers of firms are generally domestic customers (88 %). Governmental organizations (71 %) and foreign customers (63 %) are very important for the company customer portfolio.

3. Firms work in a high competitive market that consists of domestic and foreign producers (63 %). Firms can have competitive advantages via e-commerce under these market conditions. First condition that firms start and sustain e-commerce will be to the interest of their customers.

4. Price (71 %) and fair (68 %) opportunities are used as marketing techniques. Advertising (44 %) and public relations (27 %) are not preferred. New customers are reached by customer visits (83 %), project follow-ups (59 %), and customer recommendations (54 %), and Customer Relations are developed by one-to-one basis of relationship with customers. Firms can get low cost advertising and public relations resources by e-commerce.

5. The Marketing Departments/Units of firms generally realize marketing activity where telephone and fax (95%) are the most important communication tools. E-commerce supplies support to Marketing Departments/Units, and e-mail can decrease the importance of telephone and fax and their cost.

6. Payments are generally made in cash. They can utilize online payment facility.

7. In computer part, information was gathered about the level of usage of technical tools of firms.

8. All companies (100%) and the majority of their customers (93%) have Internet connection. Although almost all firms have Website, more than half of them (69 %) are registered under search engine. It means that many firms don't understand the importance or power of Website and establishing a Website is considered as a waste of monetary sources.

9. Web sites are generally prepared by professional firms (43 %). This shows that they do not have qualified personnel that can make Web sites, and do related jobs in the company. Firms lose their control by getting support from professionals.

10. Company profile and product presentations are made on the Web sites. In other words, they are in the first step of e-commerce. When their ideas about doing e-commerce asked, 30 % of them indicate that they don't think to do e-commerce, 45 % of them answered that they think to do and the rest of them express that they are already doing e-commerce. This shows that firms do not have enough information about e-commerce and their e-commerce definitions are different from each others.

11. Firms, which do not think of doing e-commerce, indicate the obstacles such as adequacy of existing business model for their goals (75 %), doubts on security (75 %); inadequacy of legal agreements (75 %), and infrastructure problems (67 %). While 50 % of them think that e-commerce is not suitable for mining, 59 % of them think that it is necessary to create the conditions that will force them. While 58 % of them think that government doesn't direct firms, steps to start e-commerce application (42 %) are not certain. More than half of them think that there are problems of getting qualified personnel and finance. Similar results were obtained in the study prepared by DTI (2000) to evaluate some of the barriers to B2B e-commerce. The different barriers were rated as follows by non-adopters (Chaffey, 2002):

- e-Commerce is not relevant to the business.
- There are not tangible benefits of e-commerce.
- The technology costs are too high.
- There is concern about confidentiality.
- There is concern about fraud.

Firms could change their minds when their competitors do e-commerce or conditions such as online auctions by governmental organizations force them.

12. Firms that think to do e-commerce believe that they could get research opportunities in low cost (82 %) and develop their existing business (67 %). Firm publicity (82 %), reaching of new market and customers (76 %) and improvement of customer relations (76 %) are important goals of firm to start e-commerce and they think that they can reach to these goals by passive advertisement (88 %).

13. www.kobinet.org.tr, ATP in www.igeme.gov.tr and www.kobiline.com were asked to measure their awareness about supports of government and private organizations. While www.kobinet.org.tr (61 %) is known the most, www.kobiline.com (39 %) is known the least.

14. The majority of the firms saying they do e-commerce indicate that reaching new markets and customers (75 %), and advertising their firms (67 %), enhancing customer relationship (50 %) are their main expectation from e-commerce. They state that they have reached a good portion of their goals by passive advertisement (75 %).

15. Firms that plan to start e-commerce or do e-commerce, consider that they can reach their goals by passive advertisement. This can be commented that firms don't want to take risk on a new matter.

16. Firms that do e-commerce don't use Web sites asked. 36 % of them had utilized ATP in www.igeme.gov.tr. The percentages for www.kobinet.org.tr and www.kobiline.com are 18. Those are supported the idea mentioned at 10.

17. The percentage of negative answers of what firms think about e-commerce is higher in firms that do e-commerce. It can be commented that firms that plan to do e-commerce are optimist while firms that do e-commerce have learned or experienced something during applications. Although firms that plan to do e-commerce find that there are some risk on security and secrecy (53 %), legal agreement are not completed (36 %), online banking service is adequate (65 %), government direct firms for e-commerce (53 %) etc.; firms that do e-commerce find that there are some risk on security and secrecy (70 %), legal agreement are not completed (70 %), online banking service is adequate (40 %), government direct firms for e-commerce (40 %).

18. The rate of firms that did not reply nor had no idea about e-commerce questionnaire is higher at that plan to start e-commerce. It can be commented that firms that plan to start e-commerce have no homogeneous properties. While some of them follow the latest developments, and approach the matter cautiously, others can be impressed by e-commerce popularity.

3.5 The Description of the Firm, a Case Study

3.5.1 General

Turmet Madencilik ve İnşaat Sanayi A.Ş was established to produce materials for construction and related side sectors in 1992. Materials such as micronised calcite and dolomite, natural colored granules, kaolin, basalt and silica sand, which are supplied from different quarries, are produced in a crushing-grinding-screening-packaging plant, which is located in Mahmudiye, 50 km far from Eskişehir. The products are sold to the producers of paint, ceramic, porcelain, isolation materials and

ceramic adhesives. Capacity is 300 tons per day depending on products. Including part time personnel, 50 personnel work in the firm.

3.5.2 General Information about the Products of the Firm

The chemical formula of calcite is $CaCO_3$. It is used as a filling material because of its properties such as whiteness and grindability. It is used especially in paper, paint, plastic, adhesive and prepared plaster industries. Its consumption is from 1-2 micron to 50-100 micron in the grinded, packed or mixing with water as pulp (as in the paper sector). Due to their low prices carbonates are produced and processed in place (ekutup.dpt.gov.tr, 2004).

In Europe, Pluess-Staufer (OMYA) and ECC (English China Clay) are in monopoly positions. They have grinding plants and sales organizations in countries such as Spain, Italy, France, Norway, Australia, Brazil and they use local materials. They are specialized in fine grinding (1-2 micron) (ekutup.dpt.gov.tr, 2004).

Dolomite is a mineral formed by accompanying Ca with Mg in calcite. It is used mainly in iron and steel industry. Other consumption fields of dolomite are glass, ceramic, paint, fertilizer, brick, cement, and construction industries, and improvement of soil in agriculture
(ekutup.dpt.gov.tr, 2004).

USA realizes more than half of the world production. Spain relieves the majority of the demand of Europe. Productos Dolomiticos and Malaga SA export high quality dolomite mainly to England. Another dolomite exporter firm of Spain is Ibardal SA. The biggest dolomite producer of Norway A/S Norwegian Talk relieves micronised dolomite demand of mainly Scandinavian countries and England.

Kaolinite ($Al_2Si_2O_5(OH)_4$) is the most important mineral formed kaolin, it is a clay mineral in the composition of aluminum hydro silicate. It is used in quality paper, ceramic, cement, paint, rubber and plastic, chemistry and medicine industries (ekutup.dpt.gov.tr, 2004).

Firms and organizations in USA and England direct the world kaolin trade. English ECC in Europe and American The Georgia Kaolin Comp. Inc. in America direct the trade (ekutup.dpt.gov.tr, 2004).

3.5.3 Characteristics of Customers, Competitors, and the Markets Studied

The firm supplied products only to domestic market until 2002, after this date it has entered to foreign market (Russia) via mediator, it has got partnership request because of the quality of its products. The most important reason for entering foreign market is the increase of plant capacity, and dry grinding system (ball mill+ air cyclone) is added to the plant. Because of the agreement signed with the

mediator, they can not sell their products around Russia markets by themselves. USA and Australia are not their target market because of high freight. A few number of foreign paint, ceramic and porcelain producers buy 40 % of the production capacity. Although there are a lot of domestic customers such as producers of ceramic, paint, ceramic adhesives, isolation materials, they buy only in low amounts. As well as products which are in the standard size and chemical properties, products which are in desired size and chemical properties based on customer demand, are also produced from different quarries and delivered at declared date. The capacity of firm is about 60,000 tons per year and it is planning to increase it.

Although there are many micronised calcite and dolomite producers in Turkey, there are only a few firms which produce in 1 micron size and there is a high competition among them. One of these firms has foreign capital and is a leader position in calcite sector. It defines the price of calcite, buy small scale domestic firms or force them with price competition. Other firms are domestic and relatively small scale firms. The products and the capacity of competitor firms are known and their Web sites are followed by firm employees. The calcite production of Turkey is 650,000 tons per year; the firm has a small market share with 20,000 tons per year capacity.

3.5.4 Production, Marketing and Payment

Materials, provided from suppliers, are passed through crushing + screening + packaging or grinding (ball mill) + classification (air cyclone) + packaging stages. Acquiring from other quarries is economic but it is not efficient. So the firm is looking for new quarries.

While the sale of products in domestic market is managed by the firm, the sale in foreign market is facilitated by the mediator.

Customer orders generally are taken by telephone and fax. Some orders are taken via e-mail or communication page in Web site, but the percentage of them is low in all orders.

The recommendations of former customers are the most important way to reach new customers. Frequently customer visits, sending greeting cards for special days, and small gifts are used to develop customer relationship with existing customers. Customer database is kept for invoicing goal.

While products are delivered to addresses of the customers in domestic market, in foreign market FOB delivery and pricing are brought into application. Because they don't have their own transportation system, they get support from logistic firms.

Developments in sector are followed. Internet is utilized for this goal**.** Periodicals such as Kobi Efor, Dizayn, İnşaat ve Yapı etc. are followed. They have been participated in the Mining Fair at TUYAP

for the first time in June 2004. They participate in foreign fairs by the name of Agat Madencilik with mediator. They will realize their first independent participation in a foreign fair in February 2005.

In the firm, under Marketing Unit, only product sales and delivering are managed. Advertising, promotion and public relations are utilized rarely.

While payment for products in foreign market is in cash, it can be credit in domestic market.

3.5.5 The Problems of the Firm

The problems of the firm generally arise due to being a small scale firm in mining sector. Important problems of the firm arise from being in mining sector are acquisition of raw material and pricing. The suppliers, which supply raw material to the firm, are small scale, their production manners are simple and the education level of their owners is low. Business relations are generally built by face to face or telephone. These methods are not efficient and causing waste of time, and there are no guarantee of continuous raw material supply, but are economic. Owning a quarry will be for the benefit of the firm.

The firm can not fix the price; it has to sell at the predetermined price. Competitors in foreign market are Turkish producers. Because these producers haven't come to an agreement on price and they don't produce fabricated products, customers benefit from this competition.

The firm carries typical properties of SMEs:

- The firm has a flexible production structure, in other words it can change the properties of its products according to the desires of its customers. While this characteristic provides advantages to the firm against big firms, it has become harder in being procurement chains of big firms, which want standard production. Besides, it has made it harder to get ISO standard, which defines production standard.
- The education level of the owners of SMEs is generally low. The owner of the firm is a geological engineer. So the education level of the owner is an advantage in the sector. However there is a problem of qualified personnel, since there are only two university graduates working at the firm other than the owner.
- There is no professional management concept. The owner of the firm is the general manager at the same time. There are no job descriptions; all white collars perform all duties. For example, the finance manager tries to reach to new markets, to develop customer relationships, to follow duties about export. The increase of capacity and work density put reorganizations on the agenda. The re-organization is among the primary goals of the firm.
- Business relations are built on emotions or human relationships not on a scientific manner.
- In business process, traditional methods are generally used. More than one manual registration is kept for one duty. The exact amount of material, coming in and going out of the firm is not known, therefore there is a problem of losses. Amount of material in the storage area is not known exactly,

either. To solve these problems, grinding plant was automated. A computer program, which supplies the automation and control of the system with KOSGEB support, was bought. Electronic weighing machine is a part of this system. The material, coming in and going out, going to stock, will be weighed on electronic weighing machine, and this information will be followed by related employees from computer. Registration will be kept automatically, so lost material and mistakes will decrease. The program have been bought, necessary infrastructure has been built in the firm. The application will start after the training that will be given by KOSGEB. Although KOSGEB provides a number of different kinds of supports for SMEs, the supports of knowledge net and e-business, software, and qualified personnel are supports of KOSGEB that are directly related to e-commerce applications. The aims of these supports are to provide firms every kind of supports to enter new markets, increase their competitive levels, use computer technologies, to go through e-commerce step by step etc. According to a declaration by KOSGEB, the conditions of KOSGEB supports are to be changed starting 2005, but these studies have not been completed yet. That's why detailed information is not available about them. At the 2004 support conditions, the firm utilized software support that cost US$8,000 and non-repayable for plant automation.

