

STRATEGIC AIMS AND EFFECTIVENESS OF  
TURKISH TRADITIONAL COMPANIES IMPLEMENTING E-COMMERCE :  
A COMPARATIVE STUDY

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I feel so lucky to have such a supportive family and friends. I dedicate my thesis to my family and to my twin soul.

## ABSTRACT

Strategic Aims and Effectiveness of Turkish Traditional Companies

Implementing E-Commerce: A Comparative Study

by

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Increase of competition in the local markets urges the companies of various sizes to implement new technologies in order not to be left behind the competition. E-commerce is one of the major types of these technologies, offering the companies a wide range of opportunities, so that they can find the most appropriate solution for their needs. However, as the technological solutions renew themselves with an amazing velocity, organizations have to consider about the rate of returns on their investments. They should analyze the effects of new technologies on their organizational effectiveness before making an investment, so that they can make the right selection. The aim of this study is to explore the factors affecting e-commerce in different sectors in Turkey, compare the sectors and measure the relations of these factors with the effectiveness of company objectives regarding e-commerce. In the scope of this research, Tourism, Finance and Textile sectors are selected as sample and a survey has been conducted to define major differences between these sectors. Hypotheses have been defined and tested using t tests and regression analysis in order to explore the factors influencing effectiveness of e-commerce in organizations.

## KISA ÖZET

Türkiye’deki Geleneksel Firmaların E-Ticaret Kurulumu Sırasındaki

Stratejik Amaç ve Verimliliklerinin Analizi:

Karşılaştırmalı Çalışma

Özlem Sipahi

Piyasalarda yaşanan rekabet ortamı, farklı büyüklükteki pek çok firmayı rekabet dışında kalmamak için yeni teknolojiler kullanmaya itmektedir. E-ticaret bu teknolojiler arasında en belirgin fayda sağlayanlardan biri olmakla birlikte, aynı zamanda firmalara pek çok seçenek sunarak kendileri için en uygun çözümü seçmelerine de yardımcı olabilmektedir. Bununla birlikte, teknolojideki yüksek hızda değişim göz önüne alındığında, firmalar yüksek değerde teknoloji yatırımlarında bulunmadan önce doğru ürüne yatırım yapabilmek için, yatırımın kendilerine dönüş oranının ne olacağını ve yapılacak yatırımların verimliliklerine etkilerini göz önünde bulundurmalıdır. Bu çalışmanın amacı, Türkiye’de yer alan farklı sektörlerin e-ticaret uygulamalarına etki eden faktörlerin belirlenerek karşılaştırma yapılması ve bu faktörlerin firmanın e-ticaret ile hedeflediği değerlere ulaşmasında yaratacağı etkinin ölçülmesidir. Çalışma kapsamında analiz yapılacak sektörler olarak “Turizm, Finans ve Tekstil” belirlenmiş olup sektörler arasında yaşanan farklılığı belirleyebilmek amacıyla anket çalışması yapılmıştır. Hipotezler oluşturularak t testleri ve regresyon analizi yardımıyla e-ticaretin verimliliğe etkisinin ölçülmesi hedeflenmektedir.

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## CHAPTER I

### INTRODUCTION

Online activities have been facilitating the living styles and working habits of many people and firms more and more every passing year and the improvements in technology make us ask ourselves “Do we have any limits in technological developments?” As the competitiveness in the market between the organizations increase, organizations become more and more willing to catch up with the new technology in order not to be left behind the competition.

E-commerce has been adopted by most of the firms in various forms and limits, however, the effectiveness of the technological implementations is started to be examined by the organizations very recently. Organizations are more skeptic before investing on the new technologies and try recognizing the advantages and disadvantages of the investments, and if likely compare them in order to make the best selection.

The aim of this thesis is to explore the differences between usage, importance and effectiveness values of different sectors in Turkey regarding e-commerce. Three sectors; “Finance, Tourism and Textile” are selected as the sample sectors and several analysis have been conducted in order to get an overview about the subject and make comparisons between the sectors.

Following is an outline explaining the contents of thesis, enabling to get an overview about the sections.

- Chapter 2 includes literature survey, in which related publications are consolidated and main concepts are defined.

- Chapter 3 explains the methodology of the research and characteristics of the sample.
- Chapter 4 contains reliability analysis and hypotheses of the research.
- Chapter 5 explains the findings of the surveys and presents the results of the hypotheses.
- Chapter 6 offers concluding remarks and summary of the results.

## CHAPTER II

### LITERATURE REVIEW

#### Overview of E-Commerce

#### Definition and Concepts

##### Definition of E-Commerce

Internet is affecting everybody's life and living styles in the recent few years significantly, in a way that makes it possible for the companies to employ e-commerce to direct their business activities and to carry out electronic transactions (Chang & Changchien, 2006). Organizations are changing from a "physical, supply-driven and disconnected" structure to an "intellectual, demand driven and interconnected" type (Chang & Li, 2003, p.35). Many organizations conduct a detailed research before implementing such technology, whereas, others make investments based on the experience from the competition (Walden & Browne, 2006).

Online transactions have a major effect on the preferences, attitudes and expectations of customers as (1) they have a wider range of alternatives, (2) they can take more conscious decisions and choices, and (3) they are trying harder to get the best price among alternatives (Marketing Week, 2006).

In terms of literature, there are several definitions of e-commerce, all of which describing the scope from different aspects. In a widely used term, e-commerce can be defined as, "the process of buying, selling, transferring or exchanging products, services and/or information via computer networks, including the internet" (Turban, 2004, p.3).

Technologies that can be observed under the scope of e-commerce are explained by Mustaffa & Beaumont as “Electronic data interchange (EDI), electronic funds transfer (EFT), electronic mail (e-mail), internet activities such as web pages, frequently asked questions (FAQ) pages, online catalogues, on-line ordering, order tracking, tendering online interaction exemplified by booking and banking services and any other form of electronic data transmission” (2004, p.85).

Organizations can be classified into three basic types based on their usage of e-commerce. The first type consists of organizations that conduct their businesses only via offline markets, by selling physical products; these are known as “brick-and-mortar organizations” (Turban, 2004). The second type is the “click-and-mortar organizations”, which serve their customers through both traditional and online markets (Bendoly, et al., 2006). Final type is the organizations that perform only in online markets, known as “virtual (pure-play) organizations” (Turban, 2004).

### Classification of E-Commerce by the Nature of the Transactions

#### Business-to-Business (B2B) E-Commerce

B2B e-commerce is defined as performing business operations between an organization and its partners through the use of internet and online technologies (Teo & Ranganathan, 2004). In such transactions, all involved associates are to be businesses or organizations in order to be considered as a B2B e-commerce transaction (Turban, 2004).

B2B models are used to e-enable “procurement, distribution, communications, sales and marketing and financial systems” among business partners (Bland, 2004, p.3).

In order to develop a more collaborative partnership, organizations are concentrating on establishing a more thorough and interactive association with their suppliers. This concept leads companies to try providing supplier involvement in their new product development activities, as well as building up multi-functional teams both in their own and their suppliers' organizations in order to enable a more successful and effective teamwork (McIvor, et al., 2003).

B2B e-commerce enables companies to take their activities in a larger area, to perform in a worldwide purchasing area. Therefore, it provides them with the opportunity of working with a larger scale of suppliers. In addition, through reverse auctions, such companies are becoming able to choose the best price among the offered bids by the suppliers performing in this worldwide platform (Wrigley & Currah, 2005).

Information technology has a significant and major role for facilitating the interaction between the customer organization and its suppliers, as electronic connection between the supply chain members, provided by e-commerce leads to an improved relationship among business partners (McIvor, et al., 2003). As the information sharing between such parties improve, it leads to an increase in productivity and decrease in transaction costs of the supply chain's members (Zank & Vokurka, 2003).

The improvements in B2B e-commerce propose new occasions for the organizations in the management of supply chain networks. Among the effects of B2B e-commerce, the major benefit is the establishment of a new and more cost-effective supply chain network, which creates about 90% of all e-commerce by value and size (Nagurney, et al., 2005). In addition, B2B e-commerce is considered to have a notable effect on improving sales performance and diminishing operational costs of

corporations, when compared to other e-commerce types such as B2C. To be more specific, the volume of sales transactions between the business partners is mostly larger than the one between the organization and its customers. Hence, most organizations consider B2B e-commerce as a necessity to improve their performance as well as profitability (Kaefer & Bendoly, 2004).

### Business-to-Consumer (B2C) E-Commerce

B2C e-commerce, also referred as e-tailing, can be defined as the online retail transactions between a company and individual shoppers (Turban, 2004). According to Chun & Kim, consumers preferring online transactions rather than the traditional methods increase, as the internet provides more information with less transaction costs. In addition, the number of products presented in an online environment is more than the traditional markets due to its product and information range (Chun & Kim, 2005).

One of the major components of B2C e-commerce can be classified as electronic shopping; for customers with a time constraints, online shopping can offer a high level of convenience. Other factors that motivate the customers can be listed as, “broader selections, competitive pricing and greater access to information” (Chen & Macredie, 2005, p.2).

The main factors that influencing B2C e-commerce in order to diminish transaction costs can be defined as, “product digitizability, product complexity and sensitivity, product tangibility or industry structure characteristics such a market thinness or customer dispersion” (Strebinger & Treiblmaier, 2006, p.5). Also, online transactions assist customers for gathering information about a product, ordering,

paying for the sales transactions as well as having the products downloaded in digital forms, when applicable (Chun & Kim, 2005).

Chen & Macredie asserts that, “in electronic shopping, the web site may be thought of as a window through which users have their initial interaction with the shop” (2005, p.1). In this context, usability and design attitudes such as download delay, navigation, content, interactivity and responsiveness can be considered as the crucial factors affecting user satisfaction (Zviran, et al., 2006). Factors such as “Information quality, service quality, system use, playfulness, and system design quality” are described as crucial for a web site to be evaluated as successful by the customers (Liao, et al., 2006, p.197).

Usage of an online shopping site by the customers is directly associated with factors such as

“Perceived characteristics of a web as a sale channel (the sub factors are perceived risk, relative advantage, online shopping experience, service quality and trust); web site and product characteristics (the sub-factors are risk reduction measures, website features and product characteristics) and consumer characteristics (the sub-factors are consumer shopping orientations, demographic variables, computer/internet knowledge and usage, consumer innovation and physical variables” (Rajagopalan & Deshmukh, 2005, p.76).

Customer Relationship Management (CRM) applications support e-commerce with the gathered information, such as classification of customers, profiling and marketing support (Highlands Ranch, 2006).

#### Business-to-Business-to-Consumer (B2B2C) E-Commerce

B2B2C e-commerce can be explained as a combination of both the B2B and B2C e-commerce. In the first linkage, a business supplies goods to another business, who then sells those goods without any change to its own individual customers; wholesaler-retailer-customer relationship can be presented as an appropriate example to such relationships (Turban, 2004).

This type of relationship can be observed when the customer is not able to give or does not prefer to order directly through the internet. Organization's distributors provide information about the products, give relevant advices and consultation as well as take orders (Chang & Li, 2003).

#### Consumer-to-Business (C2B) E-Commerce

C2B e-commerce occurs between individuals who are selling goods and organizations searching for the best offer for the products they are in need of (Turban, 2004).

C2B e-commerce is not as common as the B2B and B2C e-commerce, as a result of the high transaction costs. C2B e-commerce requires analyzing the buyers' necessities and associating them with the best suitable offer by the vendors. Several buyers with similar product needs can form a coalition to be able to get a better offer for the product known as the "Buyer Coalition Formation Model". The aim of this model and of C2B in general, is to be able to get a special offer for a specific product by increasing the demand through collaborating the buyers who need the product. Internet has a major role for this coalition, as it is easier to form groups online (Chen, et al., 2006).

#### Consumer-to-Consumer (C2C) E-Commerce

Consumer-to-Consumer (C2C) e-commerce can be defined as "the system of e-commerce that serves as a facilitator in a transaction between individuals or small enterprises" (Gonzalez, 2003, p.463).

In C2C, individual customers interact in an online environment in order to sell each other goods such as residential property, cars, etc. Auction sites can be given as an example to the C2C transactions between the individuals (Turban, 2004). By means of C2C e-commerce, customers from different countries can interact with

each other, so that the markets of developing countries are accessible worldwide, leading to a positively affected political, economic and social structure of the countries (Li, et al., 2007).

In C2C transactions, there are several security issues such as fraudulent bidding, payment failures or product failures. For protecting customers, the products should not be delivered prior to the payment, there should be an effective authentication system and payment should be made after the product conformity is tested by the buyer (Gonzalez, 2003).

