CRITICAL SUCCESS FACTORS AFFECTING E-COMMERCE ACTIVITIES OF SMALL AND MEDIUM ENTERPRISES IN TURKEY

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Thesis Abstract

Volkan Coşgun, "Critical Success Factors Affecting

E-Commerce Activities of Small and Medium Enterprises in Turkey"

Electronic commerce, one of the most popular business phenomena in these years, is creating new opportunities and threats against business. It is redefining customer supplier relationships, business processes, even sometimes restructuring the whole industry. In Turkey, small and medium enterprises (SME) have a big impact on the economy. For this reason, their survival and success is crucial for the economy. E-commerce can be a way for SMEs to be a step ahead of domestic and international competitors.

The aim of this study is to explore the critical success factors that are affecting e-commerce activities of SMEs in Turkey. In this study, literature has been reviewed in order to develop a research model. By using previous researches a research model has been developed and a questionnaire has been composed in order to collect input for the research.

A questionnaire has been applied to participants from a wide variety of industries. Construct validity and reliability of questionnaire items have been tested by using factor analysis and Cronbach's alpha. Regression analysis has been applied in order to explore the factor affecting e-commerce activities of SMEs. In addition to regression analysis, the success measures of e-commerce are compared between users and non-users of some e-commerce applications.

Tez Özeti

Volkan Coşgun, "Türkiye'deki Küçük ve Orta Boy İşletmelerin
E-Ticaret Faaliyetlerini Etkileyen Kritik Başarı Faktörleri"

İş dünyasında son yılların en popüler konularından birisi olan e-ticaret, işletmeler için yeni fırsatlar ve tehditler yaratmaktadır. E-ticaret, müşteri tedarikci ilişkilerini ,iş süreçlerini yeniden şekillendirir, hatta bazen bütün endüstriyi yeniden yapılandırır.

Küçük ve Orta boy işletmelerin Türkiye ekonomisindeki etkisi büyüktür. Bu nedenle, KOBIlerin hayatta kalması ve başarısı ekonomi için kritik öneme sahiptir. E-ticaret KOBIlerin yerli ve uluslararası rakiplerinin önüne geçmesini sağlayabilir. Bu çalışmanın amacı, Türkiye'deki KOBIlerin e-ticaret faaliyetlerini etkileyen kritik başarı faktörlerini tesbit etmektir. Bu çalışma kapsamında, literatür taraması yapılarak araştırma modeli geliştirilmiştir. Araştırma modeline göre anket oluşturulmuş ve çeşitli endüstrilerden katılımcılara uygulanmıştır.

Anket sorularının geçerliliği ve güvenilirliği , faktör analizi ve Cronbach'ın alpha katsayısı kullanılarak test edilmiştir. Modelin testi ve e-ticaret başarı faktörlerini belirlemek için regresyon analizi yapılmıştır.Regresyon analizine ek olarak, e-ticaret başarı ölçüleri çeşitli e-ticaret teknolojilerini kullanan ve kullanmayan firmalar arasında karşılaştırılmıştır.

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CHAPTER I

INTRODUCTION

Electronic commerce is one of the most popular business phenomena in these years. In the last few decades, the world has faced important changes in technology and lifestyle of people. Rapid development in communications technology increased the importance of internet in people's life. Internet turned out to be an important medium for buying, selling, advertising, getting information and reviewing about products.

The widespread usage of internet has strong implications for the businesses and managers-commerce is allowing organizations to improve their business communications and processes. In addition, internet enables businesses to increase accuracy and efficiency of business transaction processing (Applegate et al., 2001). Many companies perceive EC as a promising tool for reaching to customers, communicating with business partners and to run business operations more effectively (Chong, 2008).

The business environment is consistently changing. Like all other technological and social changes, e-commerce is offering new opportunities and threats to businesses. E-commerce is significantly changing how the business is conducted. To survive, companies have to respond the changes initiated by e-commerce. E-commerce is redefining customer supplier relationships, business processes, even sometimes restructuring the whole industry.

E-commerce offers many benefits to the business and customers. Notably, it offers lower costs, geographic independence and greater market reach for businesses while it offers plenty of alternative suppliers and products at lower prices.

Internet usage is becoming more widespread in Turkey in last few years. The number of broadband users is increasing at a fast pace in Turkey which contributes the popularity of e-commerce as a substitute for traditional way of shopping. According to OECD Broadband statistics (2009), the internet penetration rate in Turkey increased by 295% in last 3 years to 8,71 %. The increases in the number of subscribers increase the prospects of e-commerce.