- The majority of the income of the firm is spent for the expense of production and general consumption. Either none or very small budget is allocated for advertisement, promotion and public relations.
- The firm does not have brand management.

3.6 The Suggestions of e-Commerce Strategy or Road Map

Every firm or organization that undertakes e-commerce must determine a strategy or road map to follow. A strategy or road map, that was preferred to use road map word in this study, is the definition of general studies to reach successfully to revised mission of the firm. It analysis the system of the firm and determines the studies that must be done to avoid time and waste of money in application. There are a number of different road maps suggestions by different researches.

e-Commerce road maps will vary depending on (Plant, 2000)

- The nature of the organization; born on the net or move to the net
- The nature of product; service-based, manufacturing or mixed
- The online model the organization wishes to adopt: B2C, B2B and so forth.

Turban et al believes that a company may decide

- not to go for e-commerce
- to do only passive advertising
- to open online stores in addition to existing stores, typically called e-tailing
- to establish a separate online division within the company
- to dissolve regular business and go for cyber-business only

The choice depends not only on the nature of the business the company conducts but also on the environment the company is operating in and on the internal resources available (Turban et al., 2000).

3.6.1 The Suggestion of Plant (Plant, 2000)

Plant believes that e-commerce leader firms have a successful e-commerce strategy. The foundations of a strong e-commerce strategy lie in the preparation of the ground before the functional issues are addressed. Three bonding factors which consist of **leadership, infrastructure and organizational learning** have importance as foundations upon which an organization's e-commerce strategy is based and as a springboard from which all development emanates. Four positional factors which consist of **technology, service, market, and brand** create a balanced strategy around bonding factors.

Leadership includes keeping an open minded with regard to all new technologies, encouraging workers, researching team thinking, being ready to make the necessary of change in a corporate strategy.

The infrastructure needs to be considered at several levels: Strategic, organizational, physical. At the strategic level, the focus is on determining the impact future technology will have on the market and the organization. The implications of technology and strategic change become apparent in the organizational level which covers the work practices, process flow and structure of the organization. The execution occurs through the physical layer.

Organizational learning occurs through shared insights, knowledge, mental model and builds on past knowledge, experience.

Technology leadership involves the early adoption of an emerging technology to achieve a preemptive position.

Internet has extensive ability to create a new corporate branding position, to reinforce the existing brand, or to enable the existing brand to be repositioned. **Brand leadership** is on the added value of mass customization. The key to mass customization is setting close to the customer and providing the product on demand at a low cost while maintaining sufficient margins for the supplier.

Service consists of building relationship with, gathering information about potential customers and maintaining relationships with existing ones.

The aim of Plant's e-commerce strategy is to present a flexible framework for e-strategists that facilitates their gaining an understanding of the interactions of the environment within which they are to operate and then developing a successful counterstrategy for their organizational entity. Figure 7 shows the general frame of Plant's suggestion.

Figure 7 The General Frame of Plant's Suggestion

3.6.2 The Suggestion of Korper and Ellis (Korper and Ellis, 1999)

Korper and Ellis suggest that the best way to develop an e-commerce road map is to approach the challenge from a business perspective, prior to even asking the technology-based questions. It is critical that the designed solution meets business goals and process, provides a substantial return on investment. The focus is on design, development, and then deployment. Korper and Ellis recommence eight steps as a recipe for e-commerce project:

- Defining vision and goals
- Developing e-commerce strategy
- Moving from current process to new process
- Moving from current systems architecture to new systems architecture
- Designing the e-commerce application-Pilot and test the system
- Deploying the system
- Focusing on success strategies

Defining vision and goals, vision and goals keeps the company focused and pointed forward. Vision is the new way of running the company (Ross, 1999). The goals must be measurable, and reviewed periodically

Developing e-commerce strategy, it includes researching the markets, brainstorming, prioritizing, and creating a scope statement.

Most research can be conducted via visiting competitor's sites, magazines, industry bulletins etc. The brainstorming should be performed as a group exercise with all of the key players in the company.

Prioritizing lets the company sort among the ideas generated and ranks those that support the company's goals and strategies.

Scope statement must be created for each prioritized element. The purpose of the scope statement is to break the project down into manageable units of work.

Moving from current process to new process, the company must capture current process and design new process. Capturing current process consists of reviewing and documenting how the company currently selling products and services.

Redefining the company process includes ensuring that requirements stated in the scope statement are incorporated. The easiest way to document the new process is to write the information in a paragraph format.

Moving from current systems architecture to new systems architecture, during the review of the current business process, the company must start mapping the current architecture and systems.

Based on the revised business process, the company must focus on the new systems architecture and determine the tools necessary to deploy the solution.

Designing the e-commerce application, the company has many alternatives to design the e-commerce application; building and hosting within the company, hosting at a commerce service provider (keeping the server at a hosting company or renting space on a hosting company's server), partnering with another site , joining a mall, outsourcing deployment (Korper and Ellis, 1999). Assessing needs and sources are essential. The scope of the project, the size of the budget, the level of expertise, time is main criteria's of assessing of needs (Kienan, 2001).

Each option has its advantages and disadvantages. Building and hosting within the company gives a higher degree of control of the system, more flexibility in making all changes. On the other hand, it is more difficult and expensive to deploy internally. The company must rent the right skill sets to build and maintain the solution; purchase all the hardware, software, and dedicated links to the Internet.

When a company chooses the alternative of hosting at a commerce service provider, it develops the site internally and hosts it at a commerce service provider. This option provides control of software selection, design and design updates.

Partnering with another site requires joining forces with a site that sells similar products and services or complementary products. The company may have to expend some manpower or financial resources to develop a portion of the solution, but the effort is less taxing than creating and hosting a solution yourself, much more marketing power.

Most malls provide services to set up the company own storefront within a few hours. This is a great option if the company, especially SME, has not the resources, technical expertise, or the money required to establish a solution internally. Smaller companies joining a mall can store up and run quickly, easily. The disadvantage is that the company has not much flexibility in customizing site, integrating with existing backend systems.

Several companies offer the total solution, from designing a Web site to actually hosting the site. This is a great option for those companies, SMEs, that do not have the technical expertise or resources to design, develop, and deploy a solution. Figure 8 shows the general frame of Korper and Ellis Suggestion below.

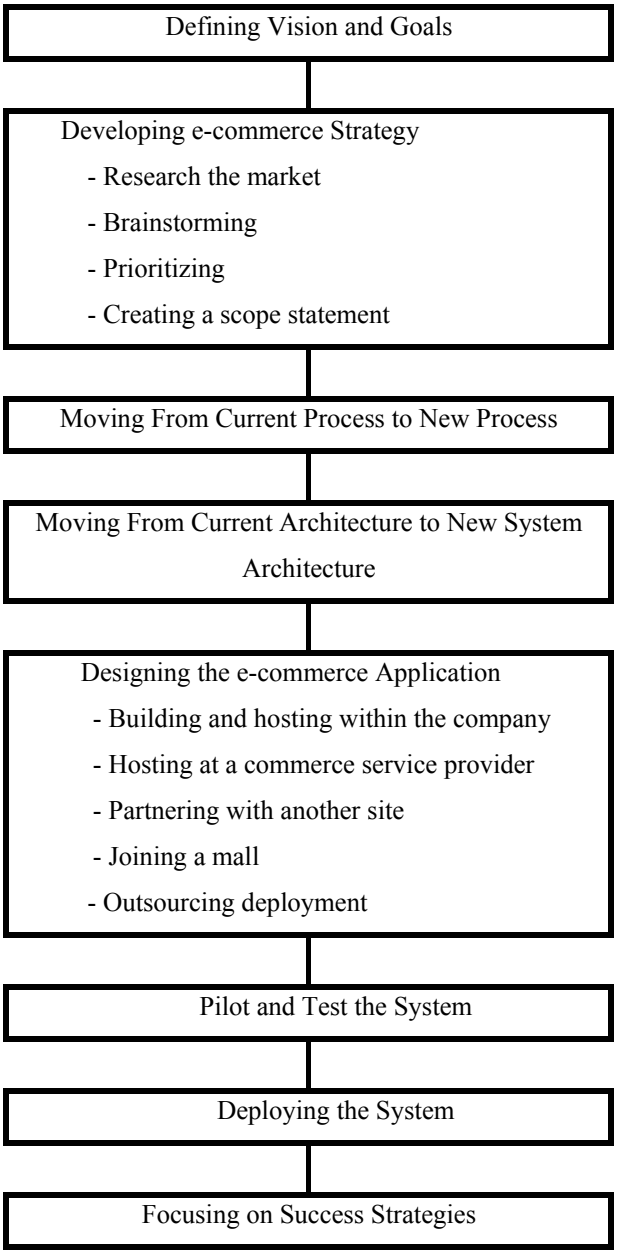

Figure 8 The General Frame of Korper and Ellis Suggestion

3.6.3 The Suggestion of Kienan (Kienan, 2001)

Kienan suggests four steps road map:

- Plan
- Create identity and attract customer
- Building e-commerce site
- Maintaining, promoting, and succeeding.

Plan must be built on goals and budget. Plan includes mission statement; goals, and milestones (expectation of ROI- for an e-commerce project is a ratio of the cost of resources required to the benefits generated by e-commerce project); identifying key staff positions, employees, resources, and associated costs.

The company must define who its own or target customers are, who competitors are, what the target markets are; then it must determine which business model is suitable for its own goals. Business model can be generating revenue, reducing expenses, enhancing customer relationship, supporting business. Generating revenue can be by product sales, advertisement sales, paid sponsorship which a company or individual pays for the privilege of being listed as a sponsor, paid placement which companies pay to have their products or brands actually appears in key places, subscription, fee for services, licensing, affiliate or affinity which involves one company setting up a system to sell their products through other companies, commission, cost-saving.

The company needs the budget in every stage of plan, design, development, promotion, and maintenance.

Creating identity and attract customer involves establishing brand, enhancing customer relationship, leveraging to boost traffic. Domain name, logo, integrity and trust have importance effect to establish "brand ". The company can use every option (being easy to reach, tracking e-mail feedback, respond promptly etc.) to enhance customer relationship.

Community is groups of people with common interests or purposes who talk online in text-based messaging systems. The company can build focused community by e-mail newsletter (from one to many), discussion group (from many to many), message board, chat areas (real-time interaction among users) and measure community success depending on the site's goals. Measurement for the success of line community has not been standardized or accepted but the most relevant measures might include such factors as the number of unique visitors to the site per month, week, or day; the number of registered members that exist; the length of time the average user spends in a session etc.

Building e-commerce site includes a site plan; working with Web shops developers and teams, back end and hosting. Plan has four stages:

- Define and strategize; analyze situation, develop business model, determine ROI, analyze competition, test market, develop strategies
- Organize and design; organize content assets, create site map, test contents- user tasks, revise based on tests, device storyboards (storyboard are sketches that describe the content, features, navigation, and other items that will go on each page of the website), spec (project specifications) content, design navigation, develop visual vocabulary, establish tech benchmarks, design page elements

- Build and implement; write-edit content, track asset, design interface, build prototype (alpha) and test with users, revised based on tests
- Deploy and launch; build beta, test for quality assurance, fix bugs, revise content, get executive approval, deploy to server and launch.

Maintaining, promoting, succeeding involve keep content usable, manageable, fresh; promoting Web site; assessing success. There are many tools to promote Website:
- Submitting the site to search engines and directories
- Persuading others to link to the Website, forming partnerships and joining alliances, entering competitions and offering awards
- Creating affiliates that place prominent links on the site leading to the other site in exchange for a reward or commission
- Gaining with banner advertisement
- Sponsoring other Websites
- Using newsletter and community forums
- Getting coverage in print media
- Integrating online and offline promotional efforts.

Assessing success starts answering what success mean to the company. The measurement must be conformed to the goals the company set when it planned its site. Analyzing Website gives much information to review, change, and improve Website. Figure 9 shows the general frame of Kienan's suggestion below.