As, the payment process differ from the classical face-to-face payment, special online payment systems are implemented. An example of these systems is the PayPal system, where both parties create an account in the system and any monetary transaction within the buying process is performed via this system. Security of the system is provided by the verification done at the beginning of the process (Gonzalez, 2004).

### Mobile Commerce

Mobile Commerce can be described as “any transaction with monetary value, either direct or indirect, that is conducted over a wireless telecommunication network” (Ngai & Gunasekaran, 2007, p.1). Mobile commerce provides customers the opportunity to order goods and pay for them through their mobile phones. Screen size, memory size and user involvement of the mobile devices is not adequate in comparison with the web-based devices. However, it also has several advantages such as “mobility, et-access convenience, ubiquity, personalization, flexibility and dissemination” (Wu & Wang, 2006, p.2).

Mobile commerce enables organizations to transform their daily e-commerce transactions from a classic network type to a wireless type. Users can perform their

personal transactions such as e-banking or purchasing via mobile phones or Personal Digital Assistants (PDA). Therefore, m-commerce provides mobility and extensive reach to all involved parties (Ngai & Gunasekaran, 2007).

### Nonbusiness E-Commerce

E-commerce activities performed by non-business organizations such as academic institutions, non-profit organizations, religious organizations, social organizations and government agencies in order to decrease their expenses and develop their general operations that can be classified as non-business e-commerce activities (Turban, 2004). Such activities are more concerned with developing existing transactions to increase efficiency than other previously explained workflows (Roy, 2005).

## Benefits and Obstacles of E-Commerce

### Benefits of E-Commerce to the Organizations

#### Global Extension

Performing the business transactions electronically removes issues between the partners resulting from geographic differences, and enables organizations to reach global markets easily (Motiwalla, et al., 2005). E-commerce assists the companies to act in global markets and reduce the trade barriers so that, the companies can increase their sales and customer base (Sung, 2004). Number of market channels used by the organizations can be increased by acting in new geographical places, with customers worldwide (Apigian, et al., 2005). Companies can reach the most suitable business partners and expand their customer base by the use of e-commerce (Turban, 2004).

### Cost Saving

Implementing e-commerce facilitates cost reduction by many aspects. Firstly, it helps diminishing transaction costs such as “making payments, record keeping, ordering, invoicing and exchanging information with customers, employees and suppliers” (Dinlersoz & Pereira, 2006, p.4). In addition, it enables companies to decrease inventory costs as they begin working with less inventory and reduce distribution costs due to the disintermediation in the supply chain (Quaddus & Achjari, 2005). Reliance of the organizations on physical areas and sales personnel also diminish, therefore, a large proportion of the retailer costs decline (Dinlersoz & Pereira, 2006). As the customer service operations are performed online, the costs of sales decline and revenues increase accordingly, so that the organization’s overall sales performance improves (Zhuang & Lederer, 2006). Costs of integrating the organizations with their suppliers also decrease with the implementation of e-commerce and by means of the electronic platform created; companies can build up a better integration with suppliers (Namchul, 2005).

### Supply Chain Improvement

In order to improve the efficiency of operations, Supplier-Customer relationships should be strengthened; developed relationships form a basis for the simplest form of supply chain (Soliman & Janz, 2004). Online platforms created by e-commerce enable organizations to share information with their suppliers, as they combine their knowledge and processes; they provide real-time information about their suppliers and they can explore potential suppliers (Apigian, 2005).

As the participation of supply chain members increases, e-commerce platform changes from an online document exchange medium to an information sharing and integration center, which is referred as a “knowledge sharing network”. Such

networks provide the organizations to manage whole supply chain level more easily and efficiently (Shin, 2005).

Electronic Data Interchange (EDI) is a specific type of e-commerce, which concentrates on the delivery of business documents between the business partners online (Kerr-Bell, 2006). EDI enables the organizations to share transactional information with its business partners all around the world. By using EDI, organizations can create an electronic purchase order, invoice or other business documents online and share these documents via internet all across the world with their organization partners (Soliman & Janz, 2004).

### Customization

E-commerce offers the organizations an opportunity to make pull-type (build-to-order) production which enables low-cost customization as the products are produced according to the customer preferences from the very beginning (Turban, 2004). The organization can respond to the market needs rapidly since it is possible to gather and share market information at organization level by this new technology (Chang, et al., 2003).

Online communication with customers allows the organizations to gather specific information about customer preferences, offer corresponding products for variety of tastes, conduct the customers without any intermediaries and facilitate their potential customers to decide on appropriate products for their specific needs in the online platform (Apigian, et al., 2005).

Companies can collect information about the customers via questionnaires and tracking visits to particular web sites, which can be used to perform a market research in order to get a better understand of the customers (Quaddus & Achjari, 2005); customers share their personal information with the suppliers in order to get a

customized service or good. On the other hand, suppliers use such information to understand the belief, attitude and buying behavior of their potential customers and adapt their product characteristics to these features in order to provide a higher quality service to their customers (Coltman & Devinney, 2001).

### Market Orientation and Expansion

By using e-commerce, the companies can perform production and distribution processes at different locations, therefore helping them to operate in a variety of product lines and markets with less investment (Motiwalla, et al., 2005). This market expansion can be in geographic zone, timeline that the customers shop, as well as a demographic dimension (Dinlersoz & Pereira, 2006)

“Market oriented firms would continuously acquire, process and disseminate knowledge about market, products, technologies and business information”. E-commerce facilitates market orientation as it enables organizations to obtain a thorough knowledge of their customers and e-market by providing a responsive and interactive channel (Chang, et al., 2003, pp.3-4).

### Rapid time-to-market

E-commerce enables companies to automate business processes, transactions and workflows, as well as use computer networks in order to buy and sell products and information (Macgregor & Vrazalic, 2006). By means of its affects on distribution channels and marketing communications, e-commerce improves a company’s performance on time-to-market (Zhuang & Lederer, 2006). Therefore, , by enhancing the communication between the parties, the time between initialization of an idea and its final launch to the market shortens (Turban; 2004).

Physical distribution services also have a key role in fulfilling the customer orders on time. These systems provide the delivery of products or service from the

origin to destination point, which is customer location. The survivorship of an organization in the market depends on their fulfillment in time to be acceptable by consumers (Rabinovich & Bailey, 2004).

#### Lower Communication Costs

Internet provides the companies of various sizes and sectors a convenient and economical communication platform without any limits of time and distance (Jih, 2005). It offers cheaper means of connection when compared to legacy systems such as telephone or fax (Turban, 2004). Internal costs of an organization also diminish, as real time information about transactions is obtainable within the whole organization (Apigian, 2005).

#### Cheaper Products and Supplies

As the cost of communication between the parties decreases, the frequency of search by buyers increases proportionally, leading the companies to lower their prices in order to protect their market share and not to be left outside the competition (Lee & Kim, 2003). As the use of internet offers a common communication medium between the business partners, time spent with daily transactions and costs such as processing orders, administrating the process, searching for material and giving order decrease, so that the companies can get their supplies with more efficient prices (Apigian, et al., 2005).

#### Better Customer Relationship

E-commerce enables companies to get in touch with their customers better by collecting information about them via web sites. With the expansion of this knowledge, they can offer differentiated products suitable for a variety of tastes. Therefore, they can increase their profit margin, as customers are willing to pay more for customized products (Bremser & Chung, 2005).

E-commerce enables companies to collect a great amount of data about their potential and current customers through daily transactions, so that these data are used later on with knowledge management programs in order to analyze customer needs (Jih, et al., 2005).

Porra states that companies that conduct web based promotion can reach their customer base more effectively than the promotions in the conventional media. Other benefits are listed as, “Improving order turnaround time or as an additional sales channel to retail stores, mail order catalogs, telephone and fax sales, customer registration or replacing an agent” (2000, p.393).

### Obstacles of E-Commerce to the Organizations

#### Lack of Standards for Quality, Security and Reliability

Trust can be explained as a customer’s confidence for the vendor to take action even in the situations where he is defenseless against the vendor (Meinert, et al., 2006). Customers regret shopping online in the situations where, there exists a deficiency of trust. “The greater the uncertainty that the customers have, the more important the trust factor becomes” (Wu & Chang, 2006, p.1254).

As the internet changes the way parties communicate, share information and shop, security concerns appear to be one of the most important factors relating e-commerce. Third party assurances are known to support trust between the parties and there is a positive linkage between the presence of an institution-based assurance, online trust and decision to buy (Wakefield & Whitten, 2006).

Many potential customers are uncertain to get involved in the online transactions because of their doubts about sharing personal information through the internet (Meinert, et al., 2006). Although most online sites have privacy protection

strategies on their own, they do not inform the customers efficiently enough to make them sure that they are secure. Customers need detailed explanations about how their personal and financial data are stored in order to perform an action in an electronic environment trustfully (Park & Kim, 2006).

In order to gain customer trust, organizations should pay significant attention to the issues such as encryption and information management and should implement systems defensive for potential criminals and hackers (Roy, 2005).

#### Difficulties in the Integration of Legacy Systems and E-Commerce Software

Number of electronic transactions that occur within a company increase with e-commerce adoption, thus the IT infrastructure of an enterprise has to be revised in order to implement e-commerce activities within the company (Strebinger & Treiblmaier, 2006).

The compatibility of a system with antecedent IT structure facilitates the adoption of that system successfully within that company. Organizations prefer implementing the systems that are most compatible with the legacy systems so that they can minimize the possible failures within the system (Lee & Kim, 2006). Legacy systems that were implemented in the past are analyzed in a bottom-up approach during the integration process, in order to get the maximum benefit and to use the existing systems to the most efficient level (Shan & Hua, 2006).

In the development of e-commerce strategies there should be an association between the online transactions and the complementary offline transactions. The lack of such an association can result in a system that does not support the aims of top management or, that does not offer a profitable environment as desired in the beginning (Kearns, 2005).

One of the most complicated skills within an e-commerce development project is connecting web sites with previous system infrastructure and databases. Web pages are changing to be dynamic in structure, which means their content has been refreshed from an online database, so the compatibility of the web sites with the background database appears to be a very crucial factor in the implementation phase (Taylor, et al., 2004).

#### Inconvenience of Internet Accessibility

Although it gets cheaper every year, the cost of internet can still be a deterrent factor for the companies implementing e-commerce. Performance of connection lines and the capacity of switches influence the speed and quality of an internet connection. In developing countries, internet usage is more expensive than the others, as the bandwidth is not adequate to meet the demand (Kamel, 2006).

#### Customer's Preference of Touch & Feel Products

Customers, who are familiar to face-to-face interactions with vendors and try to get the best offer by these interactions, feel uncomfortable with the fact of buying a product without touching from a vendor far away. In order to overcome this threat, organizations can combine virtual storefront and physical storefront, so that, the customers are able to choose the product from the web site and exchange the product with money at the distribution center (Efendioglu & Yip, 2004).

#### Cultural Differences

Culture has been defined by Kamel as,

“The difference among people of different countries and regions in core values, traditions, customs, norms, opinions about social and ethical issues, business and social practices, tastes, gestures, treatment of people of certain gender or age, and so on.” (Kamel, 2006, p.51).

Customers' view of e-commerce varies depending on the country they live. Some cultures are more ambitious to try new technologies, which lead the managers to be more willing to develop and implement new technologies on their organizations (Tarafdar & Vaidya, 2006).

On the opposite side, some organizations are against early technology adoption. For instance, customers may prefer paying by cash instead of credit card, which affects the nature of e-commerce activities (Kamel, 2006). Being a characteristic of their culture, some nations believe that, paying by credit cards is a type of debt; and because they refuse having debts, these customers do not use any terms of payment except cash (Efendioglu & Yip, 2004).

Organizations should find new ways of transactions in this type of situations, such as ordering online and making payment by cash at the point of delivery (Kamel, 2006).

#### Lack of Top Management Commitment

Top management support creates a suitable environment for new technology adoptions, by providing "a long-term strategic vision, initiative, support and commitment". In the implementation process, top management should play an important role for obtaining the necessary sources and support (Lee & Kim, 2006, p.10).

When the initial adopters of e-commerce are observed, it can be seen that management gives crucial support for implementing new systems and define organizational expectations from the new system (Tarafdar & Vaidya, 2006).

In the cases in which there exists a relatively low commitment of top management, the reason can be insufficient informing about the potential benefits and needed resources (Teo & Ranganathan, 2004). If that seems to be the case,

management should be informed periodically about the positive sides of e-commerce in order to convince them to implement the new system.