Small and medium enterprises (SMEs) have vital role within many major economies throughout the world. SMEs are major economic players and a potential source of national employment in Turkey. SMEs constitute 99.8% of the total enterprises and employees of SMEs constitute 76% of the total employees in Turkey. Their ability to successfully adopt and use the Internet and electronic commerce is of paramount importance in ensuring their stability and future survival (Stansfield, 2003).

Thanks to the accessibility of internet, electronic commerce is a realistic possibility for SMEs (Kathuria and Joshi 2007). Previously, the reach of SMEs to global markets was limited with their sales channels. However, with e-commerce small companies now can compete in the global markets. Internet is creating equal grounds for SMEs to compete with the large corporations and enables small companies to make a strong impact on their customers (Riquelme, 2002).

The aim of this thesis is to explore the critical success factors affecting the ecommerce activities of small and medium enterprises in Turkey.

This thesis is organized as follows:

Chapter 2 contains discussion of relevant literature,

Chapter 3 discusses the methodology of the research and the properties of the sample,

Chapter 4 includes the statistical analysis of the research,

Chapter 5 contains presentation of empirical results and discussion,

Chapter 6 concludes the study.

CHAPTER II

LITERATURE REVIEW

Critical Success Factors

Critical success factor analysis is a business analysis method which involves identifying the business elements which are crucial for the success of the businesses. Rockart (1979) applied the idea of critical success factor as a model in information systems development and integration. Rockart(1979) refined the critical success factor analysis of Daniel(1965) and stated that critical success factors are “the limited number of areas in which results, if they are satisfactory, will ensure successful competitive performance for the organization”. In case of not adequate results to occur in these areas, organizational performance for the period is expected to be less than desired (Rockart,1979).

The analysis and identification of critical success factors for each project enables companies to identify 'what they need to change to improve their ultimate chances for success' (Petkov, 2003). In this thesis study, I will try to explore the critical success factors affecting e-commerce activities of small and medium enterprises in Turkey.

E-Commerce and Small and Medium Enterprises

SMEs (small and medium enterprises) are major economic players and a potential source of national employment in Turkey as it is in most of the developing countries. SMEs constitute 99.8 % of the total enterprises and employees of SMEs

constitute large proportion of the total employees in Turkey. KOSGEB (Small and Medium Industry Development Organization) defines enterprises which employ less than 50 employees is regarded as small enterprise, while enterprises which employ 51 to 150 employees are regarded as medium enterprises.

According OECD researchers, SMEs in Turkey are lagging behind the SMEs in European Union "in terms of know-how, skill levels, capital investment to support their activities, access and ability to take advantage of modern technologies, especially in the information and communications fields." E-commerce can be a way for SMEs in Turkey to create a competitive edge against their domestic and international competitors.

SMEs can use e-commerce technologies for various purposes such as communicating with customers and suppliers, promoting their goods and services, providing extensive information about their products or services, providing pre-sales and after-sales support to their customers, collecting market data (Doherty and Ellis-Chadwick, 2003).

The internet help SMEs to overcome their disadvantages related with size in comparison to large companies by enabling "small companies to extend their geographical reach and secure new customers in ways formerly restricted to much larger firms" (Chong,2008). E-commerce allows SMEs to compete on a global scale and provides access to wider markets (Lawson-Body, 2008). In addition, as cited by Kaynak et al. (2004), internet based electronic commerce may create direct savings such as "product promotion, new sales channels, quick product delivery, more satisfaction of customers, inexpensive advertising medium, enhanced company image, new business opportunities, efficiency in information gathering and better support from suppliers (Walczuch et al., 2000; Nath et al., 1998; Poon and Swatman,

1999)". For these reasons, SMEs adoption and effective usage of e-commerce is crucial to improve the performance of SMEs.

Factors Affecting E-Commerce Activities of SMEs

In the literature, due to the interdisciplinary nature of technology adoption studies, various approaches and theoretical frameworks are employed in the analysis of adoption and use of electronic commerce by small and medium enterprises. In my dissertation, I adopted an approach of uniting literature for the adoption and usage of e-commerce to study e-commerce success factors.

Previous empirical studies illustrated that financial resources, size, top management support, previous IT experience, perceived benefits, industry characteristic, external pressure, compatibility, external IT support, are significant factors affecting adoption and usage of e-commerce by SMEs. In addition to, these factors e-commerce capabilities such as interactivity, content, convenience are affecting satisfaction of users with the website. Since satisfaction, creates loyalty and increases possibility of repetitive orders they are expected to affect the success of the company in e-commerce.