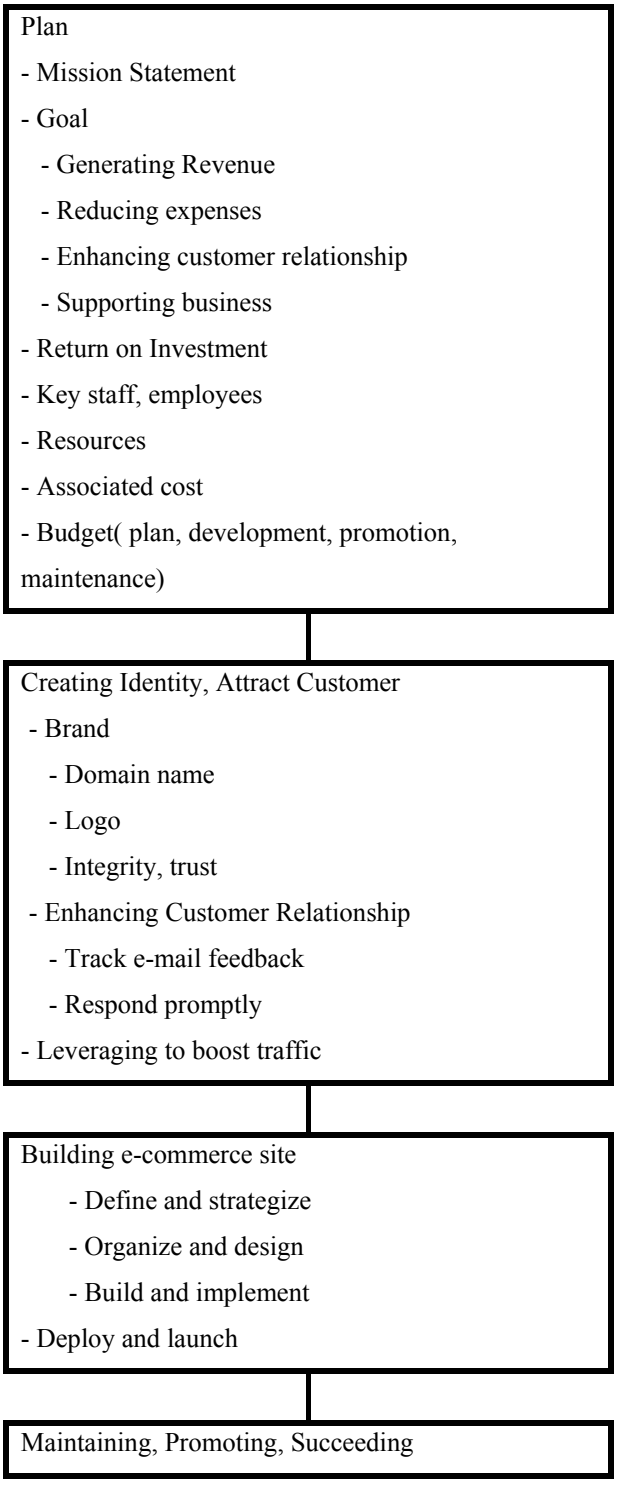

Figure 9 The General Frame of Kienan's Suggestion

3.6.4 The Suggestion of Turban et al (Turban et al., 2000)

Turban et al suggest generic methodology how a company conducts e-commerce planning and implementing. Generic methodology is composed of four main stages:

- Industry and competitive analysis
- Strategy formulation
- Implementation
- Assessment

These stages are interrelated in a cyclic movement.

Successful e-commerce companies focus on customers, markets, and competitive positioning, as well as internal operations. A company which wants to enter e-commerce must track the changing environments, understanding customer groups, and devising methods of meeting the needs of customer group.

Industry and competitive analysis for e-commerce covers monitoring, evaluating, and disseminating information from the external and internal environments with respect to launching an e-commerce project. The most popular tool is SWOT analysis. SWOT is an acronym used to describe particular strengths, weaknesses, opportunities, and threats.

Strategy formulation is the development of long-range and strategic plans for the effective management of environmental opportunities and threats, in light of corporate strengths and weakness. A company should think about what it intend to accomplish by establishing a Web site; marketing, customer support, sales. Determining the purpose of the site provides the framework for a company's e-commerce strategy.

Strategy formulation could include several other topics such as critical factors for e-commerce, a value analysis approach, ROI and risk analysis, e-commerce strategies and scenarios; to help in focusing on the essentials.

Critical success factors are the indispensable business, technology, and human factors that help to achieve the desired level of organizational goals and highly dependent on the company's situation. Some critical factors are top management support, technical infrastructure, cost of the e-commerce project, level of trust between buyers and sellers etc.

A value chain is a series of activities a company performs to achieve its goals at various stages of the production process, from resources' acquisition to product delivery. The added value of these activities contributes to profit and asset value as well as the competitive position of the company in the market.

Resources required creating additional value through e-commerce need to be examined with respect to cost-benefit analysis and level of risk involved.

Business strategies in general can be competitive and/or cooperative. A competitive strategy assumes fighting against all competitors for the purpose of survival and to win. It can be planned offensively or defensively. An offensive strategy usually takes place in an established competitor's market location. It can be applied by two forms: Frontal assault is that the attacking firm goes head-to-head with its competitor. Flanking maneuver is that rather than going straight after the competitor's position with a frontal assault, a firm may attack a part of the market, where the competitor is weak. A defensive strategy usually takes place in the firm's own current market position, as a defense against possible attacks by a rival. It can be applied by two forms: Raise structural barriers so that entry barriers can be used to block a challenger's logical avenues of attack. To lower the inducement for attack is to reduce a challenger's expectation of future profits in the industry.

A cooperative strategy plans for working together with specific competitors to gain advantage against other competitors. It involves a strategic alliance through joint venture or value chain partnership. Joint venture is a cooperative business activity, formed by two or more separate organizations for strategic purpose that creates an independent business entity and allocates ownership, operational responsibilities, and financial risks and rewards to each member, while preserving their separate identity/autonomy. Value-chain partnership is a strong and close alliance in which a company forms a long-term arrangement with a key supplier or distributor for mutual advantage.

Implementation stage includes implementation plan, creating Web team, Web design and security, evaluating resources, pilot project. It is necessary to build an implementation plan that will outline the steps to follow during implementation. Then one needs to get organized, usually starting with establishing a Web team. Web design and security are essential to accomplish the goals. Required and cost must be listed and then resources must be examined.

e-Commerce project need to be assessed during and after implementation. Such assessment of the project which must be based on some measurement of e-commerce result can be examined both from the cost-benefit of the initial investment as well as a future strategy formulation. The Web team should develop a checklist to address both the evaluation of project performance and the assessment of changing environment. Figure 9 shows the general frame of Turban et al.'s suggestion below.

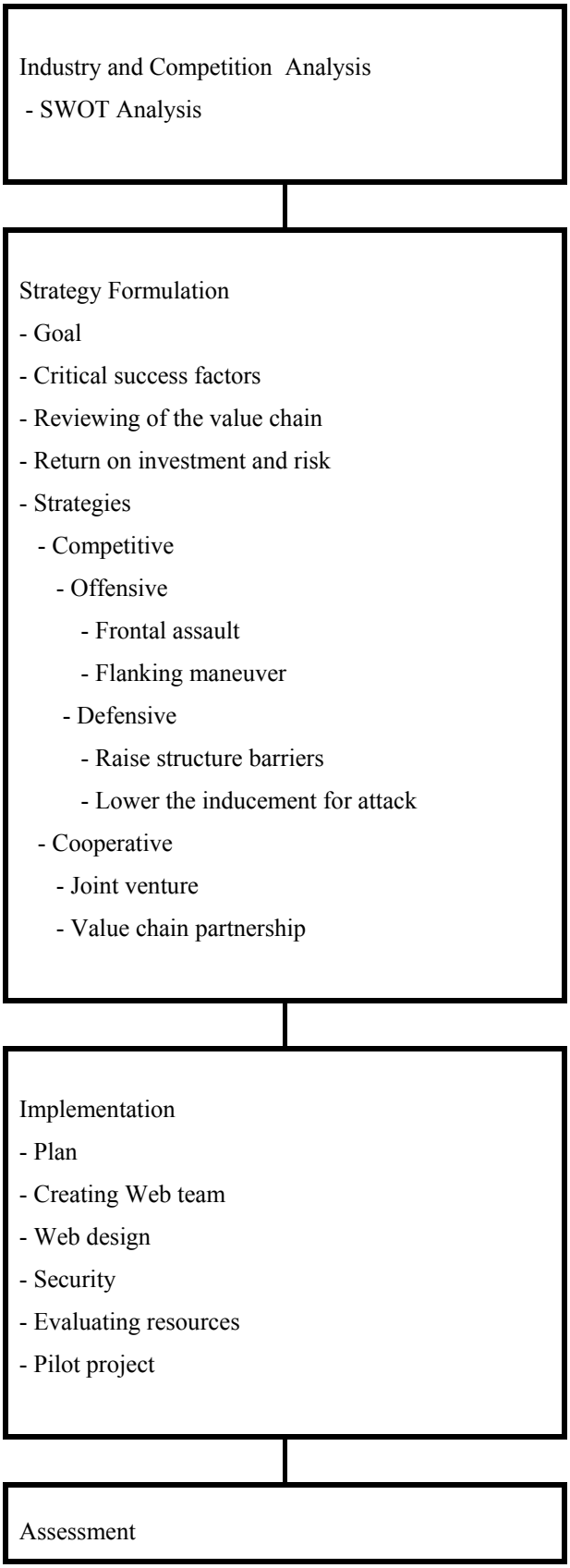

Figure 10 The General Frame of Turban et al.'s Suggestion

3.6.5 The Suggestion of **Kobiline.com** (www.kobiline.com, 2004)

Kobiline suggests a road map that involves 9 steps to enter cyberspace:
- Plan,
- Taking domain name
- Choosing server firm
- Creating a secure environment
- Creating Web site
- Building sales infrastructure
- Promotion of Web site
- Developing Web site

Plan consists of testing of the company whether it is suitable for e-commerce or not, determining target customers, reviewing sales process, building infrastructure for payment electronically, building content of the site.

Building sales infrastructure consists of integration of sales processes, delivery, services after sale, connection to the bank, security, and taxation.

Promotion Web site includes registration to research engine, e-mail campaign, and advertising.

Web site can be developed basically by utilizing of user's knowledge, reviewing Web site continuously. Figure 11 shows the general frame of Kobiline's suggestion.

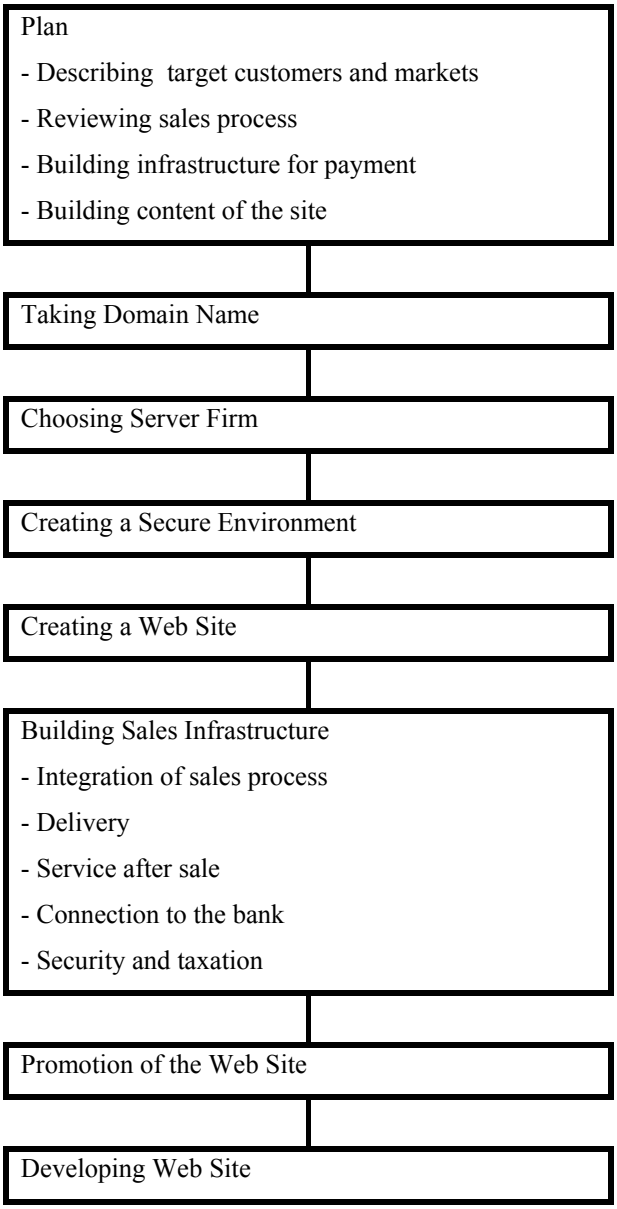

Figure 11 The General Frame of Kobiline' Suggestion

3.6.6 Other Suggestions (Turban et al., 2000)

Mougayar (1998) recommends the following 10 steps for maximizing the chances of e-commerce success:

- Conduct necessary education and training
- Review current distribution and supply chain
- Understand what customers and partners expect from Web
- Reevaluate the nature of products and services which the company supplies
- Give a new role to human resources department

- Extend current system to the outside
- Track new competitors and market shares
- Develop a Web-centric marketing strategy
- Participate in the creation and development of virtual marketplaces
- Install e-commerce management style

An alternative process was suggested by Ware et al. (1998) who proposed road map for developing e-commerce (Turban et al., 2000):
-Create a map of scenario for aligning business road map and Internet initiatives in the future
-Communicate a vision from top management to drive Internet initiatives
-Identify and transform key value constellations, specifically, what business core practices and process the Internet technologies could mostly affect. These steps identify possible opportunities.
-Develop the portfolio of e-commerce initiatives the company wants to pursue.
-Develop year –by-year objectives and plans for the chosen initiatives, including measures of effectiveness and their effect on the business.
-Implement the change. The project participants must undergo the changes in attitudes and behavior required by such system.
-Monitor the overall plan, learn lessons, adjust, and improve.