## CHAPTER III

### METHODOLOGY

#### Survey Development

During the literature review period, a draft of the questionnaire has been prepared. The most important factors within e-commerce implementation and usage phases have been defined and included in the survey.

Pilot questionnaire has been applied to a group of respondents and their opinions about the questionnaire have been collected. Respondents were randomly chosen between employees working in private sector. In accordance with the feedback of the respondents, factors included in the survey have been revised and the double entrances are removed.

After the revision of the survey, three sectors subject to comparison were selected among the companies performing some of their activities via internet. “Finance, Tourism and Textile” were chosen and the questionnaires were sent to the companies acting in these sectors.

Finance sector was preferred because, most of the activities performed during the daily actions are provided online. As the volume of online activities is higher in comparison with the other sectors, this sector can provide beneficial information about the effectiveness of electronic commerce within the companies.

Second sector was decided to be “Tourism”, as it is in the service sector and in the last years most of the booking activities are conducted online by the customers.

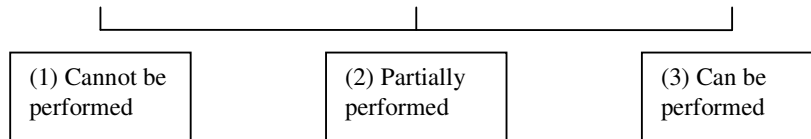
The last sector was selected as “Textile”, since the companies working in this sector are performing production activities and this distinction may provide important contribution during the analysis of B2B e-commerce transactions.

The questionnaire has been classified under seven main parts, which are;

- Number of parties connected online
- Number of activities performed online
- Strategic aims of the organizations for implementing e-commerce and their importance
- Objectives of the organizations for implementing e-commerce and their importance
- Effectiveness rate of attaining the objectives
- Problems encountered during online activities
- Top management support rate

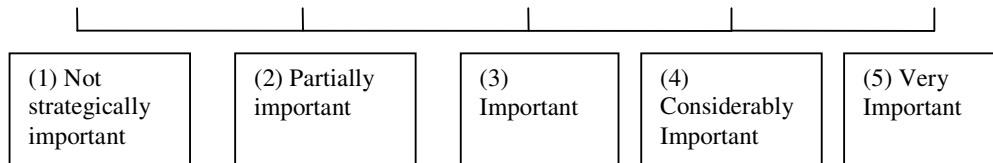
First part is composed of parties connected online; the aim is to understand the number of parties that are connected via internet throughout the organization. The answers are evaluated as “Can be Performed / Cannot be Performed”.

“Number of activities performed online” are classified as shown below.

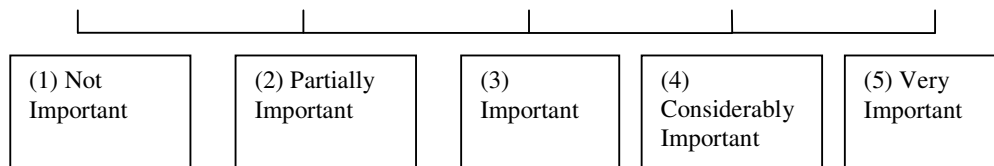


Respondents choose the best suitable option for their company considering the online activities that can be carried out within their organizations.

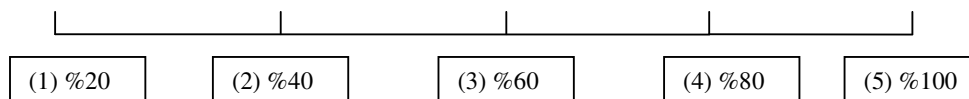
“Strategic aims of the organizations for implementing e-commerce and their importance” are measured with a Likert scale like the figure below.



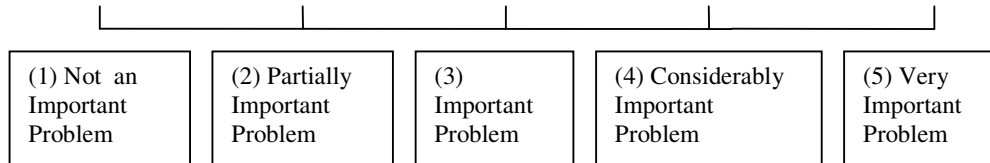
“Objectives of the organizations for implementing e-commerce and their importance” are evaluated in a similar manner with a Likert scale as shown below.



“Effectiveness rate of attaining the objectives” part is composed of the objectives that are mentioned in the previous section of the questionnaire and assessed by the respondents in an interval such as the one below.

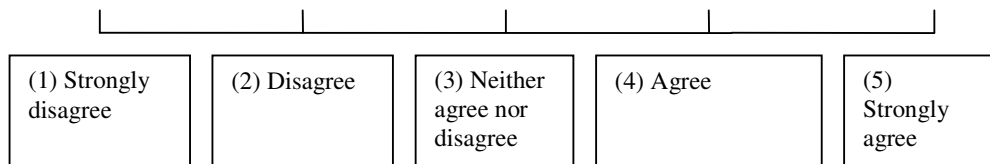


“Problems encountered during online activities” are rated according to their importance to the related company with a scale as follows.



However, after the pre-tests and evaluation it was observed that, some of the companies did not come across some of the problems, as they belong to the service sector. As a result, a sixth variable is included in the questionnaire, named like “Not valid for my company”.

The last part in the questionnaire is composed of “Top management support rate” in which, the respondents declare their opinion about the degree of attention paid by the top management for the development of new technologies and e-commerce. Evaluation has been made with a scale like the below.



### Data Collection and Responsiveness

25 companies from each sector were selected randomly among the list of companies at similar sizes, applying similar online activities and the questionnaires were sent by e-mail to the representatives in each company. The sample size is conservative, as it is challenging to get a response from the companies. After 2 weeks, organizations without response were recalled by telephone and with periodical reminding, response rate was increased.

In the finance sector, banks, insurance companies and private finance organizations were included in the sample. 16 out of 25 companies responded without error. Respondents are mainly managers and users from the sales

departments, as they are the most frequent users of online activities throughout the organization.

Textile sector was composed of ready-to-wear sales companies and manufacturers. Response rate was 15 out of 25. Respondents are mainly managers of sales and production departments. Response of the production department is highly important, as supplier activities is more important for this sector, compared with the others.

Finally, respondents of “Tourism” sector were mainly tour agencies, hotels and yachting agencies. 13 out of 25 companies responded in this category. Respondents are mainly owners of tour agencies and managers of hotels.

The data is analyzed with SPSS tool, after the responses are collected.

## CHAPTER IV

### HYPOTHESIS FORMING AND ANALYSIS

#### Reliability Analysis

Strategic aims of the organizations for implementing and using e-commerce activities were linked to the objectives of the organizations inside the questionnaire. The relationship between the strategic aims and objectives in the first phase, can be observed in a table as follows.

Table 4.1. Strategic Aims and Their Relationship with the Objectives

Strategic Aims	Objectives
Increasing competitive advantage	Increasing Sales
	Facilitating the organizations to gain competitive advantage
	Need for competitiveness
	Market penetration in the local markets
	Decreasing marketing costs
Serving the customers new and better products/services	Improving communication with customers
	Penetration of products/services
	Improving direct sales to customers
Flexible information access	Providing information share throughout the organization
	Improving intraorganizational communication
	Generating flexible working opportunities
Improving customer relations	Gaining new customer via web site
	Informing customers about the products/services
	Providing communication continuity with customers
	Making customer feedback on time
Improving the awareness and prestige of the organization	Improving company image
Providing higher volume of data output	Improving data entrance costs
	Improving data transfer rate
	Improving data entrance faults
Improving organizational responses to changes	Decreasing distribution channels
	Simplifying ordering process
Improving the access to other organizations	Choosing alternative suppliers
	Entering overseas markets

Strategic Aims	Objectives
Decreasing communication costs - improving efficiency	Providing communication continuity with suppliers
	Providing communication continuity with partners
	Providing communication continuity with employees
Improving employee efficiency and company effectiveness	Decreasing operational costs
	Decreasing employee costs
	Fastening management/working processes
	Order/Delivery time improvement
	Keeping less stock

Reliability analysis was applied for the strategic aims that are connected to more than one objective. By calculating Cronbach's alpha, some of the objectives that are not consistent with the results of related strategic aims were removed. Further analyses were conducted using the remaining objectives. Limit value for Cronbach's alpha is taken as 0,60; alpha values greater than 0,60 were included in the other tests. After the reliability analysis, the final table can be shown as follows.

Table 4.2. Strategic Aims an Objectives after Reliability Analysis

Strategic Aims	Objectives	Cronbach's Alpha
Increasing competitive advantage	Increasing Sales	0,646
	Facilitating the organizations to gain competitive advantage	
	Need for competitiveness	
	Market penetration in the local markets	
	Decreasing marketing costs	
Serving the customers new and better products/services	Improving communication with customers	0,526
	Penetration of products/services	
	Improving direct sales to customers	

Strategic Aims	Objectives	Cronbach's Alpha
Flexible information access	Providing information share throughout the organization	0,705
	Improving intraorganizational communication	
	Generating flexible working opportunities	
Improving customer relations	Gaining new customer via web site	0,785
	Informing customers about the products/services	
	Providing communication continuity with customers	
	Making customer feedback on time	
Improving the awareness and prestige of the organization	Improving company image	0,711
Providing higher volume of data output	Improving data entrance costs	0,705
	Improving data transfer rate	
	Improving data entrance faults	
Improving organizational responses to changes	Decreasing distribution channels	0,772
	Simplifying ordering process	
Improving the access to other organizations	Choosing alternative suppliers	0,598
	Entering overaseas markets	
Decreasing communication costs - improving efficiency	Providing communication continuity with suppliers	0,622
	Providing communication continuity with partners	
	Providing communication continuity with employees	
Improving employee efficiency and company effectiveness	Decreasing operational costs	0,673
	Decreasing employee costs	
	Fastening management/working processes	
	Order/Delivery time improvement	
	Keeping less stock	

As the table is examined, it can be seen that objectives related to the aims of “Serving the customers new and better products and services” and “Improving the access to other organizations” were removed, as their alpha is below the limits.

Besides these objectives, in the last section, “Keeping less stock” was also dismissed, as the other objectives together have a better defining rate without that objective.

### Hypotheses

In the first part of the analyses, number of online parties in each sector has been observed. According to this observation, first hypothesis can be declared as;

**H<sub>1</sub>:** *Parties involved in online transactions vary depending on the sector.*

In the second part, number and characteristics of online transactions are examined. Second hypotheses can be formed as;

**H<sub>2a</sub>:** *Type of online transactions for customers, performed in the organizations varies depending on the sector.*

**H<sub>2b</sub>:** *Type of online transactions for suppliers, performed in the organizations varies depending on the sector.*

In further observations, objectives of the companies for using e-commerce activities and the effectiveness rates of these objectives are analyzed. Each objective is evaluated in order to get an overview. Hypotheses are listed as follows.

**H<sub>3a</sub>:** *The effectiveness of “Decreasing operational costs” increase depending on the importance given to this objective.*

**H<sub>3b</sub>:** *The effectiveness of “Decreasing employee costs” increase depending on the importance given to this objective.*

**H<sub>3c</sub>:** *The effectiveness of “Decreasing marketing costs” increase depending on the importance given to this objective.*

**H<sub>3d</sub>:** *The effectiveness of “Increasing Sales” increase depending on the importance given to this objective.*

**H<sub>3e</sub>:** *The effectiveness of “Improving company image” increase depending on the importance given to this objective.*

**H<sub>3f</sub>:** *The effectiveness of “Decreasing distribution channels” increase depending on the importance given to this objective.*

**H<sub>3g</sub>:** *The effectiveness of “Simplifying ordering process” increase depending on the importance given to this objective.*

**H<sub>3h</sub>:** *The effectiveness of “Fastening management/working processes” increase depending on the importance given to this objective.*

**H<sub>3i</sub>:** *The effectiveness of “Facilitating the organizations to gain competitive advantage” increase depending on the importance given to this objective.*

**H<sub>3j</sub>:** *The effectiveness of “Need for competitiveness” increase depending on the importance given to this objective.*

**H<sub>3k</sub>:** *The effectiveness of “Providing information share throughout the organization” increase depending on the importance given to this objective.*

**H<sub>3l</sub>:** *The effectiveness of “Improving intraorganizational communication” increase depending on the importance given to this objective.*

**H<sub>3m</sub>:** *The effectiveness of “Generating flexible working opportunities” increase depending on the importance given to this objective.*

**H<sub>3n</sub>:** *The effectiveness of “Gaining new customers via web site” increase depending on the importance given to this objective.*

**H<sub>3o</sub>:** *The effectiveness of “Market penetration in the local markets” increase depending on the importance given to this objective.*

**H<sub>3p</sub>:** *The effectiveness of “Informing customers about the products/services” increase depending on the importance given to this objective.*

**H<sub>3q</sub>:** *The effectiveness of “Providing communication continuity with customers” increase depending on the importance given to this objective.*

**H<sub>3r</sub>:** *The effectiveness of “Making customer feedback on time” increase depending on the importance given to this objective.*

**H<sub>3s</sub>:** *The effectiveness of “Order/Delivery time improvement” increase depending on the importance given to this objective.*

**H<sub>3t</sub>:** *The effectiveness of “Improving data entrance costs” increase depending on the importance given to this objective.*

**H<sub>3u</sub>:** *The effectiveness of “Improving data transfer rate” increase depending on the importance given to this objective.*

**H<sub>3v</sub>:** *The effectiveness of “Improving data entrance faults” increase depending on the importance given to this objective.*

**H<sub>3w</sub>:** *The effectiveness of “Keeping less stock” increase depending on the importance given to this objective.*

**H<sub>3x</sub>:** *The effectiveness of “Providing communication continuity with suppliers” increase depending on the importance given to this objective.*

**H<sub>3y</sub>:** *The effectiveness of “Providing communication continuity with partners” increase depending on the importance given to this objective.*

**H<sub>3z</sub>:** *The effectiveness of “Providing communication continuity with employees” increase depending on the importance given to this objective.*

In the next part of the survey, problems occurring during the adaptation of e-commerce activities and top management support are ranked by the respondents.