Organizational Factors

Factors classified under organizational context are related directly to availability and use of its internal resources. It includes financial resources, firm size and scope, structure, quality of its human resources, organizational support, top management supports.

Financial Resources

Financial resources have been a significant factor affecting operations of firms. E-commerce adoption requires investment in hardware, software and employee training. Adequate financial resources enables firms to make necessary

investments to develop superior e-business functionalities, thus enables companies to realize the potential e-business value (Zhu et al., 2003a).

Previous researches on adoption and use of e-commerce studies showed mixed evidence. Mehrstens et al. (2003) analyzed the factors that influenced the internet adoption by SMEs. They indicated financial resources are not a major factor affecting internet adoption by SMEs. Similarly, Scupola (2004) found that that although financial resources are an important factor in e-commerce adoption, it is not a determinant in e-commerce adoption. However, Zhu et al. (2003a) indicated financial resources as significant facilitators for e-business value creation in their empirical study of analyzing e-business value drivers.

In the context of this study financial resources can be defined as the budget for IT and Web applications as a percentage of total revenue (Mahmood and Mann, 1993).

Size:

Organizational size indicates the level of operational resources of the company (Auger, 2005). It has been regarded as a significant factor affecting performance of companies (Hatfield & Kohn, 2001). It is indicated as a factor affecting organizations capability to adopt innovation positively by researchers studying on organizational innovation (Lee & Xia, 2005).

In the literature, size has been found to be a significant factor affecting e-commerce adoption. Weiss (2000) suggests that larger companies are more likely to adopt the e-commerce that the smaller companies. Similarly, Zhu et al. (2002a) claims that larger companies are more advantageous than small companies with regard to e-business adoption due to the following reasons. Larger firms have more available resources for e-business adoption, they have more chance to benefit from

economies of scale, they are more able to engage in early stage investment in e-business which is associated with high risk, and they have more power to drive "their trading partners to adopt technology with network externalities" (Zhu et al. ,2002a). Furthermore, Ling (2001) indicate that the size of the enterprise is a determining factor in adoption decision.

In the context of this study, number of employees has been used as an input for organizational size.

Top Management Support

Previous studies indicate that top management support has been an important factor in IT adoption. Caldeira and Ward (2002) studied factors affecting adoption and use of information systems and technology (IS/IT) in Portuguese manufacturing small and medium-sized enterprises (SMEs). Their research indicates that top management perspectives towards IS/IT adoption and attitudes towards IS/IT adoption has a critical role in developing IS/IT competencies and in the IS/IT success.

Similarly, Mirchandani and Motwani (2001) identify factors that can discriminate adopters and non-adopters of electronic commerce in small businesses. In the empirical study of 62 small businesses, they suggest that enthusiasm of top management towards e-commerce is a significant factor differentiating between adopters and non-adopters of e-commerce in small businesses as well as relative advantage perceived from EC, IT knowledge of employees and compatibility of EC with current business practices of the company.

Furthermore, Nasco et al. (2008) conducted an empirical research on intentions to adopt e-commerce among 212 managers/owners of SMEs in Chile by using Theory of Planned Behavior (TPB). They indicated that behaviors and subjective norms have strong influence on adoption intentions and they suggested

that manager's attitudes must change and "social referents surrounding the adoption" must be stressed upon to motivate managers in developing countries to adopt e-commerce. Similarly, Tsao&Koong (2004) identified top management support as a significant critical success factor for Business to Business Electronic Commerce (B2BEC) adoption by small and medium size enterprises in Taiwan.

Kutlu and Özturan (2008) investigated the usage and adoption of IT in SMEs in Turkey. They indicated that business owners and managers with positive attitude towards IT tend to be more successful in adoption and implementation of new technology.

IT Skills & Experience

IT skills and experience of its employees are key knowledge assets of the company (Bharadwaj, 2000). IT experience can be in form of previous experience of owner or employees with computers, previous technology implementations. Lack of internal expertise can be a factor delaying the innovation (Thong, 1999).

In the literature, previous IT experience has been observed to be an important factor affecting success of the information technology adoption. Palvia and Palvia (2000) indicate that age and experience of owner are very important factors in the success of information technology adoption.

Similarly, Sparling et al. (2007) shows that technological opportunism and readiness, owner experience with computers, support within the organization, relative advantage and compatibility are factors that are differentiating adopters and non-adopters of e-commerce.

Technological Factors

Factors classified under technological context are related with the technical issues to adopt Electronic Commerce. It includes factors like e-commerce experience, perceived benefits of e-commerce, compatibility with business practices.