3.7 A New Suggested Strategy/Road Map

The suggestion of Plant can be defined as a success philosophy. He indicates the foundation that it is necessary for e-commerce or aimed for any other business. It resembles the result of the study of Yeh-Yun Lin. It is emphasized that human resources and the vision of the owner of firms or managers of firms are important success factors. It is the unique suggestion, which has an approach at macro level, among many. It seems that the chance of the application of Plant's suggestion is low because the priority of SMEs is production.

Korper and Ellis accept that the owner of the firm and manager, thinking of doing e-commerce, has information about e-commerce and its opportunities. Their suggestion is simple, easy, but it is based on technique. It is examined about production process and technique infrastructure, but details on e-commerce application is not given. There is no vision in big part of SMEs, unique goal is to make money. It seems that the suggestion of Korper and Ellis can be applied to many SMEs because of its simplicity and easiness.

Just like Korper and Ellis, Kienan accepts that the owner of the firm and manager, wanting to do e-commerce, has information about e-commerce and its opportunities; and believes that not known or non accessible Web site is not of any use. That's why she attaches importance to Web site publicity; she has a costumer based approach. It distinguishes from the suggestion of Korper and

Ellis by this property. When she explains establishing a Web site in detail, she doesn't explain server alternatives.

The suggestion of Turban et al is the most comprehensive one among the suggestions. It examines all criteria thoroughly during application. It emphasizes the properties of firm, competitors and environment located in or sector. It is necessary to know the properties of target market and competitors for determining road map. SWOT analysis is a hard work. It can be perceived as 4 questions must be answered for SMEs. The part of e-commerce is short, the part of Web site design leads the way, and the part of Web advertising is not explained. At this point they think different from Kienan.

www.kobiline.com is a private site to serve SMEs. It is simple, easy to use usable based on properties of target customer. It is based on sales. Sector or competitor analysis and cost-benefit calculation is not done. It gives emphasis to payment infrastructure, especially for B2C.

The suggestion of Mougayar is a unique suggestion emphasizing on education. All suggestions accept that the decision makers and applicators have information about e-commerce. It is recommended that the firms should have a Web based marketing strategy and, if possible, should establish a virtual marketplace. In other words, a transformation from brick and mortar to click and click is recommended in order to realize this, it is advisable to review supply chain.

The suggestion of Ware et al has a plan property with developing year by year objectives in a new concept such as e-commerce. It is indicated that top management support is main success factor. They think similar with Plant and Yeh-Yun Lin. They identify core practices and process affected by Internet, in other words they identify success factors. At this point they approach the suggestion of Turban et al. When e-commerce application develops, there will be an increase in the number of participants.

In the previous part, well known road maps that had been taken from literature were mentioned. However, advantages and disadvantages (weak and strong) sides of each one based on these evaluations, the need for a new road map is obvious. A new road map is established based on strong sides of some suggested strategies. The suggestion of Turban et al. was chosen as the new road map frame of this study due to the reason that it is the most comprehensive suggestion among others. Suggested road map consists of four stages:

1- Analysis
2- Strategy formulation
3- Implementation
4- Evaluation of results and review of road map

3.7.1 Analysis Stage

The first stage contains analysis of country, sector, firm, and competitors.

In country analysis according to the suggested road map the subjects that must be researched are:
- If there are e-commerce applications in the country that the firm is located in, what is the proportion in total commerce or monetary volume?
- If the government makes the legal arrangements, what are advantages or disadvantages of them?
- Do human resources include personnel suitable for e-commerce?
- What is the attitude of society to e-commerce?
- What are the infrastructure facilities and costs?

Tools such as reports prepared by government organizations, universities, associations etc., newspapers or economics pages of newspapers, television and Internet etc. can be used for suggested research.

In sector analysis, e-commerce applications in the sector and their kinds must be researched, if there is. For this purpose periodicals related to the sector and activities of organizations can be utilized.

Firm analysis requires extensive examinations. Structure of the firm, the properties of production, sales, delivery, publicity etc., and general properties of market, competition conditions, and the properties customers must be researched. Besides these, SWOT analysis can be used. By this, the strong and weak sides of the firm and advantages and disadvantages of e-commerce can be determined.

Competitor analysis enables a comparison of the properties of competitors, and their new business styles. Web site of competitors, fairs and the ideas of customers are suitable tools for this study.

As a result of the suggested searches mentioned above, if the firm management thinks that it can benefit from e-commerce, it must do a case analysis. Case analysis implies determination of target market, customers and competitors.

3.7.2 Strategy Formulation Stage

The second stage consists of training on e-commerce and creating a working team, determining of goals and critical success factors, analysis of value chain, determining return on investment, and identification of strategy and budget.

As Mougayar suggests (Turban et al., 2000), the owners and / or managers of the firms must get training on e-commerce to make healthy decisions and direct the firm. The training can be given by

personnel that work in the firm and related to the subject or professional support can be taken. The training must be towards establishing new targets instead of practice.

After training, the owners and / or managers of the firms must create a working team that is responsible for all e-commerce applications such as planning, preparation, implementing, changing, and adoption etc.

The mission must be reviewed and the goals must be defined after training and establishing e-commerce team. Goals can be one or more. As Kienan (2001) suggests, goals can be increasing revenue, decreasing cost, developing customer relations or supporting existing business.

It is not enough to define goals to be successful but, necessary success factors for reaching goals must be determined. According to Turban et al, success factors can be the properties of products, top management support, the customers' acceptance of e-commerce applications, and trust between seller and buyers etc.

As Korper and Ellis (1999) suggest, all business processes must be reviewed, all changes that must be done, are determined. The same work must be done for technical infrastructure to aim listing needs. All kinds of changes are done to get more revenue. Consequently, return on investment must be defined with goals.

It can not be possible all goals defined based on success factors and return on investment. As Korper and Ellis suggests, it must be prioritized.

The application form of e-commerce must be defined based on target market. Competition that is based on either defensive or offensive or cooperation way can be chosen.

Prioritized goals and success factors, and budget for necessary changes for business and infrastructure must be planned at the end of the second stage. As Kienan suggests, budget must be considered widely from plan to maintenance in the implementation.

3.7.3 Implementation Stage

The third stage comprises planning, establishing a brand, evaluating needs and sources, determining Web content, establishing sales infrastructure, building security and infrastructure of payments, promoting Web site, testing and deploying.

The aims at the two stages must be applied under a plan.

Establishing a brand is started with taking the domain name and logo.

Evaluating the needs and sources involves host options, Web content and design. There are many options for server services and Web design. In the beginning professional services can be preferred, some of the services can be provided within the firm with experience by time.

If the goal is online sales, it is not sufficient to place an online sale form on Web site. Related sales process must be adapted. It is necessary to plan stock control, transportation, services after sale, some arrangements about tax and integration to each others. If online payment will be accepted, an agreement must be made with a bank for online payment service. Whether there will be online sales or payment or not, security software must certainly be bought.

As Kienan suggests it is not enough to create Web site, it must be introduced. At the beginning registration is necessary, in later stages it is recommended to establish community, to increase the number of customers in course of time or to direct advertisement in order to increase revenue.

After testing the applications, it can be put into practice.

3.7.4 Evaluation of Results and Review of Road Map Stage

The last stage is the stage of evaluation of performance and making necessary changes. Success measurement (how many people click in one day, how many people want sample in one day or how many people shop in one day etc.) must be brought out. e-Mails that are sent to Web site are important feedback tools, and they must be answered promptly and necessary development must be done at Web site. The suggested new road map and its details are given in Table 9 and in Figure 12.

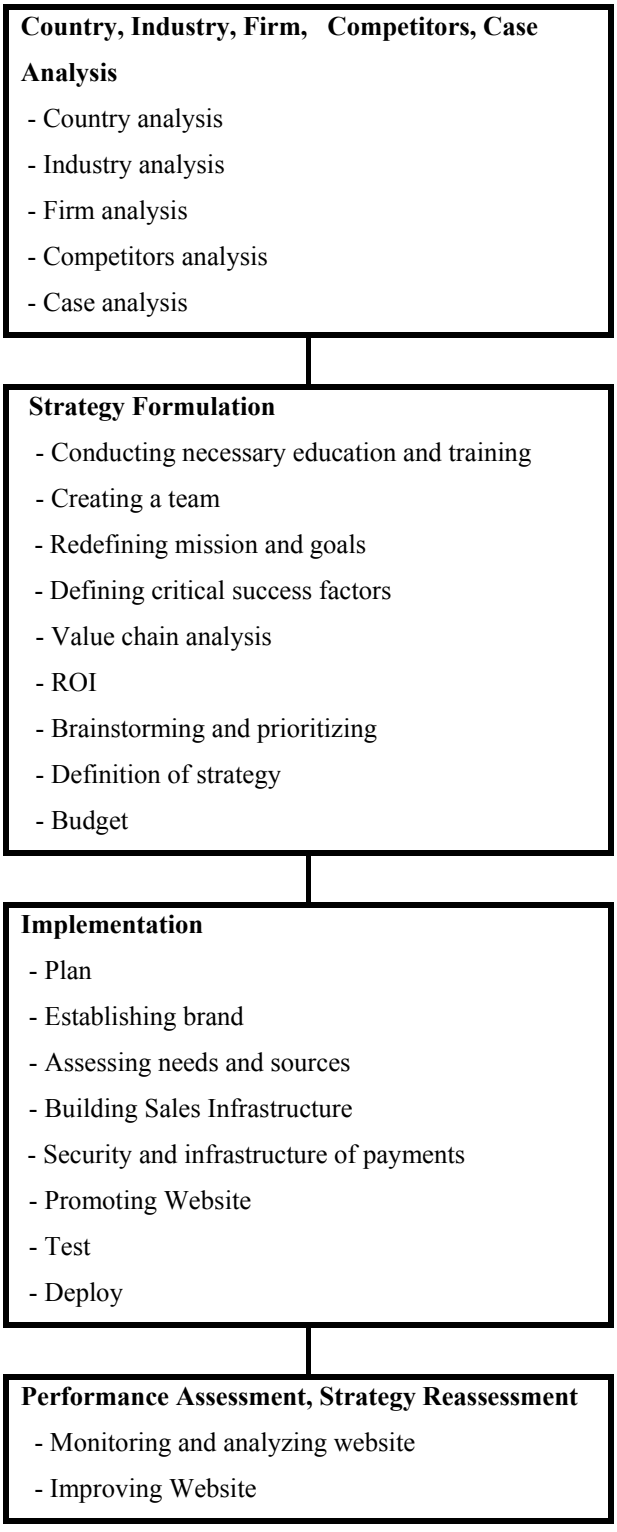

Figure 12 A New Suggested Road Map

Table 9 Details of New Suggested Road Map

1. Country, Industry, Firm, Competitors Analysis
    1.1. Country
        1.1.1. Economy
        1.1.2. State
        1.1.3. Labor
        1.1.4. Culture
    1.2. Industry
    1.3. Firm
        1.3.1. Properties of the firm and its customers
        1.3.2. Market conditions
            1.3.2. SWOT analysis (Turban et al., 2000)
    1.4. Competitors (Turban et al., 2000)
        1.4.1. Properties and business styles of them
    1.5. Case analysis (Kırçova, 2001)
        1.5.1. Target markets and customers
2. Strategy Formulation
    2.1. Conduct necessary education and training (Turban et al., 2000)
    2.2. Creating a team (Turban et al., 2000)
    2.3. Redefining mission and goals
        2.3.1. Goals (Kienan, 2001)
            2.3.1.1. Generating revenue
            2.3.1.2. Reducing expenses
            2.3.1.3. Enhancing customer relationship
            2.3.1.4. Supporting business
    2.4. Critical success factor (Turban et al., 2000)
        2.4.1. Specific products or services traded
        2.4.2. Top management support
        2.4.3. Project team reflecting various functional areas
        2.4.4. Technical infrastructure
        2.4.5. Customer acceptance
        2.4.6. User friendly Web-interface
        2.4.7. Integration with the corporate legacy system
        2.4.8. Security and control of the e-commerce system
        2.4.9. Competition and market situation
        2.4.10. Cost of the e-commerce project
        2.4.11. Level of trust between buyers and sellers
    2.5. Value chain analysis (Turban et al., 2000)
        2.5.1. Review of business processes (Korper and Ellis, 1999)
            2.5.1.1. Capturing current process (Production, shipping, payments, etc.)
            2.5.1.2. New process design
        2.5.2. Review of architecture (Korper and Ellis, 1999)
            2.5.2.1. Current systems architecture
            2.5.2.2. New systems architecture
    2.6. Return on investment (Turban et al., 2000)
    2.7. Brainstorming and prioritizing (Korper and Ellis, 1999)