Final hypotheses aim to analyze the effect of all sections to effectiveness rate. Independent variables are selected as; “Number of parties using e-commerce”,

“Number of customer activities performed online”, “Number of supplier activities performed online”, “Importance of objectives”, “Importance of problems” and “Top management support average”. The hypotheses are described below

**H<sub>4a</sub>:** *Number of parties using e-commerce affects the effectiveness of the objectives for e-commerce.*

**H<sub>4b</sub>:** *Number of customer activities performed online affects the effectiveness of the objectives for e-commerce.*

**H<sub>4c</sub>:** *Number of supplier activities performed online affects the effectiveness of the objectives for e-commerce.*

**H<sub>4d</sub>:** *Importance of objectives affects the effectiveness of the objectives for e-commerce.*

**H<sub>4e</sub>:** *Importance of problems affects the effectiveness of the objectives for e-commerce.*

**H<sub>4f</sub>:** *Top management support affects the effectiveness of the objectives for e-commerce.*

Hypotheses listed above are summarized in the research models as follows.

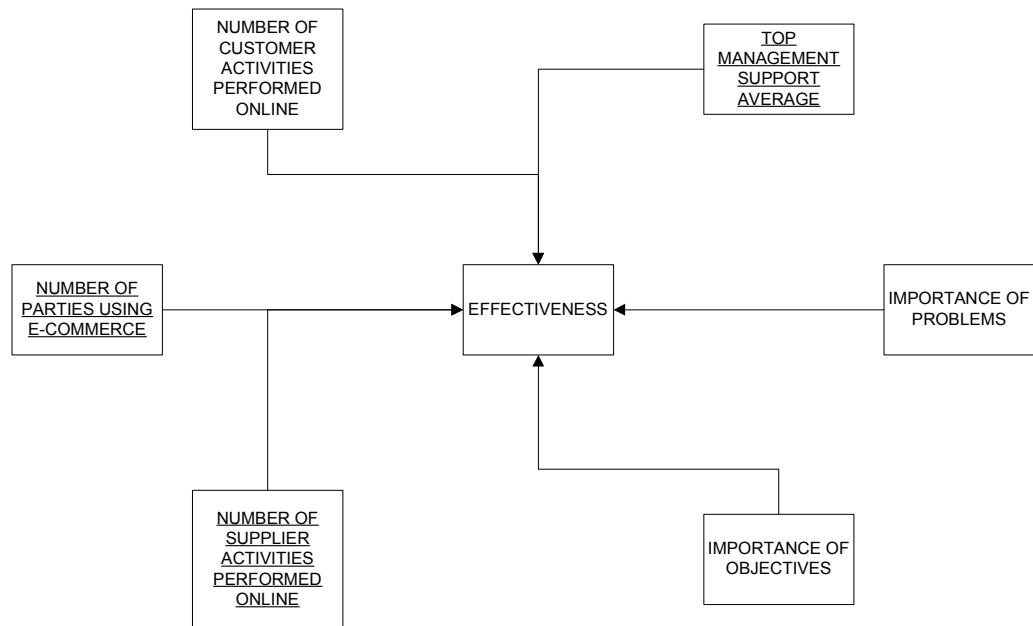


Figure 4.1. Linear Regression Model

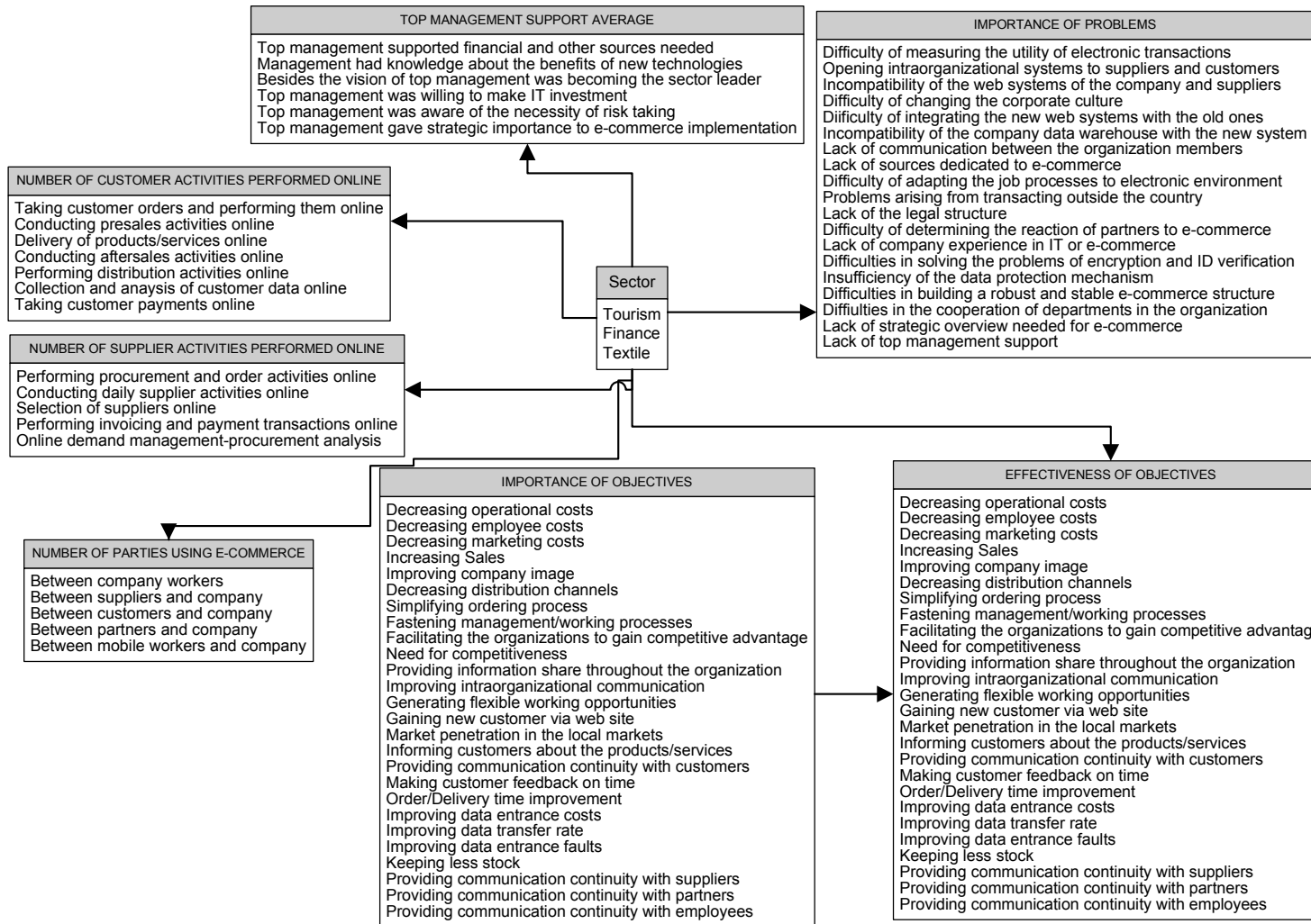


Figure 4.2. Research Model

## CHAPTER V

### ANALYSIS FINDINGS AND RESULTS

#### Online Connected Parties

##### Frequency Analysis

In the first phase of the research, descriptive analyses have been conducted on the data in order to have an idea about the online lifestyles and attitudes of the companies.

According to the responses given on the first section of the questionnaire, number of parties connected online is categorized according to sectors. Frequency and percentage of the companies are analyzed and results are shown in the table below.

Table 5.1. Frequency of Parties Connected Online and Their Percentage in the Tourism Sector

Parties Connected Online	Tourism	
	Frequency	Percentage
Between customers and company	13	%100,00
Between company workers	10	%76,92
Between suppliers and company	5	%38,46
Between mobile workers and company	5	%38,46
Between partners and company	2	%15,38

Table 5.2. Frequency of Parties Connected Online and Their Percentage in the Finance Sector

Parties Connected Online	Finance	
	Frequency	Percentage
Between customers and company	15	%93,75
Between company workers	11	%68,75
Between partners and company	7	%43,75
Between mobile workers and company	6	%37,50
Between suppliers and company	4	%25,00

Table 5.3. Frequency of Parties Connected Online and Their Percentage in the Textile Sector

Parties Connected Online	Textile	
	Frequency	Percentage
Between company workers	15	%100,00
Between customers and company	13	%86,67
Between suppliers and company	12	%80,00
Between partners and company	6	%40,00
Between mobile workers and company	2	%13,33

In the “Tourism” sector, online activities can be performed mainly by “Company Workers” and “Customers and Company”. The other parties also play a role in online transactions according to some respondents, but their percentage is less than 50%.

In “Finance”, online activities are carried out by “Company Workers” and “Customers and Company” with percentage values 68,75% and 93,75% respectively. Communication with partners can also be provided online in with a rate of 43,75%. Communication with suppliers has a lower ratio, as the collaboration with the suppliers is not as much important as it is in the sectors of production.

Online transactions between “Company Workers”, “Suppliers and Company” and “Customers and Company” can be executed in the “Textile” sector. Connection between the company and the suppliers has a higher percentage, as in the production sector, working in cooperation with the suppliers has much importance to gain competitive advantage. Transactions between “Partners and Company” and “Mobile Workers and Company” have ratios below 50% as it was in the previous sectors.

#### Hypothesis Testing

**H<sub>1</sub>:** *Parties involved in online transactions vary depending on the sector.*

First hypothesis has been tested with ANOVA. As the confidence level has been taken as %95, significance levels greater than 0,05 accepts the hypothesis that there exists no difference between the sectors.

Table 5.4. Results of ANOVA test for H<sub>1</sub>

**ANOVA**

Number of Parties Using E-Commerce

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	1,563	2	,781	,583	,563
Within Groups	53,600	40	1,340		
Total	55,163	42			

H<sub>0</sub> = There is no difference between the sectors.

Sign. = 0,563 > 0,05 → H<sub>0</sub> accepted. There is no significant difference between the sectors in the parties involved in online transactions.

H<sub>1</sub> → Not Supported.

After ANOVA is conducted, a similar test, Kruskal – Wallis has also been applied in order to test if the results are compatible.

Table 5.5. Results of Kruskal – Wallis test for H<sub>1</sub>

**Test Statistics<sup>a,b</sup>**

	Number of Parties Using E-Commerce
Chi-Square	1,354
df	2
Asymp. Sig.	,508

a. Kruskal Wallis Test

b. Grouping Variable: Sector

H<sub>0</sub> = There is no difference between the sectors.

Sign. = 0,508 > 0,05 → H<sub>0</sub> accepted. There is no significant difference between the sectors in the parties involved in online transactions.

H<sub>1</sub> → Not Supported.

## Online Activities Performed by the Organizations

### Descriptive Analysis

Online activities carried out by the companies vary according to the sector they belong and to the parties involved in the activities. In the second part of the questionnaire, online activities that can be performed via e-commerce were listed, and the respondents chose the best option suitable for the degree their organization can handle that activity. Means of the responses were calculated and the results of the section are shown in the table as follows.