Perceived Benefit:

In the literature, perceived benefit has been identified as an important factor affecting adoption of e-commerce in SMEs. Perceived benefits are the benefits that are offered by e-commerce in comparison to the traditional way of doing business. Perceived benefits of e-commerce, includes increased sales, improved communication with customers, suppliers and employees, and easier order tracking (Baldwin et al., 2000).

Mehrstens et al. (2001) categorized perceived benefit into three categories: relative advantage, communication and as a business tool. Relative advantage is the perceived advantage of the e-commerce in comparison to traditional methods of doing business. The perceived benefits under communication category include the convenience of communication among participants of value chain. Mehrstens et al. (2001) suggested that "opportunity to present information on a web site" has been an important motivation for SMEs to adopt Internet technologies. In addition, Mehrstens et al. (2001) observed that internet is perceived by companies as a business tool that should be integral part of daily business activities.

Similarly, Kutlu and Özturan (2008) claimed that expected benefits of IT such as "expected increase in the accuracy of information, comfort level with technology and expected increase in the processing speed" have a significant role in IT implementation decisions.

Grandon and Pearson (2004), identified factors that differentiate between adopters and non-adopters of e-commerce for SMEs in Chile. They identified

perceived usefulness (perceived benefit), perceived ease of use (complexity) and compatibility with current business practices as significant factors under the technological context.

Al-Qirim (2007) studied the affect of 10 factors on the adoption of different ecommerce communications and applications technologies (EC) in small businesses (SMEs) in New Zealand (NZ). Al-Qirim(2007) identifies relative advantage (perceived benefit), competition and support from technology vendors as significant factors affecting Extranet/VPN adoption.

Beatty et al. (2001) conducted an empirical study with the data of 286 medium to large US firms to identify factors influencing corporate Web site adoption, they found that early adopters emphasized more on perceived benefits of having a web site that does the late adopters.

Compatibility:

Compatibility refers to the degree to which e-commerce applications are compatible with the current practices of the company. Compatibility includes how well e-commerce suits with the value chain (customers and supplier) processes, and how well e-commerce matches with the firm's current business processes (Sparling, 2007).

In the literature, compatibility is indicated as a catalyzing factor for e-commerce adoption. Sparling (2007) pointed out a positive relation between the level of compatibility of an innovation and the adoption of the innovation. Similarly, Roger (1995) identified relative advantage, degree of compatibility of innovation, complexity, trialability and observability as the properties of innovations that affect the rate of adoption.

Furthermore, in his empirical study with SMEs from New Zealand, Al-Qirim (2007) identified compatibility as an important factor affecting adoption of e-commerce technologies. In addition, Kendall et al. (2001) and Sparling (2007) indicated compatibility with current business practices as significant factor that differentiates adopters and non-adopters of e-commerce.

E-Commerce Age:

E-commerce age refers to the number of year that the companies have been using the e-commerce. Companies that have earlier online presence are likely to enjoy first mover's advantage (Auger, 2005). In addition, companies that are using e-commerce for long period of time, may have more experience about the system, customers and they are more likely to have less problems with the system. For this reason, e-commerce age can be a factor affecting success of the companies. However, in their study of determinants of e-commerce website development, Kowtha and Choon (2001) didn't support for the affect of website age on e-commerce website success.

Environmental Factors

Companies are conducting their operations in an environment surrounded by their stakeholders (customers, suppliers, government, general public etc.) and competitors. "The external environment is the arena in which an organization conducts its business" (Tornatzky and Fleischer, 1990).

Stakeholders and industry characteristics are affecting operations and strategy as well as they affects adoption of electronic commerce. Factors classified under environmental context include industry pressure, competition in industry and external IT support.

Industry Pressure

Scupola (2004) studied environmental, organizational and technological factors affecting Internet commerce adoption and implementation in small businesses by analyzing seven small businesses located in Southern Italy. Findings of his study indicate that factors from environmental context are of a great importance in the adoption and implementation of e-commerce in SMEs. In particular, government intervention, external pressure from suppliers and competitors has found to be significantly affecting Internet commerce adoption and implementation in small businesses in Italy.

Scupola(2004) claims that competitors, suppliers and customers may compel small businesses to engage in e-commerce activities. Grandon and Pearson (2004) studied variables which differentiate between adopters and non-adopters of e-commerce with managers/owners of SMEs in Chile. They observed that external pressure from competitors, government, and industry to adopt electronic commerce is a discriminating factor between adopters and non-adopters of EC.