Table 9 Details of New Suggested Road Map (Continued)

- 2.8. Definition of strategy (Turban et al., 2000)
  - 2.8.1. Competitive strategy
    - 2.8.1.1. Offensive
      - 2.8.1.1.1. Frontal assault
    - 2.8.1.1.2. Flanking Maneuver
    - 2.8.1.2. Defensive
    - 2.8.1.2.1. Raise structural barriers
    - 2.8.1.2.2. Lower the inducement for attack
  - 2.8.2. Cooperative strategy
    - 2.8.2.1. Joint Venture
    - 2.8.2.2. Value-chain partnership
  - 2.9. Budget (Kienan, 2001)
  - 2.9.1. Plan
  - 2.9.2. Design
    - 2.9.3. Development
  - 2.9.4. Promotion
  - 2.9.5. Maintenance
- 3. Implementation
  - 3.1. Plan
  - 3.2. Establishing brand (Kienan, 2001)
    - 3.2.1. Domain name
    - 3.2.2. Logo
  - 3.3. Assessing needs and sources
    - 3.3.1. Considering hosting options (Kienan, 2001)
      - 3.3.1.1. Hosting in the company
      - 3.3.1.2. Keeping server at a hosting company
      - 3.3.1.3. Renting a space on a hosting company's server
    - 3.3.2. Web content and Web design (Korper and Ellis, 1999)
      - 3.3.2.1. Building and hosting within the company
      - 3.3.2.2. Partnering with another site
      - 3.3.2.3. Joining a mall
      - 3.3.2.4. Outsourcing deployment
  - 3.4. Security and infrastructure of payments
  - 3.5. Promoting Website (Kienan, 2001)
  - 3.5.1. Registering in search engine
  - 3.5.2. Building suitable links
  - 3.5.3. Using banner
  - 3.5.4. Sponsoring other Websites
  - 3.5.5. Building focused community
    - 3.5.5.1. e-Mail newsletter
    - 3.5.5.2. Discussion group
    - 3.5.5.3. Message board
    - 3.5.5.4. Chat areas
  - 3.5.6. Using print media
  - 3.6. Test
  - 3.7. Deploy
- 4. Performance Assessment, Strategy Reassessment
  - 4.1. Monitoring and analyzing website (Considering results and goals)
  - 4.2. Improving Website (www.kobiline.com, 2004)

3.8 Analysis of the Firm from the e-Commerce Perspective

3.8.1 Information Technology Infrastructure of the Firm

There are a total number of 6 computers consisting of laptops and PCs in the firm. Computers are used in daily use, at accounting and Internet connection. Internet connection is used effectively to communicate, to collect information about competitors and their products, to reach target market and new customers, and to capture new products and business opportunities. The firm has its own Web site. Telephone and fax are used densely for communication.

3.8.2 Suppliers / Customers and Their Computer Facilities

All of the suppliers do not facilitate computer and Internet facilities. The education level of their owners is the most important indicating factor. The facilitating of computer and Internet are not common among their customers except producers of ceramic and some paint. Consequently, the firm can facilitate e-commerce only with some of their customers. A questionnaire about "Customers' Attitude to e-Commerce" was prepared and it is given in Appendix B. The questionnaire was sent to 10 firms, but only 5 of them answered it, all of these answers were evaluated, and the results were expressed as percentage. The questionnaire consisted of three parts and the topics mentioned below were searched:

- In the first part, general information about the firms that had answered the questionnaire,
- In the second part, the computer and Internet facilities; and Web site ownership of firms,
- In the third part, the approaches of firms to e-commerce and reasons behind these.

The results of the questionnaire are given below:

1. In market and trade part, it were analyzed the general properties of customer firms and supplier firms that are wanted from customer firms to get information about the readiness of customer firms to e-commerce. Because firms could check more than one choice, sum of the percentage of the choices is not equal to 100 %.
2. The firms buy their needs from foreign producers (80 %), domestic producers (60 %), and local producers (60 %). Producers can find new customers by e-commerce.
3. Firms find their suppliers by recommendation (80 %) the most. Fairs (60 %), advertisement (60 %) and Internet (60 %) follow it. The percentage of Internet is high and Internet gives firms an opportunity to reach new markets.
4. The most important property that is wanted from suppliers is to deliver the desired quality products at the suitable price (100 %). It is followed by delivering the desired quality products on time (80 %). e-Commerce realizes efficiency on processes.
5. All of them utilize their Procurement Departments/Units (100 %) to provide raw materials. Telephone and fax (100 %) and e-mail (40 %) are important communication tools.
6. Payment is in cash (20 %), credit (40 %) and others (60 %).
7. In computer part, information was obtained about the level of usage of technical tools of firms.

8. There are computers in all firms and each of them has its own Web site. Computers are utilized especially in routine business (100 %), accounting (100 %), for Internet connection (100 %), and in project (80 %).
9. Computer and Internet connection are used for the majority of their suppliers (60 %).
10. The majority of the Web sites (60 %) are registered under search engines. It is optimistic expectation to reach new customers and markets unless Web site is registered under a search engine.
11. All firms expressed that they haven't facilitated e-commerce applications. Two firms explained that they haven't facilitated e-commerce applications because the existing business models (40 %) were enough for their goals and it needs time to do e-commerce (40 %). One of the firms thought that the mining sector was not suitable for e-commerce. The manager of the mediator firm in Russia declared that they didn't have any information about e-commerce and the manager of another firm declared that they were not interested in the subject.
12. Although the customers of the firm have computer and Internet connection, they are not ready to e-commerce. If the firm wants to do e-commerce, new customer portfolio must be determined as target customers.

3.8.3 Competitors and Their Computer Facilities

Almost all competitors utilize the facilities of computer and Internet. Computers are used especially in daily use, at accounting and Internet connection. Internet connection is used effectively to communicate, to collect information about competitors and their products, to reach target market and new customers, and to capture new products and business opportunities. 80 % of them have Web sites, the publicity of firm and products are made. Some of them have Department/Unit of Data Processing, and employ personnel; some of them prefer professional services.

3.8.4 The e-Commerce Perception of the Firm

Although the owner and finance manager of the firm interviewed do not have sufficient information about e-commerce, they approach to the subject positively and they believe that e-commerce will benefit them. A part time person is employed as responsible for the information technology; this person has knowledge and experience about e-commerce. The firm's own Web site was prepared by this person, and a domain name including the name of the firm, www.turmet.com.tr, in addition to the domain name of www.dolomit.com.tr was taken, and were registered under search engines. All services, except professional server services, are executed by this employee. This person stated that they would start the application in one year even completing infrastructure, which would realize online payment, if the owner of the firm gave permission; but disapproval of this system by their suppliers and customers was the biggest obstacle.

The answers given by the person who is responsible for information and technology on behalf of the owner of the firm about "The Approach to e-Commerce in Turkish Mining Sector" in Mining Fair are shown in Tables 10, 11, 12 and 13:

Table 10 Answer of the Firm to Question 17 (What Do You Think about e-Commerce?)

	5	**4**	**3**	**2**	**1**
There are risk on security and secrecy.	X				
Legal agreements are completed.					X
Steps to start e-commerce application are determined	X				
Government has produced politicies to direct firms, to make conditions easy (technical infrastructure, education, cheap credits, intermediaries etc.)					X
Online banking service is adequate.		X			
It develops the existing business model.	X				
It provides search facility on markets, competitors, and their products with lower cost.	X				
There are technical infrastructure problems.	X				
There is a lack of qualified personnel.		X			
There are problems to get finance		X			

5= Definitely, I agree, 4=I agreed, 3=I have no idea, 2=I don't agree, 1=Definitely, I don't agree,

This person believes that e-commerce will support the existing business, and provide search facility on markets, competitors, and their products with lower cost. Importance of risks on security and secrecy problems arising from technical infrastructure are emphasized. It is asserted that legal agreements are not completed and government has not produced policies to direct firms. Although online banking service is adequate, the lack of qualified personnel and financial difficulties are a reality.

Table 11 Answer of the Firm to Question 18 (If You Want to Do e-Commerce, What Is Your Goal?)

a. To get revenue with new markets and customers	X
b. To reduce expenses	X
c. To enhance customer relationship	X
d. To support the existing business	X
e. To facilitate as a firm promotion / advertisement tool	X
f. To catch first entering advantages by stepping before competitors	X

It is seen that goals and aims are covered in wide perspective, the firm wants to utilize all facilities and it is believed that this can be accomplished with a separate online department/unit.

Table 12 Answer of the Firm to Question 19 **(**If You Use e-Commerce, How?)

a. To do only passive advertisement	
b. To open online stores in addition to existing store	
c. To establish a separate online division within the firm	X
d. To dissolve regular business and go for cyber-business only	
e. To enter into an auction site	

Table 13 Answer of the Firm to Question 20 (Have You ever Heard Web Sites Mentioned Below?)

	Yes	No
www.kobinet.org.tr	X	
Ankara Trade Point in www.igeme.gov.tr	X	
www.kobiline.com	X	

Although the firm is a member of Kobinet, Kobiline and ATP, those channels are not used efficiently to reach new markets and customers.

3.8.5 A Preliminary SWOT Analysis for the Firm

The owner of the firm trusts very much in their qualified products having defined chemical compositions and size distributions, and also expresses that this is the strong side of the firm. Using technology to grow business, creating new investment, and website are considered as additional strong sides of the firm. As a result of the interview with the owner and some employees of the firm, it can be considered that a boss, who trusts and empowers the employees, open to development and having university degree, is another strong side.

The owner of the firm indicates that organization is the weakest side of the firm. The modernization and automation of grinding plant have brought a high increase in capacity and income, quality of products, and new market facilities. This development, which is called as growing up with hormone by the owner of the firm, has not been reflected to the organization. Since job descriptions are not defined, all duties are done by white collars. Lack of qualified personnel can be considered another weak side of the firm.

According to the owner of the firm the advantages of the e-commerce are faster and easier communication, getting more control and efficiency on system and transportation procedures, and customer satisfaction. The disadvantages of the e-commerce are considered to be security, and hardware, software and personnel expenses, which are necessary for building and sustaining e-commerce system.