Table 5.6. Descriptive Statistics for Online Activities in Tourism Sector

Online Activities	Tourism		
	Mean	N	Std. Deviation
Taking customer orders and performing them online	3,00	13	0,00
Conducting presales activities online	2,77	13	0,44
Collection and analysis of customer data online	2,77	13	0,44
Conducting aftersales activities online	2,62	13	0,51
Taking customer payments online	2,62	13	0,51
Online demand management-procurement analysis	2,38	13	0,51
Performing procurement and order activities online	2,23	13	0,44
Delivery of products/services online	2,15	13	0,38
Performing distribution activities online	2,00	13	0,71
Performing invoicing and payment transactions online	1,92	13	0,95
Conducting daily supplier activities online	1,77	13	0,44
Selection of suppliers online	1,00	13	0,00

Table 5.7. Descriptive Statistics for Online Activities in Finance Sector

Online Activities	Finance		
	Mean	N	Std. Deviation
Conducting aftersales activities online	3,00	16	0,00
Collection and analysis of customer data online	2,81	16	0,40
Taking customer payments online	2,81	16	0,40
Taking customer orders and performing them online	2,63	16	0,50
Delivery of products/services online	2,50	16	0,63
Conducting presales activities online	2,38	16	0,50
Performing distribution activities online	2,38	16	0,62
Performing invoicing and payment transactions online	2,38	16	0,81
Online demand management-procurement analysis	2,31	16	0,48
Performing procurement and order activities online	2,13	16	0,72
Selection of suppliers online	2,00	16	0,00
Conducting daily supplier activities online	1,94	16	0,57

Table 5.8. Descriptive Statistics for Online Activities in Textile Sector

Online Activities	Textile		
	Frequency	Percentage	Std. Deviation
Taking customer payments online	2,80	15	0,41
Collection and analysis of customer data online	2,67	15	0,49
Performing invoicing and payment transactions online	2,67	15	0,49
Taking customer orders and performing them online	2,60	15	0,63
Performing procurement and order activities online	2,53	15	0,52
Conducting daily supplier activities online	2,47	15	0,74
Performing distribution activities online	2,40	15	0,83
Online demand management-procurement analysis	2,33	15	0,49
Conducting presales activities online	2,27	15	0,80
Conducting aftersales activities online	2,27	15	0,88
Selection of suppliers online	2,20	15	0,77
Delivery of products/services online	2,07	15	0,80

The degree of performing the activities were measured using a scale of three intervals such as “(1) Cannot Be Performed / (2) Partially Performed / (3) Can Be Performed”. In accordance with these intervals, as the results are analyzed, mean

values of the results can be accepted as “Can be Performed to a High Extent” if the result is greater than 2,50.

In the “Tourism” sector, activities that can be performed with the highest performance are “Taking customer orders and performing them online”, “Conducting presales activities online”, “Conducting aftersales activities online”, “Collection and analysis of customer data online” and “Taking customer payments online”. It can be accepted as meaningful, as most of the online activities carried on by the companies in the tourism are related with the customers, such as booking activities, and presales informing activities. Transactions mostly related with the suppliers have mean values less than 2,50, as in the service sector online supplier relations are not as much developed as the production sector.

Finance sector has similar mean values, as it is also included in the service sector. Factors with high mean values are, “Taking customer orders and performing them online”, “Delivery of products/services online”, “Conducting aftersales activities online”, “Collection and analysis of customer data online” and “Taking customer payments online”. Activities related with the supplier-company relations have less mean values.

Finally, in “Textile” sector, the activities with high mean values are distributed symmetrical between the activities related with the suppliers and related with the customers. Supplier relations are more crucial for the organizations to decrease cycle time and increase competitiveness. Factors with the high mean values are, “Taking customer orders and performing them online”, “Collection and analysis of customer data online”, “Taking customer payments online”, “Performing procurement and order activities online” and “Performing invoicing and payment transactions online”.

## Hypothesis Testing

**H<sub>2a</sub>:** *Type of online transactions for customers, performed in the organizations varies depending on the sector.*

Hypothesis has been tested with ANOVA. As the confidence level has been taken as %95, significance levels greater than 0,05 accepts the hypothesis that there exists no difference between the sectors.

Table 5.9. Results of ANOVA test – H<sub>2a</sub>

<b>ANOVA</b>					
Number of Customer Activities Performed Online					
	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	,017	2	,009	,349	,708
Within Groups	,976	40	,024		
Total	,993	42			

H<sub>0</sub> = There is no difference between the sectors.

Sign. = 0,708 > 0,05 → H<sub>0</sub> accepted. There is no significant difference between the sectors in the online transactions for customers.

H<sub>2a</sub> → Not Supported.

After ANOVA test, Kruskal – Wallis has also been conducted to see whether the results are compatible.

Table 5.10. Results of Kruskal – Wallis test – H<sub>2a</sub>

**Test Statistics<sup>a,b</sup>**

	Number of Customer Activities Performed Online
Chi-Square	,097
df	2
Asymp. Sig.	,952

a. Kruskal Wallis Test

b. Grouping Variable: Sector

H<sub>0</sub> = There is no difference between the sectors.

Sign. = 0,952 > 0,05 → H<sub>0</sub> accepted. There is no significant difference between the sectors in the online transactions for customers.

H<sub>2a</sub> → Not Supported.

**H<sub>2b</sub>:** *Type of online transactions for suppliers, performed in the organizations varies depending on the sector.*

Table 5.11. Results of ANOVA test – H<sub>2b</sub>

**ANOVA**

Number of Supplier Activities Performed Online

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	,309	2	,154	5,040	,011
Within Groups	1,226	40	,031		
Total	1,535	42			

H<sub>0</sub> = There is no difference between the sectors.

Sign. = 0,011 < 0,05 → H<sub>0</sub> rejected. There is difference between the sectors in the online transactions for suppliers.

H<sub>2b</sub> → Supported.

In order to compare the results, Kruskal – Wallis has also been applied, and the results are as follows.

Table 5.12. Results of Kruskal – Wallis test – H<sub>2b</sub>

Test Statistics <sup>a,b</sup>	
	Number of Supplier Activities Performed Online
Chi-Square	7,636
df	2
Asymp. Sig.	,022

a. Kruskal Wallis Test

b. Grouping Variable: Sector

H<sub>0</sub> = There is no difference between the sectors.

Sign. = 0,022 < 0,05 → H<sub>0</sub> rejected. There is difference between the sectors in the online transactions for suppliers.

H<sub>2b</sub> → Supported.

### Objectives of Online Activities

Another important analysis is conducted for the company objectives for implementing e-commerce. Respondents ranked the importance of each objective on the list according to the view of their organization. Mean values for the rankings in each sector is calculated in order to make a comparison between the sectors. These values will form a basis for the analysis to examine if there exists a relation between the importance given to the factors and the effectiveness ratio of these factors. Mean values are shown in the tables shown below. As some of the objectives were

dismissed after reliability analyses, those objectives are not included in descriptive analyses.

Table 5.13. Descriptive Statistics for Company Objectives in Tourism Sector

Objectives	Tourism		
	Mean	N	Std. Deviation
Informing customers about the products/services	4,69	13	0,48
Making customer feedback on time	4,69	13	0,48
Fastening management/working processes	4,62	13	0,51
Gaining new customer via web site	4,62	13	0,51
Facilitating the organizations to gain competitive advantage	4,46	13	0,52
Providing communication continuity with customers	4,46	13	0,52
Order/Delivery time improvement	4,46	13	0,52
Improving data transfer rate	4,46	13	0,52
Decreasing distribution channels	4,23	13	0,83
Need for competitiveness	4,23	13	0,44
Decreasing operational costs	4,23	13	1,01
Providing communication continuity with partners	4,23	13	0,83
Increasing Sales	4,15	13	1,28
Simplifying ordering process	4,08	13	0,95
Market penetration in the local markets	4,00	13	0,71
Providing communication continuity with suppliers	4,00	13	0,71
Decreasing marketing costs	3,92	13	1,19
Providing information share throughout the organization	3,92	13	0,95
Improving intraorganizational communication	3,92	13	0,95
Keeping less stock	3,92	13	1,19
Improving company image	3,85	13	1,28
Providing communication continuity with employees	3,77	13	0,83
Improving data entrance costs	3,62	13	0,87
Generating flexible working opportunities	3,54	13	1,13
Improving data entrance faults	3,54	13	1,13
Decreasing employee costs	3,23	13	0,44

Table 5.14. Descriptive Statistics for Company Objectives in Finance Sector

Objectives	Finance		
	Mean	N	Std. Deviation
Increasing Sales	4,81	16	0,54
Decreasing operational costs	4,63	16	0,50
Facilitating the organizations to gain competitive advantage	4,63	16	0,62
Need for competitiveness	4,56	16	0,73
Gaining new customer via web site	4,50	16	0,52
Providing communication continuity with customers	4,50	16	0,52
Improving company image	4,31	16	0,60
Providing communication continuity with employees	4,31	16	0,48
Fastening management/working processes	4,25	16	0,77
Order/Delivery time improvement	4,25	16	0,77
Informing customers about the products/services	4,19	16	0,83
Making customer feedback on time	4,19	16	0,75
Providing communication continuity with partners	4,19	16	1,17
Market penetration in the local markets	4,13	16	1,15
Decreasing employee costs	4,06	16	0,68
Improving intraorganizational communication	4,06	16	0,44
Providing information share throughout the organization	3,88	16	0,50
Decreasing distribution channels	3,81	16	1,05
Improving data entrance costs	3,69	16	1,01
Simplifying ordering process	3,63	16	0,72
Improving data entrance faults	3,63	16	0,62
Generating flexible working opportunities	3,50	16	0,82
Improving data transfer rate	3,44	16	1,09
Providing communication continuity with suppliers	3,38	16	0,96
Decreasing marketing costs	3,25	16	0,86
Keeping less stock	2,38	16	1,41

Table 5.15. Descriptive Statistics for Company Objectives in Textile Sector

Objectives	Textile		
	Mean	N	Std. Deviation
Order/Delivery time improvement	4,67	15	0,62
Improving intraorganizational communication	4,47	15	0,52
Increasing Sales	4,47	15	0,92
Decreasing marketing costs	4,40	15	0,63
Decreasing operational costs	4,33	15	0,72
Facilitating the organizations to gain competitive advantage	4,33	15	0,90
Providing communication continuity with suppliers	4,33	15	0,82
Keeping less stock	4,33	15	1,23
Decreasing distribution channels	4,27	15	0,88
Fastening management/working processes	4,27	15	0,59
Improving data transfer rate	4,27	15	0,70
Improving data entrance faults	4,27	15	0,59
Simplifying ordering process	4,20	15	0,77
Providing communication continuity with customers	4,20	15	0,94
Making customer feedback on time	4,20	15	0,86
Improving data entrance costs	4,20	15	0,77
Providing communication continuity with employees	4,20	15	0,94
Decreasing employee costs	4,13	15	0,64
Improving company image	4,13	15	0,99
Providing communication continuity with partners	4,13	15	1,06
Providing information share throughout the organization	4,13	15	0,74
Informing customers about the products/services	4,13	15	0,83
Generating flexible working opportunities	4,07	15	1,22
Need for competitiveness	3,93	15	0,88
Gaining new customer via web site	3,67	15	1,23
Market penetration in the local markets	3,53	15	1,13

Objectives listed in the questionnaire were ranked with an interval of five degrees such as “(1) Not Important, (2) Partially Important, (3) Important, (4) Considerably Important, (5) Very Important”. Thus, through these intervals, the objectives with means more than 4,00 can be accepted as “Important to a very high extent”.

When the “Tourism” sector is analyzed, 16 objectives out of 26 were marked as very important. Objectives with the highest means are, “Gaining new customers via web site”, “Informing customers about the products/services” and “Making customer feedback on time”. Findings are consistent with the previous analyses, as most of the online activities conducted by this sector are related with customers. Factors with least mean values are, “Decreasing employee costs”, “Generating flexible working opportunities” and “Improving data entrance faults”.

In the “Finance” sector, 16 objectives out of 26 objectives are selected as very important. The most important factors are observed as, “Facilitating the organizations to gain competitive advantage”, “Decreasing operational costs” and “Increasing Sales”. As the number of activities that are performed online are more than the other sectors, operational costs of the sector is highly dependent to communication costs in the Finance sector. As well as this, the competitiveness of the companies is also affected by communications technology, as most of the transactions occurring between “Customer and Company” and “Employees” are online. Objectives with the least mean values are, “Decreasing marketing costs”, “Keeping less stock” and “Providing communication continuity with suppliers”.