Beatty et al. (2001) examined factors influencing corporate Web site adoption by analyzing input from 286 medium to large US firms. In their study, they identified external pressure of competitors, industry or government as an important influencing factor.

Competition:

Existence of intense competition is a motivator factor for companies to differentiate and be a step ahead of their competitors. As the number of competitors that adopted innovation increases, small firms have more tendencies to adopt the innovation in order to maintain their own competitive position (Sparling, 2007). Electronic commerce improves access of firms to customers and improves their competitive

position. For this reason, firms operating in a highly competitive industry tend to give more importance on IS innovations (Zhu et al., 2003).

Similarly, Al-Qirim (2007) indicates that competition influences electronic commerce adoption decisions positively, especially for Extranet/VPN adoption. Furthermore, a positive relationship between the intensity of competition in an industry and the degree of adoption has been identified by Lertwongsatien et al. (2003).

However, in their empirical study of determinant factors in the adoption of e-business by Korean SMEs, Jeon et al. (2006) didn't find support for competitive pressure of the industry as a critical factor affecting the e-business implementation success in Korea.

Previous studies except the study of Jeon et al. (2006), indicates that competition intensity is a catalyzer factor for e-commerce adoption and higher degrees of adoption is expected in competitive industries. This indicates that more emphasis is placed on e-commerce in competition intense industries. Thus, inferences from adoption literature motivate us to think that competition intensity can be a factor leading to success of their e-commerce venture. However, in their study of analyzing e-business value drivers, Zhu et al. (2003) did not find competition intensity as a significant factor improving e-business performance of the company.

External IT Support:

Companies increasingly prefer outsourcing their information system development due to the need for lower costs, faster implementation, easier-to-use applications and effective use of company resources (Ward and Peppard, 2002). This trend enables companies with limited IT resources to access the latest technological developments easily.

Yap et al. (1992) studied information system success factors in small businesses. They indicate a positive association between successful adoption of information systems and level of vendor support. This can be attributable to the vendors important role in selecting the appropriate information system for the company and their after sale support and training. Similarly, Thong (2001) indicated that companies that receive good managerial, consultant and vendor support are more likely to implement new IS.

In addition, vendors can assist e-commerce adoption by providing giving simple explanations and recommendations about the IT systems (Scupola, 2004).

Ramdani et al. (2007) studied factors influencing SME adoption of enterprise systems in the northwest of England. They indicated that external IT support as an important factor impacting SMEs adoption of Enterprise Systems. In addition to external IT support, they found relative advantage, compatibility, complexity, trialability, observability, top management support, organizational readiness, IT experience, size, industry, market scope, competitive pressure to be important factors affecting Enterprise System (ES) adoption positively. Similarly, in their empirical study with UK data, Guinea et al. (2005) pointed out external it support impacts adoption of enterprise systems by SMEs positively. Furthermore, study of Al-Qirim (2007) indicates that support from technology vendors influence e-commerce adoption decision.

E-Commerce Application Properties

The utilization of e-commerce capabilities will lead to superior performance for net enhanced organizations (Lederer et al., 2001). E-commerce capabilities may range from static information to online order tracking and from digital product catalogues to integration with suppliers' databases (Zhu et al., 2002b). Electronic commerce

resources have been observed to be positively related with the firm performance (Auger, 2003). In the context of my study, e-commerce application properties are studied under four subgroups : interactivity, convenience, content and transaction.

Interactivity:

Interactivity refers to the two-way dynamic communication between the website and customers. Sirinivasan et al. (2002) defines interactivity "as the availability and effectiveness of customer support tools on a website, effectiveness of customer support tools on a website and the degree to which two-way communication with customers is facilitate."

Interactivity feature includes several dimensions "such as through availability of electronic feedback mechanisms, the ability to order products or services online, availability of searchable features" (Ghose and Dou 1998) and e-mail based support or other pre- and post-sale support.

Previous studies on the role of interactivity in e-commerce shows a positive relationship between the level of interactivity of a website and its performance (Auger, 2005). The level of interactivity of a website increases the attention level of customers, helps to strengthen the relationships between company and its customers, and improves customer's satisfaction with online shopping (Agarwal et al., 2002). In the literature, interactivity has been observed as an important feature of websites affecting customer loyalty (Watson, Akselsen, & Pitt, 1998). Since loyal customers are key for the success of the companies, interactivity should be regarded as a factor affecting performance of the e-commerce.

Auger (2005) studied the impact of interactivity and design sophistication on the performance of commercial websites for small businesses. Their findings indicate a positive association between interactivity and overall performance.