3.8.6 The Adequacy for International Business of the Firm

The firm sold its products only in domestic market until 2002, after this date it entered in foreign market, Russia, via mediator. Questionnaire called "Are You Ready for International Business?" prepared by International Forum Naturallia Business Partnership and Alliance and answers of the owner of the firm are given below in Table 14 (www.naturallia.com, 2004):

Table 14 Readiness of the Firm for International Business

Questions	**Yes**	**No**
1. Do you have surplus production capacity or specialists available in order to meet an increased demand for your product or service?	X	
2. Do the administrators /managers of your company support your export efforts?	X	
3. Is your company in the habit of meeting its deadlines?	X	
4. Do the administrators /managers of your company have experience in the area of export markets?	X	
5. Does your product or service have a distinct advantage (quality, price, uniqueness, innovation)?	X	
6. Have you adopted your packaging (labeling and / or advertising material) to suit your target market?	X	
7. Do you have the ability and the required resources to offer local after-sale support and service?	X	
8. Do you have FOB price list or a CIF price list for your products or a fee schedule for your services?	X	
9. Is your publicity / advertising material available in the language of your target market (business cards, brochures /fliers, Web sites)?		X
10. Have you begun promoting your product or service to your target market?		X
11. Have you engaged the services of a sales representative / agent, or established a partnership with local company?	X	
12. Have you engaged the services of a forwarding agent or a customs broker?	X	
13. Is your product or service available at the present time?		
a. In production or in development	X	
b. At the prototype stage		
c. Only at the idea / concept stage		
14. Is your product or service available, at present, on the Turkish market?		
a. Now being sold or taking up an increasing share or the market	X	
b. Now being sold but taking up a small part of the market		
c. Now being sold in a single Turkish city		
15. Do you have the necessary financial resources to adopt your product or service to the target market or to promote it?		
a. Financial resources available	X	
b. Financing is forthcoming		
c. No financing available		
16. Have you undertaken a foreign-market study?		
a. Have undertaken a primary and subsidiary-market study, including a visit to the target market		
b. Have undertaken a partial study of the primary and subsidiary market	X	
c. No research undertaken, as yet		

Based on the questionnaire, it is determined that the firm understands the strategies and applications, and has necessary resources to be successful in export.

3.8.7 The e-Commerce Readiness Level of the Firm

The questionnaire called "Are You Ready for e-Commerce?" prepared by www.kobiline.com (2004) is answered by the owner of the firm and the results are given below in Table 15:

Table 15 Readiness of the Firm for e-Commerce

Questions	**Yes**	**No**
1. Did you research e-commerce activities in your sector? Did you determine what your competitors do over Internet?	X	
2. Did you determine target customers of your Internet store?	X	
3. Did you research the properties and habits of facilitating of computer of your target customers?	X	
4. Did you bring to light of your process of business and sale?	X	
5. Did you think how you integrate your existing process of business and sale with Internet store?		X
6. Did you plan what kind of information and services you will give to your customers at your Web site?	X	
7. Did you form your Web site content? Did you collect visual materials such as picture, photograph, which are related to your firm and your products?	X	
8. Did you make an agreement with a firm, which prepare and update your Web site or employ personnel to do all defined duties?	X	
9. Did you give enough training to personnel, which are responsible of your Web site?	X	
10. Did you take your domain name?	X	
11. Did you make an agreement with a hosting firm?	X	
12. Did you built the online payment infrastructure consulting with your bank?		X
13. Did you take measure to supply Web site security?		X
14. Did you take measures to defend yourself against credit cards fraud?		X
15. Did you make necessary arrangements for delivery of your products that you will sell?	X	
16. Do you know subjects related to selling goods in domestic or foreign market, about tax such as VAT.?	X	
17. Did you define services after sale, which you will give over Internet?		X
18. Did you plan necessary marketing activities to promote your Web site?		X
19. Did you register your Web site under important search engines?	X	
20. Did you do necessary preparation to record user statistics and evaluation for the aim of showing the way of improving your Web site?		X
21. Did you separate the improving and publicity budget, which is parallel to your goals?		X

An evaluation based on the questionnaire data can be made such that the firm had a positive attitude towards e-commerce and considered it would be beneficiary to existing business, but the owner of the firm was not sure yet how e-commerce was done.

The properties of products, customers and market shares of competitors and their Web sites are closely followed. They introduce their firms and products. One of them has a different Web site. Detailed online order forms for former/new domestic or foreign customers in Turkish and English are established separately.

All present/potential business partners, which utilize computer and Internet facilities, form their target mass. Suppliers are not in the target mass because they don't utilize computer and Internet facilities.

The production and sale phases are explained above in 3.5.4.

The Web site of the firm is prepared in Turkish and English, and the firm and its products are being introduced. Some photographs and videos about the firm are presented. Because of the products are not suitable to show in catalogue due to their properties, chemical analysis results, color parameters, definitions and fields of consumption of them, package forms, size distributions for grindable materials, screen apertures for crushable materials, and the results of quantitative EDX analysis are given. In addition, there are some links in Web site named www.dolomit.com.tr both in Turkish and English.

Online orders and payments are not done. e-Mail is used for communication and taking on-line orders. Communication page consists of three small divisions:

I. The division including information about firms, which want to interview,

II. The division including things such as sample or interview requests, which is wanted from the firm,

III. The division that ideas, recommendations and requests about the firm will be written.

In other words, communication page is used as a writing place for order form and data for potential customers.

A part time person who is experienced on information technology is employed to do all arrangements, updating, and directions. There will be a need for fulltime personnel when the firm starts e-commerce.

Domain names including the name of the firm and www.dolomit.com.tr are taken and registered under search engines.

Interviews with banks for online payment facilities were made.

Mining sector is appropriate for indirect e-commerce because it does not allow online delivery. Consequently, there are not different applications such as tax about selling to domestic or foreign, from traditional commerce. The automation of Offices of Tax and customs will change the sending form of necessary documents.

As indicated in the steps of e-commerce division, the firm is:

- at 5th stage according to Australian Electronic Business Network
- at 3rd level according to Hong Kong Productivity Council
- at Group B according to Chau
- at 2nd stage according to the definition of Electronic Commerce and Telework Trends

3.9 Analysis of the Suggested Road Map

In the interview with the owner of the firm, road maps that were taken from literature and the suggested road map were explained. The opinions and critics about suggested road map were asked. Besides, the expert opinions of KOSGEB e-Business Department (2004) and CE Technology, an official consulting firm of KOSGEB on commerce were taken.

For the first part of the road map, the owner of the firm expressed that the suggested road map was generally acceptable and applicable. The analysis concept included in the suggested road map was discussed. It was stated by the firm that analysis was a procedure of dividing the subject into parts to make it be understood better, collecting and evaluating data at each part, and constituting the results and recommendations that small scale firms could not make. It was explained that analysis, which was included in suggested road map, meant "a general evaluation". Evaluation was considered as collected general knowledge to make decision for starting a business or not.

It stated by the firm that they had no time and personnel to collect information about e-commerce application in the country included in the first part of the road map, and it was recommended to remove this part from the road map. It was added that governmental organizations and universities could collect these data. The same critics were made for industry analysis and SWOT analysis. For this part the following decisions were made.

- To remove the country analysis from the suggestion,
- To utilize the questionnaire prepared for this study as industry analysis,
- To perceive SWOT analysis as 4 simple questions and their answers.

As for the second part of the road map, a two-stage training was recommended; the first stage was to be consisted of general information for the owner and the managers of the firm and the second stage was to be directed to application; and based on this training to create a team responsible for e-commerce by managers, and to review missions and goals with this team. It was recommended also to determine critical success factors and to review business process and infrastructure to reach the defined mission and goals. However, the owner of the firm stated that training could get based on goals as in the case of KOSGEB applications that first the aim was asked and then necessary training and supports were given otherwise there would be time and money waste. It was stated that instead of dealing with goals, strategies, and success factors separately, all must be taken completely. It was rejected that the recommendation on which the road map should be defined later depending on target market, based on the idea of assuming an attitude at the beginning. It was decided that a team could not be created because the firm was small scale, there was a lack of qualified personnel, and the job definitions weren't established. In fact, only 3 persons give direction to the future of the firm and this is the team that will get training and follow the subject.

According to the consulting firm small scale firms could not accomplish e-commerce applications with their facilities, so it was necessary for them to get professional support, and it was recommended to them utilizing governmental support. It was also stressed that it organized long and multiobjective meetings with managers of the firms that training related to e-commerce or information are given and goals are defined while the properties of firm and its products, and market to be located in are defined, at the beginning. At the same time deficiencies are determined by the studies related to the subject. According to the consulting firm there are two points to be criticized in the suggested road map. Though, it was recommended that after goals were determined, to define the critical success factors, to determine the needs by reviewing business process and technical infrastructure, and to determine the priorities at the second part of suggestion it was expressed that priorities were related directly with budget that was why budget and ROI must be at the first part instead of in the end of the second part.

The first part of road map that was constructed at the light of critics starts with analyses of the industry, competitors and the firm. The attitude of the sector to e-commerce and applications of competitors must be followed. Firm analysis must be more detailed, business processes, the properties of products and customers, and market conditions must be explored. It can also use SWOT analysis. While goals are defined, critical success factors and strategies must be determined. Target markets and customers must be determined based on this information. While needs to reach success are defined, business processes and technical infrastructure must be reviewed. If professional service is employed the needs of the firm must be determined. Goals must be prioritized based on budget and expectation on ROI. Then detailed work/personnel/time table/budget plan must be prepared and documented. The first part is brought nearer to Kienan's suggestion based on critics and review.

The latter discussions focused on security, publicity, and online order form. During the interview with the owner of the firm and some of the employees it was asked why online order form hadn't put on Web site. Finance manager stated not to prefer to use such a form because of different expectations of customers, such as price requests of former customers that couldn't be accomplished within the same online order form. It is added that communication page was prepared in such a structure that it would serve multiple goals. The second critic of the consulting firm was at this point. It was expressed that there is a requirement for a customized page because every customer wanted different attitude and for this purpose it is recommended free membership system or customer relations management system that every customer will may reach its own information about products and services with user name and password, as general. It was offered that this recommendation to be wide enough to cover the procurement chains of the firms. This recommendation was accepted by the person responsible for data processing while the results of the questionnaire about customers' attitude to e-commerce and the need of reorganization of the firm were reminded. The owner of the firm stated that e-commerce application first of all would give efficiency to the firm, decrease mistakes, and save time, but portfolio of customers would not allow this. According to the consulting firm the delay in starting e-commerce because of unwillingness of the customers would result in losing the potential markets and customers.

It was expressed by the person responsible for data processing that it was attached more importance to the publicity of Web site than security, in the suggested road map. It was brought out that the firm didn't reserve budget for advertisement and promotion, so the deficiencies could be completed by the Web site. According to the consulting firm taking domain name and logo were not enough to establish brand, advertisements on sector portals and sites such as Google adwords etc. were important also. Meanwhile KOSGEB support for e-business consisting of 4 stages was mentioned**.** There is Web site design at the first stage, publicity on portals at the second stage, e-commerce support at domestic market at the third stage, e-commerce support at foreign market at the last stage. It was indicated by the owner of the firm that the importance of advertisement was obvious if the firm didn't realize a demand increase the advertisement would give damage to the firm.

The second part of the road map, which was rearranged based on the critics, starts with the content and the design of the Web site**.** The models related to visual material, content and software must be prepared and revised. Besides domain name and logo, all information about firm must be used to establish firm identification. Portals, which will demonstrate the firm, must be determined. Establishment of customer relations management system and adaptation of e-commerce applications to the entire system must be done. All system must be tested.

The third part of the road map consists of applications based on training, deployment and Web site promotion. The recommendation for publicity is to go forward step by step with coordination. New publicity tools must be used when the capacity of the plant will be increased.

The last part of the road map is the only part that no discussions were made on.

The revised ultimate form of the suggested road map is given in Figure 13.

The suggested road map was revised by using the information about the selected firm. This final version of the road map can be applied to all firms that want to utilize e-commerce. If such a necessity arises, some changes can be made. The special conditions related to sector, customers, procurement process, products, production process etc. of every firm should be taken into account separately. It shouldn't be forgotten that there is no one unique solution applicable to all kind of firms without making the necessary adjustments.