As the “Textile” sector is observed, 23 objectives out of 26 are selected as very important. The highest mean values belong to the factors, “Increasing Sales”, “Improving intraorganizational communication” and “Order/Delivery time improvement”, which can be expected, as the most important activities for the companies in this sector are the ones with the suppliers. Objectives with the least mean values are, “Gaining new customer via web site” and “Market penetration in the local markets”.

## Effectiveness of Objectives

Objectives that are ranked according to their importance are also evaluated according to their effectiveness in the next part of the questionnaire. Mean values of the effectiveness rates are shown in the tables below, depending on the sectors.

Table 5.16. Descriptive Statistics for Effectiveness of Company Objectives in Tourism Sector

Effectiveness of Objectives	Tourism		
	Mean	N	Std. Deviation
Decreasing operational costs	3,92	13	0,76
Improving data entrance costs	3,85	13	1,28
Decreasing marketing costs	3,69	13	1,03
Improving company image	3,69	13	0,85
Fastening management/working processes	3,69	13	1,44
Gaining new customer via web site	3,69	13	1,32
Improving data transfer rate	3,69	13	1,32
Improving data entrance faults	3,69	13	1,32
Informing customers about the products/services	3,62	13	0,87
Order/Delivery time improvement	3,62	13	0,87
Need for competitiveness	3,54	13	1,45
Providing communication continuity with customers	3,46	13	0,88
Facilitating the organizations to gain competitive advantage	3,46	13	1,76
Increasing Sales	3,31	13	1,25
Providing information share throughout the organization	3,31	13	0,75
Making customer feedback on time	3,31	13	1,03
Providing communication continuity with employees	3,31	13	0,75
Simplifying ordering process	3,23	13	1,09
Generating flexible working opportunities	3,23	13	0,83
Decreasing distribution channels	3,15	13	1,34
Market penetration in the local markets	3,00	13	0,91
Keeping less stock	2,92	13	1,19
Improving intraorganizational communication	2,85	13	0,80
Decreasing employee costs	2,77	13	0,44
Providing communication continuity with partners	2,62	13	1,12
Providing communication continuity with suppliers	2,46	13	1,13

Table 5.17. Descriptive Statistics for Effectiveness of Company Objectives in Finance Sector

Effectiveness of Objectives	Finance		
	Mean	N	Std. Deviation
Facilitating the organizations to gain competitive advantage	4,56	16	0,51
Gaining new customer via web site	4,56	16	0,51
Need for competitiveness	4,31	16	0,48
Providing communication continuity with employees	4,25	16	0,77
Improving intraorganizational communication	4,19	16	1,17
Decreasing operational costs	4,13	16	1,20
Improving company image	4,13	16	0,72
Providing communication continuity with customers	4,13	16	1,02
Fastening management/working processes	4,06	16	1,12
Providing information share throughout the organization	4,06	16	1,12
Improving data entrance costs	4,06	16	1,12
Making customer feedback on time	4,00	16	1,15
Order/Delivery time improvement	4,00	16	1,26
Decreasing employee costs	3,94	16	0,68
Simplifying ordering process	3,94	16	0,85
Decreasing distribution channels	3,81	16	0,98
Improving data transfer rate	3,75	16	1,13
Improving data entrance faults	3,75	16	1,13
Increasing Sales	3,69	16	0,60
Market penetration in the local markets	3,69	16	0,87
Informing customers about the products/services	3,69	16	1,25
Generating flexible working opportunities	3,50	16	1,26
Providing communication continuity with partners	3,50	16	0,89
Providing communication continuity with suppliers	3,31	16	1,66
Decreasing marketing costs	3,25	16	0,86
Keeping less stock	2,75	16	0,68

Table 5.18. Descriptive Statistics for Effectiveness of Company Objectives in Textile Sector

Effectiveness of Objectives	Textile		
	Mean	N	Std. Deviation
Simplifying ordering process	3,67	15	0,98
Providing communication continuity with customers	3,67	15	1,18
Improving intraorganizational communication	3,67	15	1,18
Providing communication continuity with employees	3,67	15	1,35
Improving company image	3,53	15	1,36
Fastening management/working processes	3,53	15	1,19
Making customer feedback on time	3,53	15	1,06
Order/Delivery time improvement	3,47	15	1,41
Providing communication continuity with suppliers	3,47	15	1,60
Decreasing distribution channels	3,40	15	1,45
Providing information share throughout the organization	3,40	15	1,06
Informing customers about the products/services	3,40	15	1,24
Facilitating the organizations to gain competitive advantage	3,27	15	1,49
Increasing Sales	3,27	15	1,44
Improving data entrance costs	3,20	15	1,21
Improving data entrance faults	3,20	15	1,26
Providing communication continuity with partners	3,20	15	1,78
Improving data transfer rate	3,13	15	1,19
Keeping less stock	3,07	15	1,44
Need for competitiveness	3,07	15	1,53
Decreasing marketing costs	2,93	15	1,62
Decreasing employee costs	2,93	15	1,39
Gaining new customer via web site	2,93	15	1,79
Decreasing operational costs	2,87	15	1,36
Generating flexible working opportunities	2,87	15	1,68
Market penetration in the local markets	2,27	15	1,49

Effectiveness of the objectives is evaluated with a scale such as, “(1) %20, (2) %40, (3) %60, (4) %80, (5) %100”. Within these intervals, the objectives with means more than 3,50 can be accepted as having an effectiveness rate above %70.

In the “Tourism” sector, effectiveness means of 11 objectives are above 3,50 out of 26 objectives. Objectives with the highest mean values are, “Decreasing

operational costs” and “Improving data entrance costs”. Effectiveness rates of “Providing communication continuity with suppliers” and “Providing communication continuity with partners” have the minimum effectiveness rates, as online activities with the partners and the suppliers are not as important as the ones with the customers.

Means of the effectiveness rates in “Finance” sector are higher than the other sectors, as means of 22 objectives are above 3,50 out of 26 objectives. Highest effectiveness rates belong to “Facilitating the organizations to gain competitive advantage”, “Gaining new customer via web site” and “Providing communication continuity with employees”. The result is acceptable, as in the finance sector, interaction with the customers is highly important and provides competitive advantage to the companies. Ability to share information within the organization simultaneously facilitates to prepare reports and have an action , since the transactions are mostly numerical. Objectives with least effectiveness rates are, “Keeping less stock” and “Providing communication continuity with suppliers”.

In the “Textile” sector, effectiveness rates are lower than the other sectors. Only 7 objectives have mean values above 3,50. Objectives with the highest effectiveness rates are “Simplifying ordering process”, “Improving intraorganizational communication”, “Providing communication continuity with customers” and “Providing communication continuity with employees”. Objectives related with the supplier-company relationship have the highest effectiveness rates, since a vast number of transactions belong to this group. Objectives with the least effectiveness rates are “Market penetration in the local markets”, “Generating flexible working opportunities” and “Decreasing operational costs”.

## Importance of Problems Occurring in Online Activities

Problems that can arise during online transactions are listed and the importance levels assigned to those problems have been selected by the respondents. Mean values of the importance levels are categorized according to sectors. Final tables can be examined in the tables shown below.

Table 5.19. Descriptive Statistics for Importance of Problems in Tourism Sector

Importance of Problems	Tourism		
	Mean	N	Std. Deviation
Lack of top management support	4,00	13	0,91
Diificulty of integrating the new web systems with the old ones	3,69	13	1,60
Lack of strategic overview needed for e-commerce	3,69	13	0,85
Difficulties in building a robust and stable e-commerce structure	3,46	13	1,13
Lack of company experience in IT or e-commerce	3,40	10	0,52
Difficulties in solving the problems of encryption and ID verification	3,31	13	1,49
Insufficiency of the data protection mechanism	3,31	13	1,49
Diffiulties in the cooperation of departments in the organization	3,31	13	1,25
Lack of communication between the organization members	3,20	10	1,69
Problems arising from transacting outside the country	3,20	10	0,42
Incompatibility of the web systems of the company and suppliers	3,08	13	0,76
Difficulty of measuring the utility of electronic transactions	3,00	13	1,41
Difficulty of adapting the job processes to electronic environment	3,00	10	0,00
Opening intraorganizational systems to suppliers and customers	2,92	13	0,64
Lack of the legal structure	2,86	7	0,90
Difficulty of changing the corporate culture	2,85	13	0,90
Lack of sources dedicated to e-commerce	2,70	10	0,48
Difficulty of determining the reaction of partners to e-commerce	2,40	10	0,97
Incompatibility of the company data warehouse with the new system	2,30	10	1,16

Table 5.20. Descriptive Statistics for Importance of Problems in Finance Sector

Importance of Problems	Finance		
	Mean	N	Std. Deviation
Difficulties in solving the problems of encryption and ID verification	5,00	7	0,00
Insufficiency of the data protection mechanism	4,25	16	0,77
Incompatibility of the web systems of the company and suppliers	4,20	15	0,77
Difficulties in building a robust and stable e-commerce structure	4,19	16	0,40
Lack of company experience in IT or e-commerce	4,00	12	1,28
Difficulty of determining the reaction of partners to e-commerce	3,88	16	0,50
Incompatibility of the company data warehouse with the new system	3,85	13	0,55
Difficulty of measuring the utility of electronic transactions	3,80	15	0,41
Lack of communication between the organization members	3,80	15	1,21
Lack of strategic overview needed for e-commerce	3,80	15	0,77
Opening intraorganizational systems to suppliers and customers	3,69	16	1,08
Lack of top management support	3,69	16	0,87
Difficulty of adapting the job processes to electronic environment	3,62	13	1,19
Lack of sources dedicated to e-commerce	3,50	16	0,89
Difficulty of changing the corporate culture	3,31	16	1,08
Diffiulties in the cooperation of departments in the organization	3,31	16	0,60
Lack of the legal structure	3,20	10	1,03
Diificulty of integrating the new web systems with the old ones	3,13	16	0,81
Problems arising from transacting outside the country	3,00	9	0,87

Table 5.21. Descriptive Statistics for Importance of Problems in Textile Sector

Importance of Problems	Textile		
	Mean	N	Std. Deviation
Lack of top management support	3,80	10	1,14
Difficulty of changing the corporate culture	3,79	14	1,12
Lack of sources dedicated to e-commerce	3,69	13	0,85
Lack of communication between the organization members	3,50	14	1,02
Difficulty of adapting the job processes to electronic environment	3,43	14	1,45
Diffiulties in the cooperation of departments in the organization	3,38	13	1,66
Difficulties in solving the problems of encryption and ID verification	3,36	11	1,63
Lack of strategic overview needed for e-commerce	3,23	13	1,30
Problems arising from transacting outside the country	3,14	14	1,10
Lack of the legal structure	3,08	12	1,62
Insufficiency of the data protection mechanism	3,08	12	1,44
Incompatibility of the company data warehouse with the new system	3,00	14	1,36
Incompatibility of the web systems of the company and suppliers	2,93	14	1,21
Difficulty of determining the reaction of partners to e-commerce	2,85	13	1,52
Lack of company experience in IT or e-commerce	2,82	11	1,40
Diificulty of integrating the new web systems with the old ones	2,71	14	1,20
Difficulties in building a robust and stable e-commerce structure	2,57	14	1,55
Difficulty of measuring the utility of electronic transactions	2,40	15	0,99
Opening intraorganizational systems to suppliers and customers	2,14	14	1,10

Importance levels of the problems are evaluated in an interval of “(1) Not an Important Problem, (2) Partially Important Problem, (3) Important Problem, (4) Considerably Important Problem, (5) Very Important Problem, (6) Not Valid for the Company”. Sixth interval has been accepted and entered in the SPSS as missing in

order not to affect the means of importance levels. Within these intervals, the problems with means more than 3,50 can be accepted as “Important to a very high extent”.

As the organizations within the “Tourism” sector are analyzed, it is observed that, out of 19 problems listed in the questionnaire, mean values of only 3 problems have been assigned as very important. “Lack of top management support”, “Difficulty of integrating the new web systems with the old ones” and “Lack of strategic overview needed for e-commerce” are the most important problems in this sector.

In the “Finance” sector, 14 problems are assigned as very important. The most important problems are “Difficulties in solving the problems of encryption and ID verification” and “Insufficiency of the data protection mechanism”.

Finally, in the “Textile” sector, 4 out of 19 problems are evaluated as very important, which are, “Difficulty of changing the corporate culture”, “Lack of communication between the organization members”, “Lack of sources dedicated to e-commerce” and “Lack of top management support”.