Similarly, Kim and La Rose (2004) modeled the affect of interactive on online buying activity by using a sample of 174 college students. They indicated that interactive characteristics of e-commerce websites have a critical role in online buying activities regardless of the shopping orientation. Sirinivasan et al. (2002) observes that interactive search process may help e-retailer to increase the perceived value that customer places on a transaction.

Convenience:

Convenience refers to the usability of the web site for the purpose for which it was designed such as to assist buying or selling or to find information (Feindt, 2002). In the context of e-commerce, convenience refers "to the extent to which a customer feels that the web site is simple, intuitive, and user friendly" (Sirinivasan, 2002). A short response time which enables fast completion of transaction is one of the features of a convenient website (Schaffer, 2000).

In addition, responding fast, a convenient website is expected to minimize of the probability of mistakes by customers, this makes shopping experience more satisfying (Sirinivasan,2002).

Content/Information:

Content/Information refers to the presentation of information about products and services offered on a web site. Palmer (2002) indicates that download delay, navigation, content, interactivity and responsiveness significantly affect the success of website. Accessible information and simplicity in completing transactions are important factors for successful completion of transactions (Sirinivasan, 2002).

Zhu and Kramer (2002) developed a set of indicators to measure e-commerce capabilities of Internet enhanced organizations. They came up with 4 indicators for information aspect of e-commerce capabilities. These indicators are

product information, search capabilities, product review, and product update. Product information indicates if a product catalog or other availability information is present on website. Search capabilities signify if the website has search capabilities which assist customers to find the information they needed. Product review information enables information sharing between customers of website about product quality, usability and reliability. Product update points if the information about products updated frequently and FAQ are updated frequently.

Transaction:

Zhu and Kramer (2002) studied transaction dimension of e-commerce competencies with 5 indicators. These are buy capabilities, online order tracking, account management, return information and security. Buy capabilities deals with if the websites of the companies enables the customer to order products/services through the Website. Online Order Tracking refers to the availability of facilities which let customers to view the status of their order. Account management aspect refers to the availability of simplified procedure to complete transaction for registered users. Return information refers to the information, procedure, and mechanism to facilitate returns. Security aspect tests the security of transaction and how safe does the company keeps customers' sensitive data.

E-Commerce Performance Measures

E-commerce success/performance refers to the level of business performance achieved after the implementation of e-commerce. Electronic Commerce can enhance the performance of the company in various ways such as creating cost efficiency, increasing coverage of the company, improving coordination. The multidimensionality of e-commerce benefits makes it hard to quantify e-commerce performance. In the literature, many studies used accounting data such as revenue,

financial performance or shareholder value to quantify ecommerce value / performance (Geyskens et al., 2002).

Albers and Clement (2007) studied the success drivers of e-business companies. In their study, they model success on two dimensions: “Revenue” and “Financial Success”. Each indicator has two subgroups and the outcomes for each subgroup are multiplied to obtain a score for each indicator. “Revenue” dimension indicated by “satisfaction with revenue” and “satisfaction of revenue development in last 12 months” by using 7 point likert scale. The other success dimension “Financial Success” is obtained by the two indicators “satisfaction with the return on investment” and “satisfaction with development of cash flow over the last 12 months” by using 7 point likert scale.

Zhu and Kramer (2005) investigated the affect of technological, organizational and environmental factors to e-business use and value. In their model, the firm performance has been measured by the changes in downstream sales, upstream procurement and internal operations. Similarly, Zhu et al. (2003a) studied 612 firms across 10 countries in the financial services industry to identify factors that may affect value creation of e-business. In their model, they used three dimensions of e-business value (its impact on firm performance): impact on commerce, impact on internal efficiency, and impact on coordination. These dimensions are consistent with the Porter’s (1985) value chain analysis and have been used by several authors in business value of information technology studies (Zhu et al, 2003a).

In my research, impact of e-commerce on firm performance has been identified using four dimensions: impact on sales, impact on competition, impact on procurement and impact on overall performance.

Impact on Overall Performance

Companies can improve their overall performance by utilizing from the benefits of e-commerce. These benefits include lower transaction costs, better information management, wider the geographical coverage, better coordination between suppliers and company (Damanpour, 2001). In addition, e-commerce allows companies to develop direct relationship, gather strategic information about these individuals/businesses, reducing costs by bypassing the intermediaries in the traditional value chain (Sutanonpaiboon, 2006). For these reasons, e-commerce improves the overall performance of the companies.