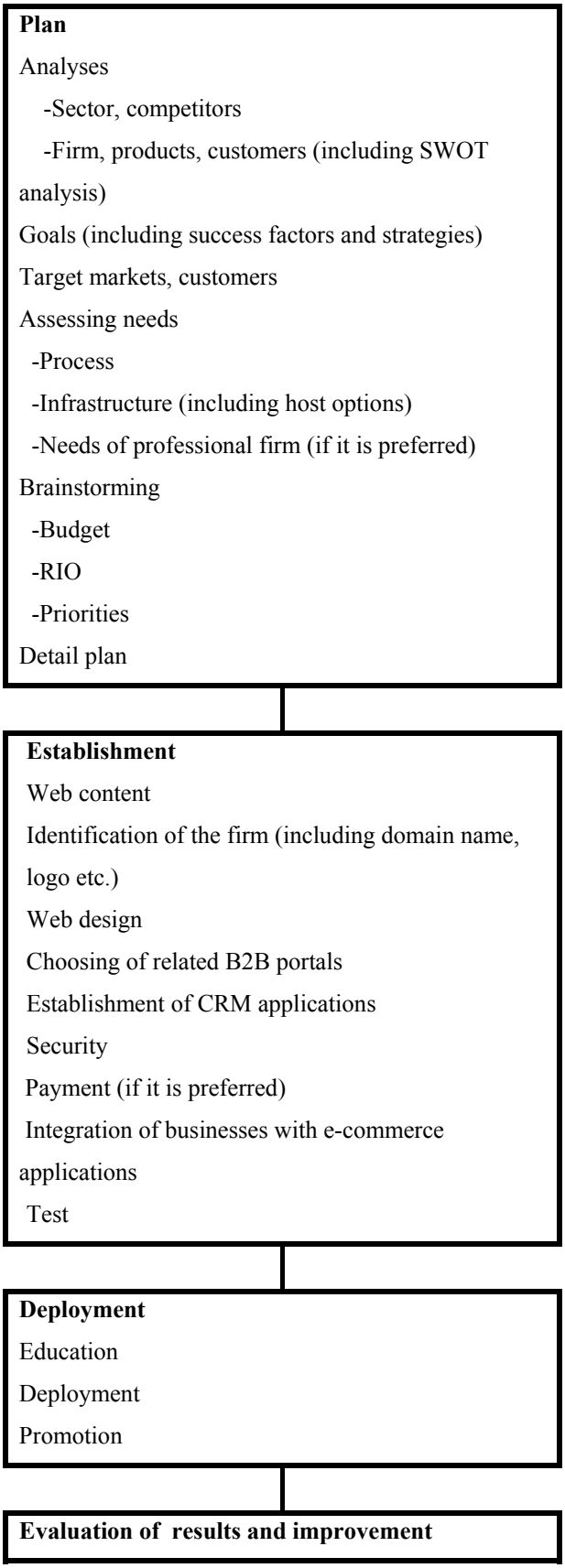

Figure 13 Revised Road Map

CHAPTER 4

CONCLUSIONS AND FURTHER RECOMMENDATIONS

Because of rapid changes in information and communication technologies and usage of these changes in commerce, the concept of electronic commerce or e-commerce are put on the agenda. e-Commerce which was put into practice in middle 90s, is considered as being in early stage, and discussions are going on about it. Applications are showing differences among countries and regions. Studies related to establishment of international standards, laws or arrangements must be carried out in national and international levels to provide developments and expand the usage of e-commerce. The role of the governments is important to promote the adoption of it.

It is not a surprise whatever happens. Change is happening at a much faster rate than at anytime in the past. The question isn't "will industries be doing via Internet?", but "how much and soon?" e-Commerce is changing business relationships. It allows companies to expand market search, to reach new markets-customers, to bid on projects, and helps them to be more productive, more cost-efficient and more profitable.

Although much has been written about e-commerce, the owners of firms, especially many SME owners, live hesitations where to start and how to proceed. The safest strategy in the short term appears to be "wait and see" how e-commerce will develop or evolve, if managers desire to avoid high risks. But firms that begin e-commerce early may gain long-term advantages that latecomers will never get.

The aim of this study is to show a road map to the firms in the mining sector, which want to benefit from the advantages of e-commerce. Mining sector takes part in B2B e-commerce category. Although there are many B2B business models, it was studied on only one model based on usage of firm's own Web sites as a virtual shop because there are only B2C e-commerce applications in Turkey, and the majority of the mining firms are small and medium size enterprises. Firms having gained experience over time will dare to apply other B2B business models. In other words the initial efforts of firms on the Internet should be small then "e-volve" into more complicated business model.

The attitude of Turkish mining firms to e-commerce was searched by the assistance of a questionnaire was recommending the road map, which mining firms should follow for starting e-commerce. The majority of the firms that answered the questionnaire have computer and computer is utilized in daily business, in accounting, and for Internet connection. Internet connection is used to get information about competitors and their products, to research new markets, and to reach new customers. The

majority of the customers of these firms have computers and they use these for the same goals and in the same form. Besides, the majority of firms have Web sites and they are registered under search engines. Web sites are prepared with the help of professional firms, but the numbers of Web sites, which are prepared by the firm employee, are not small. Web sites are used to introduce firms and their products. Because the majority of the mining firms are in small scale, they can not reserve budget for advertisement and promotion and they work with restricted number of customers. Thus they try to eliminate this weak side by Web sites. They are not updated and customer statistics are not kept, in other words they are static sites. Although there are online order forms in some Web sites, they are not used by customers; e-mail is used as order form.

While all firms have Web sites, when it is asked if they utilize e-commerce facilities or not, 30 % of them don't think to do e-commerce, 45 % of them think to do and the rest of them express that they are already doing e-commerce. Because the information levels of firms are different, their e-commerce definitions are different. While the majority of firms and their customers have computers, Internet, and Web site facilities, it cannot be expressed that they utilize e-commerce facilities. Although firms determine many goals (to reach new markets, to develop customer relationships, to introduce etc.) they try to do them with passive advertisement, in other words they don't want to take risk. Adequacy of existing business model for their goals, doubts on security; inadequacy of legal agreements and technical infrastructure problems are seen as obstacles for e-commerce. Many firms are not aware of government support or believe that it is not adequate.

The problems of firms which want to utilize e-commerce facilities must be dealt with the sector they are situated in and the scales of the firms. As mentioned above, mining firms are generally small scale firms, besides a clear regulatory environment, the full deployment of e-commerce depends on user awareness and the existence of clear business cases. The education and consciousness levels of the owners of firms are important success factors. Top management's open mindedness about developments, commitment, support, and delegation are very important for successful implementation of the new technology. It is necessary that the governmental organizations render conscious even force the firms. Transfer of adjudication of governmental organizations to virtual place, completion of customs automation project, legal utilizing of electronic signature and acceptance of all virtual data as proof and obligatory will canalize many organizations to e-commerce. At this point, the importance of government supports emerges. Especially, KOSGEB must explain its supports and services better.

The strategy/road map that must be followed to start e-commerce by mining firms was prepared based on road map suggestions in literature. New suggested road map was tried to be applied to a mining firm located in Eskişehir. It was discussed with the owner of the firm and some employees of the firm, an employee from KOSGEB e-Business Process Department, and the manager of an e-commerce consulting firm and the necessary changes were made in order to get an applicable road map.

The first part of the road map starts with analysis of industry, competitors and the firm. Firm analysis must include business processes, the properties of products and customers, and market conditions must be explored. While goals are defined, critical success factors and strategies must be determined. Target markets and customers must be determined based on this information. While needs to reach success are defined, business processes and technical infrastructure must be reviewed. Goals must be prioritized based on budget and expectation on ROI. Then detailed work/personnel/time table/budget plan must be prepared and documented.

The second part of the road map starts with content and design of the Web site**.** Besides domain name and logo, all information about the firm must be used to establish the firm identification. Establishment of customer relations management system and adaptation of e-commerce applications to the entire system must be done. All system must be tested.

The third part of the road map consists of applications based on training, deployment and Web site promotion.

The last part of the road map consists of evaluation of the results and revising Web site.

Foreign trade knowledge and experience are necessary for e-commerce application in foreign market. A questionnaire supplied from literature, analysis of adequacy for foreign trade, was applied and it emerged that the firm was adequate in this subject. As a result of questionnaire examining the adequacy of the firm about e-commerce that gathered from literature, it emerged that the firm wondered e-commerce, but didn't know what to do. The attitude of the firm to e-commerce, goals, and completed studies related to the subject were determined by a questionnaire prepared for this study. Firm manager believes that e-commerce will benefit the firm. The Web site of the firm that has been was prepared; the domain name was taken and registered under search engines by a part time person. It is believed that the firm could succeed in reaching its wide goals from entering to new market to development of customer relations in an independent online division within the firm. There is not usage of online order form or online payment. Communication page is arranged as a page of taking orders, demands of samples and interviews. The attitude to e-commerce of customers of the firm was examined with a questionnaire prepared, it was emerged as a result that they didn't want to do e-commerce although each of them had computer, Internet, and Web site. Hence, getting the participation of customers is very difficult as they lack the confidence and knowledge in conducting e-commerce**.** It can be thought it needs time for e-commerce applications with existing customers, but the behavior of potential customers must be taken into account.

Although the suggested new road map was reviewed based on the studied firm, it consists of some parts to recommend all firms.

Firms, which want to start e-commerce applications, must determine their goals and business model first of all. Some factors such as role in the market structure, physical attributes of the goods traded, personnel involvement required in buying and selling process, public intervention affect the choice of a business model. In this case study, it was recommended that the firm should start with a virtual shop. The next stage can be taking place in portals. This attitude is harmonious with the steps of e-commerce explained above in section 2.5. Besides, new applications can be added in the same business model with increase in the number of customers in the course of time. Usage of banner, application of questionnaire or creating community can be given as examples.

Firms have been advised to adopt information and communication technologies to support initially the achievement of existing business objectives. However, entry into B2B e-commerce may require the adoption of new business strategies. Each firm must be evaluated in the environment of individual firm, a dual marketing and informational perspective. While firms bring the strong sides forward, they must find solutions for their weak sides. The marketing perspective covers an analysis of internal, customer and competitor factors. The informational perspective consists of one or more of strategic, informational or transactional issues. Strategic benefits include changes in firm's products or way of operation. Informational benefits are obtained from improved support for communication, reporting and decision making, with better information access, quality and flexibility. Transactional benefits are the results of improved efficiency in operations. All of them should be considered by managers when evaluating advantages of e-commerce related to the cost Although Internet environment is a new type of business concept, it must be remembered that the basics of a market plan can apply and "Built it and they will come "is not a common rule in the world of e-commerce.

e-Commerce is not only a simple Web site design or buying-selling and application of related trade and security softwares. All business process must be brought into harmony with e-commerce applications or integrated. When it is accomplished, e-commerce applications will provide benefits. As a summary, if the goal is online buying-selling activities, all business processes must be automatized and integrated with each other. If there are supply chains with suppliers or customers, they had better be included in integration. Online stock control must be done to get answer from/give answer to online order in any location. If the goal is to enhance customer relationship or give customized service, customer database (a later stage may be data mining) must be used to give customized services. A database keeps information related to every customer and this information consists of the kinds, amounts, and price intervals of products bought by customer and transportation manners of them etc. Customized products and price applications must be built depending on that knowledge. In the case study firm which was established in 1992, has been selling products to domestic market for 10 years; then it entered to the foreign market because of capacity increase. The firm made system automation utilizing KOSGEB support. While the increase in capacity created an increase in new market and revenue, the need for reorganization had emerged. This application could not be realized because new personnel were not employed in increasing work density, job descriptions were not defined and a database was not being kept for customers. It seems that the case study firm

will be unsuccessful unless the automation of business process and reorganization of the firm are made. Consequently, changes must be done in organization parallel to the capacity increase. Automation and integration of the system will bring the firm close to e-business. Although e-commerce is an application under e-business, many mining firms will start e-commerce as a result of e-business.

The adoption of e-solutions implies that a long skill transformation is taking place inside most businesses. Companies should therefore provide the necessary training and education to their staff on the usage and benefits of e-commerce applications. These help to remove staff's fears on the new workflow and practices and to increase their knowledge on the new applications and procedures.

Because e-commerce applications need high skilled persons and big investment, firms generally prefer to realize applications utilizing their facilities of finance and human resources. They can capitalize government supports in order to get the help of professional firms. Besides, they can use nets or projects such as ATP or Kobinet, which are supported by government, as an alternative to reach new market and customers and to get information about foreign markets.

It shouldn't be expected that e-commerce will bring radical solutions to the problems of mining sector, but being outside of developments will increase its problems. If firms, especially SMEs, want to survive and/or sustain developments in the environment of globalization and recent economic crisis in Turkey, they need to change their way of doing business, especially employing new information technologies.

As mentioned above the new road map suggestion was based on the advantageous sides of the suggestions from literature and was revised later. However, examination of revised suggestions in practice and recommendations to encountered problems were not realized because the firm has not been fully utilizing the e-commerce and the time of study was limited. It can be the subject of a further study. Possible other initiatives could use the suggested road map to carry advance the study that may be supported or sponsored by government or industry associations at a local level and analyse the results for different mining firms.

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APPENDIX A

QUESTIONNAIRE ABOUT E-COMMERCE IN TURKISH MINING SECTOR

A. FIRM DESCRIPTION: (To write down the firm name is completely depends on your desire. All information will be used in related study and be kept secret.)