### Top Management Support

Final part of the questionnaire was composed of evaluations regarding top management support. Respondents ranked their agreement levels on the attention level of top management. In the studies that were conducted later, effects of top management support on the effectiveness of e-commerce objectives are analyzed. Mean values of “Top Management Support” evaluations are as follows.

Table 5.22. Descriptive Statistics for Top Management Support in Tourism Sector

Top Management Support	Tourism		
	Mean	N	Std. Deviation
Top management supported financial and other sources needed	4,46	13	0,52
Top management was willing to make IT investment	4,31	13	0,75
Top management gave strategic importance to e-commerce implementation	4,31	13	0,75
Besides the vision of top management was becoming the sector leader	4,23	13	0,44
Top management was aware of the necessity of risk taking	4,23	13	0,83
Management had knowledge about the benefits of new technologies	4,08	13	0,95

Table 5.23. Descriptive Statistics for Top Management Support in Finance Sector

Top Management Support	Finance		
	Mean	N	Std. Deviation
Top management supported financial and other sources needed	4,75	16	0,45
Management had knowledge about the benefits of new technologies	4,63	16	0,50
Top management gave strategic importance to e-commerce implementation	4,63	16	0,50
Top management was aware of the necessity of risk taking	4,44	16	0,51
Top management was willing to make IT investment	4,00	16	0,63
Besides the vision of top management was becoming the sector leader	3,81	16	0,98

Table 5.24. Descriptive Statistics for Top Management Support in Textile Sector

Top Management Support	Textile		
	Mean	N	Std. Deviation
Top management was willing to make IT investment	3,93	15	1,28
Management had knowledge about the benefits of new technologies	3,73	15	1,16
Top management supported financial and other sources needed	3,67	15	1,18
Top management was aware of the necessity of risk taking	3,60	15	1,30
Top management gave strategic importance to e-commerce implementation	3,53	15	1,36
Besides the vision of top management was becoming the sector leader	3,40	15	1,24

“Top Management Support” is assessed with an interval of “(1) I don’t agree, (2) I agree to some extent, (3) I neither agree nor disagree, (4) I strongly agree, (5) I definitely agree”. For the mean values greater than 4,00; it can be figured out that top management is highly supportive in that sector.

When the mean values of three sectors are compared, highest mean values are observed in the “Finance” sector. As most of the activities performed within the organization are conducted online, top management is highly supportive in this sector. Mean values observed in the “Textile” sector is less than the others and management support of “Tourism” is in the medium extent.

## Relationship between the Importance and the Effectiveness of Objectives

In order to examine the relationship between the importance and effectiveness of the company objectives for implementing e-commerce, paired samples t test has been applied. In the questionnaire, importance of the objectives and their effectiveness rates were measured in two different sections. Importance and effectiveness of each objective has been compared in order to test the hypotheses declared in Chapter Four. The results can be summarized as follows.

Table 5.25. Paired Samples t Test Results for Importance & Effectiveness of Objectives

Pair Name	t	df	Sig. (2-tailed)
	Mean	Std. Deviation	Std. Error Mean
	Upper	Lower	Upper
Decreasing operational costs (Importance - Effectiveness)	4,673	43	0,000
Decreasing employee costs (Importance - Effectiveness)	3,357	43	0,002
Decreasing marketing costs (Importance - Effectiveness)	2,594	43	0,013
Increasing Sales (Importance - Effectiveness)	5,234	43	0,000
Improving company image (Importance - Effectiveness)	1,891	43	0,065
Decreasing distribution channels (Importance - Effectiveness)	3,094	43	0,003
Simplifying ordering process (Importance - Effectiveness)	1,857	43	0,070
Fastening management/working processes (Importance - Effectiveness)	3,301	43	0,002
Facilitating the organizations to gain competitive advantage (Importance - Effectiveness)	3,458	43	0,001
Need for competitiveness (Importance - Effectiveness)	3,764	43	0,001
Providing information share throughout the organization (Importance - Effectiveness)	2,110	43	0,041

Pair Name	t	df	Sig. (2-tailed)
	Mean	Std. Deviation	Std. Error Mean
	Upper	Lower	Upper
Improving intraorganizational communication (Importance - Effectiveness)	2,705	43	0,010
Generating flexible working opportunities (Importance - Effectiveness)	2,305	43	0,026
Gaining new customer via web site (Importance - Effectiveness)	2,657	43	0,011
Market penetration in the local markets (Importance - Effectiveness)	5,429	43	0,000
Informing customers about the products/services (Importance - Effectiveness)	5,574	43	0,000
Providing communication continuity with customers (Importance - Effectiveness)	4,422	43	0,000
Making customer feedback on time (Importance - Effectiveness)	3,796	43	0,000
Order/Delivery time improvement (Importance - Effectiveness)	3,892	43	0,000
Improving data entrance costs (Importance - Effectiveness)	0,675	43	0,503
Improving data transfer rate (Importance - Effectiveness)	2,387	43	0,021
Improving data entrance faults (Importance - Effectiveness)	1,062	43	0,294
Keeping less stock (Importance - Effectiveness)	2,215	43	0,032
Providing communication continuity with suppliers (Importance - Effectiveness)	3,718	43	0,001
Providing communication continuity with partners (Importance - Effectiveness)	5,875	43	0,000
Providing communication continuity with employees (Importance - Effectiveness)	1,984	43	0,054

Paired samples test has been applied at a confidence level of %95, thus significance levels below 0,05 indicates a difference between the importance level and significance of an objective.

$H_0$  = There is no difference between the importance level and effectiveness level of the objective.

Significance < 0,05  $\rightarrow H_0$  is rejected.

For further explanation, if we examine the significance value of the first objective; “Decreasing operational costs”; as the significance level is equal to 0,000, which is smaller than 0,05; there exists a difference between the importance and effectiveness values of the related objective.

Similarly, according to the significance levels in the table, results of the hypotheses presented at the beginning can be summarized as follows.

**H<sub>3a</sub>**: *The effectiveness of “Decreasing operational costs” increase depending on the importance given to this objective.* → Not Supported

**H<sub>3b</sub>**: *The effectiveness of “Decreasing employee costs” increase depending on the importance given to this objective.* → Not Supported

**H<sub>3c</sub>**: *The effectiveness of “Decreasing marketing costs” increase depending on the importance given to this objective.* → Not Supported

**H<sub>3d</sub>**: *The effectiveness of “Increasing Sales” increase depending on the importance given to this objective.* → Not Supported

**H<sub>3e</sub>**: *The effectiveness of “Improving company image” increase depending on the importance given to this objective.* → Supported

**H<sub>3f</sub>**: *The effectiveness of “Decreasing distribution channels” increase depending on the importance given to this objective.* → Not Supported

**H<sub>3g</sub>**: *The effectiveness of “Simplifying ordering process” increase depending on the importance given to this objective.* → Supported

**H<sub>3h</sub>**: *The effectiveness of “Fastening management/working processes” increase depending on the importance given to this objective.* → Not Supported

**H<sub>3i</sub>**: *The effectiveness of “Facilitating the organizations to gain competitive advantage” increase depending on the importance given to this objective.* → Not Supported

**H<sub>3j</sub>**: *The effectiveness of “Need for competitiveness” increase depending on the importance given to this objective. → Not Supported*

**H<sub>3k</sub>**: *The effectiveness of “Providing information share throughout the organization” increase depending on the importance given to this objective. → Not Supported*

**H<sub>3l</sub>**: *The effectiveness of “Improving intraorganizational communication” increase depending on the importance given to this objective. → Not Supported*

**H<sub>3m</sub>**: *The effectiveness of “Generating flexible working opportunities” increase depending on the importance given to this objective. → Not Supported*

**H<sub>3n</sub>**: *The effectiveness of “Gaining new customers via web site” increase depending on the importance given to this objective. → Not Supported*

**H<sub>3o</sub>**: *The effectiveness of “Market penetration in the local markets” increase depending on the importance given to this objective. → Not Supported*

**H<sub>3p</sub>**: *The effectiveness of “Informing customers about the products/services” increase depending on the importance given to this objective. → Not Supported*

**H<sub>3q</sub>**: *The effectiveness of “Providing communication continuity with customers” increase depending on the importance given to this objective. → Not Supported*

**H<sub>3r</sub>**: *The effectiveness of “Making customer feedback on time” increase depending on the importance given to this objective. → Not Supported*

**H<sub>3s</sub>**: *The effectiveness of “Order/Delivery time improvement” increase depending on the importance given to this objective. → Not Supported*

**H<sub>3t</sub>**: *The effectiveness of “Improving data entrance costs” increase depending on the importance given to this objective. → Supported*

**H<sub>3u</sub>**: *The effectiveness of “Improving data transfer rate” increase depending on the importance given to this objective. → Not Supported*

**H<sub>3v</sub>**: *The effectiveness of “Improving data entrance faults” increase depending on the importance given to this objective. → Supported*

**H<sub>3w</sub>**: *The effectiveness of “Keeping less stock” increase depending on the importance given to this objective. → Not Supported*

**H<sub>3x</sub>**: *The effectiveness of “Providing communication continuity with suppliers” increase depending on the importance given to this objective. → Not Supported*

**H<sub>3y</sub>**: *The effectiveness of “Providing communication continuity with partners” increase depending on the importance given to this objective. → Not Supported*

**H<sub>3z</sub>**: *The effectiveness of “Providing communication continuity with employees” increase depending on the importance given to this objective. → Supported*

In summary, most of the cases there is a difference between the importance assigned to an objective and its effectiveness level. Effectiveness of the objectives does not change proportionally with the importance level of that objective.

## Linear Regression Results

In order to clarify the relationship of the variables with the effectiveness rate, linear regression is applied. Mean values of each section has been calculated for applying the regression method.

In the first step, mean value of effectiveness for each organization is calculated. Then, the distribution of the sample has been compared with normal distribution using Kolmogorov-Smirnov test, as the distribution of the dependent variable should be normal in order to apply regression.

Table 5.26. Results of Kolmogorov – Smirnov test for Linear Regression Analysis

<b>One-Sample Kolmogorov-Smirnov Test</b>		Effectiveness of Objectives
N		44
Normal Parameters <sup>a,b</sup>	Mean	,7007
	Std. Deviation	,16970
Most Extreme Differences	Absolute	,114
	Positive	,084
	Negative	-,114
Kolmogorov-Smirnov Z		,756
Asymp. Sig. (2-tailed)		,617

a. Test distribution is Normal.

b. Calculated from data.

Significance level of the distribution is calculated as 0,617.

$H_0$ : There is no difference between the distribution of the sample and normal distribution.

Sig. = 0,617 > 0,05  $\rightarrow H_0$  accepted.

It is found that, the distribution of the effectiveness mean values is similar to the normal distribution. Thus, mean values are used in the regression analyses.

In the regression analysis, “Effectiveness” has been taken as the dependent variable; whereas, “Number of parties using e-commerce”, “Number of customer activities performed online”, “Number of supplier activities performed online”, “Importance of objectives”, “Importance of problems” and “Top management support average” are taken as the independent variables.

After the analysis has been done, ANOVA table is controlled in order to test the meaningfulness of the model. Significance level of the equation is 0,000; which means that the model is meaningful.

Table 5.27. Results of ANOVA test for Linear Regression Analysis

**ANOVA<sup>b</sup>**

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	,669	6	,111	7,243	,000 <sup>a</sup>
	Residual	,569	37	,015		
	Total	1,238	43			

a. Predictors: (Constant), Top Management Support Average, Number of Parties Using E-Commerce, Number of Supplier Activities Performed Online, Importance of Problems, Number of Customer Activities Performed Online, Importance of Objectives

b. Dependent Variable: Effectiveness of Objectives

H<sub>0</sub>: The model has no meaning.

Sig. = 0,000 < 0,05 → H<sub>0</sub> rejected.

It has been proved that the model is meaningful.

R<sup>2</sup> of the model has been calculated as 0,540; which means that the independent variables explain the dependent variable with a ratio of %54.

In order to test the multi-collinearity, variance inflation factor (VIF) has been observed in the coefficients table.

If VIF is greater than 10, there exists multi-collinearity, which means that independent variables are affected by each other. Furthermore, if VIF values are close to 1, there is no multi-collinearity. VIF values calculated at the end of regression analysis are as follows.

Table.5.28. VIF Values of Independent Values in Regression Analysis

Independent Variables	VIF
(Constant)	
Number of Parties Using E-Commerce	1,109
Number of Customer Activities Performed Online	1,659
Number of Supplier Activities Performed Online	1,147
Importance of Objectives	1,895
Importance of Problems	1,210
Top Management Support Average	1,799

Since, VIF values of the independent variables are less than 10, it can be accepted that, there is no significant multi-collinearity. Independent variables do not affect each other.