Impact on Sales

E-commerce applications help companies to improve their sales**.** Zhu and Kramer (2002) indicated that the impact of e-commerce on sales can be in various ways such as increasing sales and improving customer services and widening the sales area. The internet enables small companies to expand their geographical reach and access to new customers who were formerly only within the reach of larger firms (Chong, 2008). In addition, e-commerce offers direct link between customers, suppliers and distributors (Kaynak et al., 2004). Thus, it empowers SMEs to market their products, launch new products in a cost-effective way (Akkeren & Cavaye, 1999).

Another impact of e-commerce on sales is the disintermediation in the value chain. By accessing the customers directly, companies can reduce their costs (Sutanonpaiboon 2006). For these reasons, e- commerce applications are expected to have positive impact on sales.

Impact on Competition

E-commerce enhances competitive position of the SMEs. Small companies used to have limited reach to customers. However, the internet improves the competitive

position of the SMEs, by enabling small companies to extend their geographical reach and secure new customers which were previously restricted to larger firms (Chong, 2008; Akkeren & Cavaye , 1999). E-commerce improves the competitive position of SMEs in the global markets (Nasco et al., 2008).

Impact on Procurement

E-commerce enables companies to lower their procurement and inventory costs. Zhu and Kramer (2002) indicated that the impact of e-commerce on procurement can be in different forms such as reducing inventory and procurement costs and improving coordination with suppliers. In addition, e-commerce enables companies to receive better support from suppliers and improves efficiency in information gathering (Poon and Swatman,1999).

CHAPTER III

METHODOLOGY

Model Development

The e-commerce success factors model is developed based on the findings in the literature. The e-commerce success factors model consist of dependent variable measures (performance measure factors) and independent variables (technological factors, organizational factors, environmental factors, electronic commerce website properties).

Dependent variable of this model, e-commerce performance is obtained by using four dimensions. These are impact of e-commerce on overall performance, on sales, on competition, on procurement. An e-commerce performance score is calculated based on impact of e-commerce on various dimensions.

Independent variables of this model, success factors are classified under 4 main groups (technological, organizational, environmental, electronic commerce website properties). Technological factors are perceived benefits, compatibility and external IT support. Organizational factors include organizational size, financial resources, top management support and previous IT Experience. Environmental factors include competition, industry, external IT support. E-commerce properties include factors such as interactivity, convenience, content and transaction. Figure 1 illustrates the dependent and independent variables of the model.