1. Firm name and year of establishment:
2. Types of product or service :
3. Capacity of products :
4. Number of employees (Manager, consultant, engineer, technician, office staff, worker etc.):

B. MARKET and TRADE: (You can check more than one choice)

5. Who is your customer?

a. Domestic	
Local customer	88 %
Government organizations	71 %
Special job groups	15 %
Others	24 %
b. Foreign	63 %

6. Can you describe your market conditions?

a. We have a monopoly position	5 %
b. There is a high competition	7 %
c. If there is a high competition in your market	
There are local producers	22 %
There are foreign producers	5 %
There are both local and foreign producers	63 %
d. Others	5 %

7. Which marketing techniques do you use?

a. Marketing mix (Product, price, promotion, place)	71 %
b. Advertisement	44 %
c. Public Relations	27 %
d. Fairs	68 %

8. How do you follow up your orders?

a. By telephone or fax	95 %
b. Via e-mail	49 %
c. Others	15 %

9. How do you deliver your products to your customers?

a. By the department of marketing of your company	85 %
b. By professional intermediaries	17 %
c. Others	10 %

10. What is your payment system?

a. Cash	73 %
b. Credit	37 %
c. Others	32 %

11. How do you provide and enhance your customer relationship? How do you get your customer to buy again?

a. Repeated customer visits	83 %
b. Projects follow up	59 %
c. Fairs	63 %
d. Advertisement	32 %
e. Recommendations of customers	54 %
f. Others	5 %

C. COMPUTER FACILITIES:

12. Do you have Internet connection?

Yes	100 %	No	-

13. Do your customers use Internet connection?

Yes	93 %	No	5 %	Not answered	2 %

14. If your firm has a Web site,

I. How do you supply, built and update server services, maintenance and other necessary services?

a. By firm personnel	31 %
b. By the help of a professional firm	43 %
c. Others	5 %
Not answered	21 %

II. Have you ever registered your Web site under search engines?

Yes	69 %	No	13 %	Not answered	18 %

D. ELECTRONIC COMMERCE (E-COMMERCE):

15. Do you use e-commerce?

No	30 %	Go to question 16
We plan to use it	45 %	Go to question 17
Yes	25 %	Go to question 21

16. If your firm doesn't want to start e-commerce application, please answer only this question. Why doesn't your firm want to do e-commerce?

	5 %	4 %	3 %	2 %	1 %	Not answered %
e-Commerce is not suitable for mining.	25	25	25	17	-	8
Existing business model is enough for your goals.	17	58	-	8	-	17
To start e-commerce, it is necessary to form conditions that force you.	42	17	8	8	8	25
There are some risks on security and secrecy.	25	50	25	-	-	-
Legal agreements are not completed.	50	25	17	8	-	-
Online banking service is not adequate.	17	8	8	25	17	25
Steps to start e-commerce application are not determined.	33	25	42	-	-	-
Government hasn't produced policies to direct firms and to make conditions easier (technical infrastructure, education, credits, intermediaries etc.)	25	33	17	8	-	17
There are some technical infrastructure problems.	25	42	25	8	-	-
There is a lack of qualified personnel.	33	25	25	17	-	-
There are problems to get finance.	17	42	33	8	-	-

5= Definitely, I agree, 4=I agree, 3=I have no idea, 2=I don't agree, 1=Definitely, I don't agree,

17. If your firm plans to use e-commerce applications, please answer questions 17-20. What do you think about e-commerce?

	5 %	4 %	3 %	2 %	1 %	Not answered %
There are some risks on security and secrecy.	18	35	6	18	6	18
Legal agreements are completed.	6	12	18	18	18	29
Steps to start e-commerce application are determined	18	18	18	12	6	29
Government has produced policies to direct firms and to make conditions easier (technical infrastructure, education, credits, intermediaries etc.)	-	12	12	29	24	24
Online banking service is adequate.	24	41	12		6	18
It develops the existing business model.	12	53	-	6	-	29
It provides search facility on markets, competitors, and their products with lower cost.	35	47	-	-	-	18
There are some technical infrastructure problems.	6	59	12	-	-	24
There is a lack of qualified personnel.	-	59	12	6	6	18
There are problems to get finance	12	24	29	8	-	18

5= Definitely, I agree, 4=I agreed, 3=I have no idea, 2=I don't agree, 1=Definitely, I don't agree,

18. If you want to do e-commerce, what is your goal?

a. To increase revenue with new markets and customers	76 %
b. To reduce expenses	53 %
c. To enhance customer relationships	76 %
d. To support the existing business	53 %
e. To facilitate as a firm promotion / advertisement tool	82 %
f. To be among the first applied firms provides advantages against to competitors	24 %

19. If you use e-commerce, how?

a. To do only passive advertisement	88 %
b. To open online stores in addition to existing store	6 %
c. To establish a separate online division within the firm	18 %
d. To dissolve regular business and go for cyber-business only	6 %
e. To enter into an auction site	-

20. Have you ever heard Web sites mentioned below?

	Yes %	No %	Not answered %
www.kobinet.org.tr	61	33	6
Ankara Trade Point in www.igeme.gov.tr	44	44	12
www.kobiline.com	39	50	11

21. If your firm uses e-commerce opportunity, please answer questions 21-25. What was your goal to do e-commerce?

a. To increase revenue with new markets and customers	75 %
b. To reduce expenses	25 %
c. To enhance customer relationship	50 %
d. To support the existing business	33 %
e. To use as a firm promotion / advertisement tool	67 %
f. To be among the first applied firms provides advantages against to competitors.	17 %

22. How do you use e-commerce?

a. To do only passive advertisement	75 %
b. To open online stores in addition to existing store	17 %
c. To establish a separate online division within the firm	17 %
d. To dissolve regular business and go for cyber-business only	-
e. To enter into an auction site	-

23. What have you got by doing e-commerce?

a. Your firm has increased revenue with new markets and customers	67 %
b. Your firm has reduced expenses.	25 %
c. Your firm has communicated with your customers in an easy way with lower cost.	42 %
d. It has contributed to the firm's promotion.	50 %
e. Your firm hasn't got any benefit.	8 %

24. What do you think about e-commerce?

.	5 %	4 %	3 %	2 %	1 %	Not answered %
There are some risks on security and secrecy	30	40	10	-	10	10
Legal agreements are completed.	30	40	10	10	-	10
Steps to start e-commerce application are determined	20	10	30	-	10	30
Government has produced policies to direct firms, to make conditions easier (technical infrastructure, education, credits, intermediaries etc.)	30	10	10	20	-	30
Online banking service is adequate.	20	20	20	20	10	10
It provides search facility on markets, competitors, and their products with lower cost.	20	30	20	-	-	30
There are some technical infrastructure problems.	20	40	30	-	-	10
There is a lack of qualified personnel.	-	60	10	10	10	10
There are problems to get finance.	-	50	2	10	10	10

5= Definitely, I agree, 4=I agree, 3=I have no idea, 2=I don't agree, 1=Definitely, I don't agree,

25. Have you ever used Web sites mentioned below?

	Yes, %	No, %
www.kobinet.org.tr	18	82
Ankara Trade Point in www.igeme.gov.tr	36	64
www.kobiline.com	18	82

APPENDIX B

QUESTIONNAIRE ABOUT CUSTOMERS' ATTITUDE TO e-COMMERCE

A. FIRM DESCRIPTION: (To write down the firm name completely depends on your desire. All information will be used in related study and will be kept secret.)

1. Firm name and year of establishment :
2. Types of product or service :
3. Production capacity :
4. Number of employees (Manager, consultant, engineer, technician, office staff, worker etc.):

B. MARKET and TRADE: (You can check more than one choice)

5. Where do you get your resources you need?

a. Local producers	60%
b. Domestic producers	60%
c. Foreign producers	80%

6. How do you find firms that provide your resources need?

a. Fairs	60%
b. Advertising	60%
c. Advice	80%
d. The firm you worked with before	60%
e. Internet	60%
f. Bulletins, magazines, printed documents issued by producer unions or associations	20%
g. Local press	-
h. National press	-
i. Others	20%

7. What are the requirements of your firm from supplier firms?

a. To provide products by required quality	40%
b. To provide products by the required quality on time	80%
c. To provide products by the required quality at a suitable price	100%
d. To follow and apply the new technology about production, marketing, finance (online order, online payment, online following up of orders etc.)	40%
e. To give information continuously about new products and their price	60%

8. How do you get your resource need?

a. By the department of marketing of your company	100%
b. By professional intermediaries	-
c. Others	-

9. How do you follow up your orders?

a. By telephone or fax	100%
b. Via e-mail	40%
c. Others	-

10. What is your payment system?

a. Cash	20%
b. Credit	40%
c. Others	60%

C. COMPUTER FACILITIES:

11. For which aim does your firm use computer?

a. For routine business work	100%
b. At accounting	100%
c. In projects	80%
d. For Internet connection	100%
e. There is no computer in your firm	-
f. Others	20%

12. Do your supplier firms use computers?

a. Computer is used by all of them.	40%
b. Computer is used by the majority of them.	60%
c. Computer is used by none of them.	-

13. Do your supplier firms have Internet connection?

a. There is Internet connection in all of them	40%
b. There is Internet connection in the majority of them.	60%
c. There is not Internet connection in the majority of them.	-

14. If your firm has a Web site,

I. How do you supply, built and update, server service, maintenance and other necessary services?

a. By firm personnel	60%
b. By the help of a professional firm	60%
c. Others	-

II. Have you ever registered under search engines?

Yes	No	Not answered
60%	20%	20%

D. ELECTRONIC COMMERCE (e-COMMERCE):

15. Do you use e-commerce?

No	100%	Go to question 16
We plan to facilitate it	-	Go to question 17
Yes	-	Go to question 18

16. If your firm does not use e-commerce, please answer questions only on this page. What do you think about e-commerce?

	Yes %	No %	No Idea %
You are not interested in e-commerce. (If you choose this option, please do not continue.)	20		
You have not any information about e-commerce. (If you choose this option, please do not continue.)	20		
e-Commerce is not suitable for your sector.	20		
Existing business model is enough for your goals.	40		
Steps to start e-commerce application are not determined.	40		
You think that there is a need of time to do e-commerce.			
There are some risks on security and secrecy. That is why you do not want to use on-line communication (e-mail, EDI etc), on-line order (products choosing from catalogue, fill order form etc. over Internet), and on-line payment.			
You can use only to obtain information about firms and their products.			
There are some technical infrastructure problems.			
There is a lack of qualified personnel.			
There are problems to get finance.			
Online banking service is not adequate.			
Legal agreements are not completed.			
Government hasn't produced policies to direct firms, to make conditions easy			

You can write down here your idea except not mentioned above.

17. If your firm plan to facilitate e-commerce, please answer questions only on this page. What do you think about e-commerce?

	Yes	No	No Idea
It supports your existing business.			
It is a new advertising tool for firms and products.			
It decreases search cost.			
It decreases communication cost.			
It creates new revenue with new markets and customers.			
It develops customer relationships.			
Being among the first applied firms provides advantages against to competitors.			
You can use on-line communication (e-mail, EDI etc).			
You can use on-line order (choosing products from catalogue, fill order form etc. over Internet)			
On-line banking service is adequate.			
You can use on-line payment.			
There are some risks on security and secrecy.			
Costs of investment, maintenance, and training are high.			
There are some technical infrastructure problems.			
There is a lack of qualified personnel.			
There are problems to get finance.			
There is not enough application of e-commerce in your sector.			
Steps to start e-commerce application are determined.			
Legal agreements are completed.			
Government has produced policies to direct firms, to make conditions easier.			

You can write down here your idea except not mentioned above.

18. If your firm use e-commerce, please answer questions only on this page. What do you think about e-commerce?

	Yes	No	No Idea
It has supported your existing business.			
It has been a new advertising tool for firms and products.			
It has decreased search cost.			
It has decreased communication cost.			
It has created new revenue with new markets and customers.			
It has developed customer relationships.			
Being in first application firms has provided advantages against to competitors.			
Return on investment is high.			
You have not got any benefit.			
You have communicated on-line (e-mail, EDI etc.).			
You have taken or received order on-line (choosing products from catalogue, fill order form etc. over Internet)			
On-line banking service is adequate.			
You have paid on-line.			
There are some risks on security and secrecy.			
There is a lack of qualified personnel.			
Costs of investment, maintenance, and training are high.			
There are some technical infrastructure problems.			
There are problems to get finance.			
The support of boss is prerequisite for success.			
The support of customers and business partners are prerequisite for success.			
There are wide applications of e-commerce in your sector.			
Steps to start e-commerce application are determined.			
Legal agreements are completed.			
Government has produced policies to direct firms, to make conditions easy.			

You can write down here your idea not mentioned above.