Third test has been applied for examining autocorrelation. Results of Durbin – Watson test has been observed in order to prove that, there is no correlation between the residuals. Value obtained at the result of the test is 2,889.

$d = 0 \rightarrow r = 1 \rightarrow$  Positive Autocorrelation

$d = 2 \rightarrow r = 0 \rightarrow$  No Autocorrelation

$d = 4 \rightarrow r = -1 \rightarrow$  Negative Autocorrelation

The result of Durbin-Watson test in the model is 2,889; which is close to 2, so it can be accepted as there is no significant autocorrelation.

Thus, as the model passed three tests, it can be admitted as meaningful. Coefficient values obtained at the end of the analysis can be examined below.

Table.5.29. Coefficients and Standard Errors of the Regression Model

Independent Variables	Unstandardized Coefficients	
	B	Sig.
(Constant)	0,255	0,136
Number of Parties Using E-Commerce	-0,041	0,024
Number of Customer Activities Performed Online	-0,006	0,967
Number of Supplier Activities Performed Online	0,313	0,006
Importance of Objectives	-0,059	0,673
Importance of Problems	0,147	0,213
Top Management Support Average	0,479	0,000
Dependent Variable: Effectiveness of Objectives		

Model that is formed at the end is as follows.

$$Y = 0,255 - 0,041 X_1 - 0,006 X_2 + 0,313 X_3 - 0,059 X_4 + 0,147 X_5 + 0,479 X_6$$

Where,

Y = Effectiveness rate of the objectives

X<sub>1</sub> = Number of parties using e-commerce

X<sub>2</sub> = Number of customer activities performed online

X<sub>3</sub> = Number of supplier activities performed online

X<sub>4</sub> = Importance of objectives

X<sub>5</sub> = Importance of problems

X<sub>6</sub> = Top management support average

After the model is formed, significance levels of the independent variables are controlled in order to remove the unnecessary variables. Variables that have significance values greater than 0,05 are removed, as their contribution to the model can be ignored. X<sub>2</sub>, X<sub>4</sub> and X<sub>5</sub> are removed according to their significance levels.

Final model is summarized below.

$$Y = -0,041 X_1 + 0,313 X_3 + 0,479 X_6$$

The model can be explained as, if the online activities for suppliers increase 1 point, effectiveness of the objectives increases 0,313 points.

If top management support increases 1 point, effectiveness of the objectives increases 0,479 points.

As the number of parties connected online increases 1 point, effectiveness decreases 0,041 points.

Results of the final hypothesis can be summarized below as;

**H<sub>4a</sub>**: *Number of parties using e-commerce affects the effectiveness of the objectives for e-commerce.* → Supported

**H<sub>4b</sub>**: *Number of customer activities performed online affects the effectiveness of the objectives for e-commerce.* → Not Supported

**H<sub>4c</sub>**: *Number of supplier activities performed online affects the effectiveness of the objectives for e-commerce.* → Supported

**H<sub>4d</sub>**: *Importance of objectives affects the effectiveness of the objectives for e-commerce.* → Not Supported

**H<sub>4e</sub>**: *Importance of problems affects the effectiveness of the objectives for e-commerce.* → Not Supported

**H<sub>4f</sub>**: *Top management support affects the effectiveness of the objectives for e-commerce.* → Supported

Detailed result table for linear regression can be examined as follows.

Table 5.30. Model Summary of Linear Regression

<b>Model Summary<sup>b</sup></b>										
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	,735 <sup>a</sup>	,540	,466	,12406	,540	7,243	6	37	,000	2,889

a. Predictors: (Constant), Top Management Support Average, Number of Parties Using E-Commerce, Number of Supplier Activities Performed Online, Importance of Problems, Number of Customer Activities Performed Online, Importance of Objectives

b. Dependent Variable: Effectiveness of Objectives

Table 5.31. Coefficients Table of Linear Regression

**Coefficients<sup>a</sup>**

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95% Confidence Interval for B		Collinearity Statistics	
		B	Std. Error	Beta			Lower Bound	Upper Bound	Tolerance	VIF
1	(Constant)	,255	,167		1,523	,136	-,084	,594		
	Number of Parties Using E-Commerce	-,041	,018	-,275	-2,346	,024	-,077	-,006	,902	1,109
	Number of Customer Activities Performed Online	-,006	,150	-,006	-,041	,967	-,309	,297	,603	1,659
	Number of Supplier Activities Performed Online	,313	,107	,350	2,933	,006	,097	,530	,872	1,147
	Importance of Objectives	-,059	,139	-,065	-,425	,673	-,341	,223	,528	1,895
	Importance of Problems	,147	,116	,156	1,268	,213	-,088	,382	,826	1,210
	Top Management Support Average	,479	,124	,579	3,869	,000	,228	,730	,556	1,799

a. Dependent Variable: Effectiveness of Objectives

## CHAPTER VI

### CONCLUSION & FUTURE RESEARCH

#### Final Comments

Aim of this research was to examine different sectors of Turkey regarding their frequency of usage, preferences, importance assigned to activities, effectiveness rates, problems faced and top management support. Results obtained are compared in order to realize the differences between the sectors and to develop a model for describing the factors influencing effectiveness of e-commerce.

According to the first analysis conducted in the study, there is no significant difference between the parties connected online between the Tourism, Finance and Textile. Online activities are performed mainly by “Company Workers” and “Customers and Company in all sectors.

In the second part, types of online activities performed in the sectors are compared. Activities conducted online are categorized as “Type of online transactions for suppliers” and “Type of online transactions for customers”. As the hypotheses are tested, there are no significant distinctions between the online activities for customers, but there exist differences between the online activities for suppliers. The reason can be that, one of the sectors is “Textile” and the relationship between the suppliers and the company is highly important in this sector, as it deals with production. The other two sectors may not have so much relationship with the suppliers as they mainly deal with service activities.

As the effectiveness rates of the sectors are compared, number of objectives that have high mean values of effectiveness rates is more than the other two sectors in the finance sector. Similarly, when the importance of problems in the e-commerce and top management sections are analyzed, in the finance sector, more factors are

analyzed as important and top management support rate seems more than the other sectors.

Importance of the objectives were compared with the effectiveness of the same objectives in order to find out if there is a direct proportion between the effectiveness rate of the objective and the importance assigned to that objective. After each objective is examined in the same style, it is observed that, 21 of the objectives do not support these hypotheses. As a result, it can be accepted that, there is no direct relation between the importance and effectiveness rate of the objectives.

Finally all factors are tested together with a regression analysis, in order to find out which factors affect effectiveness. At the end of the analysis, three factors are dismissed and final model has been formed as the one follows.

$$Y = -0,041 X_1 + 0,313 X_3 + 0,479 X_6$$

$X_1$  = Number of parties using e-commerce

$X_3$  = Number of supplier activities performed online

$X_6$  = Top management support average

Effectiveness is affected positively by “Number of supplier activities performed online” and “Top management support average”. “Number of parties using e-commerce” influences effectiveness negatively.

Results of the regression analysis is compatible with the analysis of the previous section, as the importance of the objectives were not found to be effective in the paired samples test and the same factor has been omitted in the regression analysis too.

## Main Limitations and Future Research

Findings of this study can form a basis for future research, as a model of effectiveness has been created by analyzing the relations between number of online parties, online activity performance, importance of e-commerce objectives, types of problems, top management support rate and effectiveness. Besides these, a comparison of sectors has been made according to these variables.

Main limitation of the study was the response rate of the organizations. As it is difficult to gather data from organizations in different sectors, number of sectors has been selected as three. If the number of sectors can be increased or the same research has been done with different sectors, the scope of the study can be enlarged and more specific results can be obtained in the future.

## APPENDIX

Table 1 Questionnaire

In your company, which of these parties are connected online? (You can choose more than one option. Put an X for the suitable choice.)	
Between company workers	
Between suppliers and company	
Between customers and company	
Between partners and company	
Between mobile workers and company	

Which of these activities can be performed online in your company? (Activities related with customers)	Cannot Be Performed 1	Partially Performed 2	Can Be Performed 3
Taking customer orders and performing them online			
Conducting presales activities online			
Delivery of products/services online			
Conducting aftersales activities online			
Performing distribution activities online			
Collection and analysis of customer data online			
Taking customer payments online			
(Activities related with suppliers)			
Performing procurement and order activities online			
Conducting daily supplier activities online			
Selection of suppliers online			
Performing invoicing and payment transactions online			
Online demand management-procurement analysis			

Within the strategic aims listed below, what is the importance of each aim to your company?	Not Strategically Important	Partially Important	Important	Considerably Important	Very Important
	1	2	3	4	5
Increasing competitive advantage					
Serving the customers new and better products/services					
Flexible information access					
Improving customer relations					
Improving the awareness and prestige of the organization					
Providing higher volume of data output					
Compatibility with the organizational aims					
Improving organizational responses to changes					
Fastening report preparation					
Improving the access to other organizations					
Decreasing communication costs - improving efficiency					
Improving employee efficiency and company effectiveness					

Within the objectives of e-commerce listed below, what is the importance of each objective to your company?	Not Important	Partially Important	Important	Considerably Important	Very Important
	1	2	3	4	5
Decreasing operational costs					
Decreasing employee costs					
Decreasing marketing costs					
Increasing Sales					
Improving company image					
Decreasing distribution channels					
Improving communication with customers					
Simplifying ordering process					
Fastening management/working processes					
Facilitating the organizations to gain competitive advantage					
Need for competitiveness					
Providing information share throughout the organization					
Improving intraorganizational communication					
Generating flexible working opportunities					
Gaining new customer via web site					
Market penetration in the local markets					
Informing customers about the products/services					
Providing communication continuity with customers					
Making customer feedback on time					
Penetration of products/services					
Choosing alternative suppliers					
Entering overaseas markets					
Improving direct sales to customers					
Order/Delivery time improvement					
Improving data entrance costs					
Improving data transfer rate					
Improving data entrance faults					
Keeping less stock					
Providing communication continuity with suppliers					
Providing communication continuity with partners					
Providing communication continuity with employees					

What is the effectiveness of each objective, after implementing e-commerce?	Effectiveness Rate (%)				
	20	40	60	80	100
Decreasing operational costs					
Decreasing employee costs					
Decreasing marketing costs					
Increasing Sales					
Improving company image					
Decreasing distribution channels					
Improving communication with customers					
Simplifying ordering process					
Fastening management/working processes					
Facilitating the organizations to gain competitive advantage					
Need for competitiveness					
Providing information share throughout the organization					
Improving intraorganizational communication					
Generating flexible working opportunities					
Gaining new customer via web site					
Market penetration in the local markets					
Informing customers about the products/services					
Providing communication continuity with customers					
Making customer feedback on time					
Penetration of products/services					
Choosing alternative suppliers					
Entering overaseas markets					
Improving direct sales to customers					
Order/Delivery time improvement					
Improving data entrance costs					
Improving data transfer rate					
Improving data entrance faults					
Keeping less stock					
Providing communication continuity with suppliers					
Providing communication continuity with partners					
Providing communication continuity with employees					

When you consider the online activities performed in your company, what is the importance of problems related with e-commerce to your company?	Not an important problem	Partially important problem	Important problem	Considerably important problem	Very important problem	Not valid for my company
	1	2	3	4	5	
Difficulty of measuring the utility of electronic transactions						
Opening intraorganizational systems to suppliers and customers						
Incompatibility of the web systems of the company and suppliers						
Difficulty of changing the corporate culture						
Difficulty of integrating the new web systems with the old ones						
Incompatibility of the company data warehouse with the new system						
Lack of communication between the organization members						
Lack of sources dedicated to e-commerce						
Difficulty of adapting the job processes to electronic environment						
Problems arising from transacting outside the country						
Lack of the legal structure						
Difficulty of determining the reaction of partners to e-commerce						
Lack of company experience in IT or e-commerce						
Difficulties in solving the problems of encryption and ID verification						
Insufficiency of the data protection mechanism						
Difficulties in building a robust and stable e-commerce structure						
Difficulties in the cooperation of departments in the organization						
Lack of strategic overview needed for e-commerce						
Lack of top management support						

What is your opinion about top management support provided within your company regarding e-commerce?	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
	1	2	3	4	5
Top management supported financial and other sources needed					
Management had knowledge about the benefits of new technologies					
Besides the vision of top management was becoming the sector leader					
Top management was willing to make IT investment					
Top management was aware of the necessity of risk taking					
Top management gave strategic importance to e-commerce implementation					

Personal Information	
Name & Surname	
Age	
Gender	
Sector	
Company name	
Job Title	

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