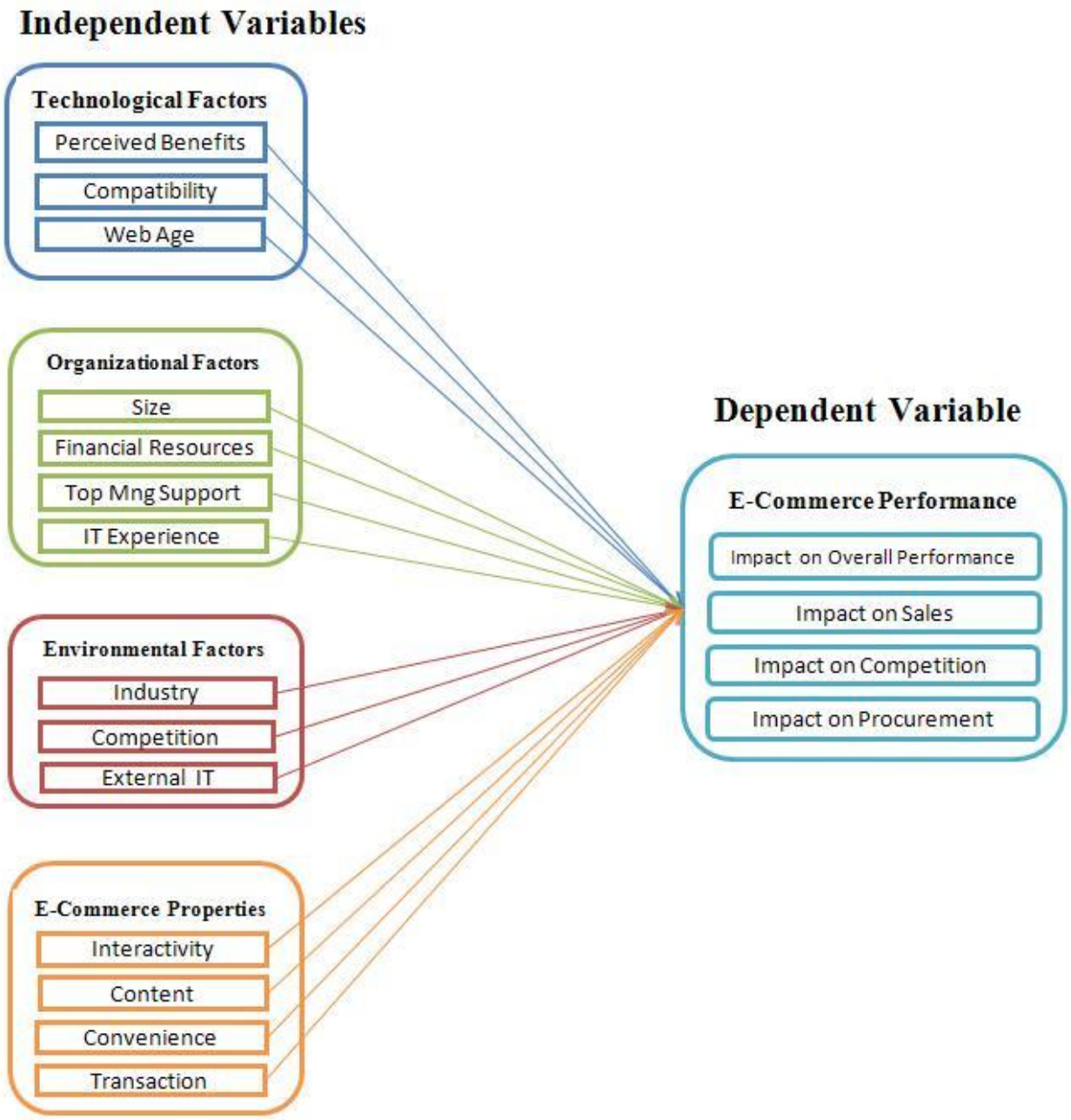

Figure 1 Model for Factors affecting E-commerce Success

Survey Instrument Development

A draft of the questionnaire has been prepared during the literature review. The most important factors affecting e-commerce activities of SMEs have been included in the questionnaire.

Pilot questionnaire has been applied to a group of respondents and then, the questionnaire items have been reviewed. The final questionnaire is composed of questions obtained from literature and questions composed to capture the relevant variables. In addition to questions related with dependent and independent variables, questions like location, industry of the company and the e-commerce technologies the company uses are included as descriptive statistics to get better information about the sample.

Inputs for Dependent Variables

The questionnaire is aiming to capture information about dependent variable (e-commerce success) in 4 dimensions; impact on overall performance, impact on sales, impact on competition, impact on procurement. In this section, participants are asked to evaluate the degree of improvement in the various dimensions of e-commerce success measure. Participants are asked to answer these question based on a 5 point likert scale shown in figure 2.

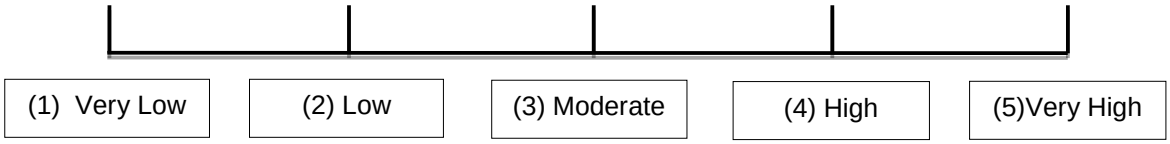

Figure 2 Intervals for Dependent Variable Measures

In order to calculate a value for each dimension, average value of the answers for the related questions has been calculated. Then, e-commerce performance measure has been calculated the values for each dimension.

Input for Independent Variables

Organizational Factors

Size: Participants are asked to choose the size (number of employees) of their company by using the 5 point Likert scale shown in figure 3.

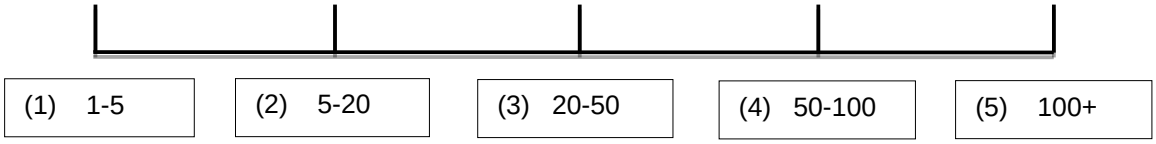

Figure 3 Intervals for Size

Financial Resources: The percentage of budget for e-commerce to sales has been used as an input for financial resources. Participants are asked to evaluate the percentage of e-commerce budget to sales based on the intervals shown in figure 4.

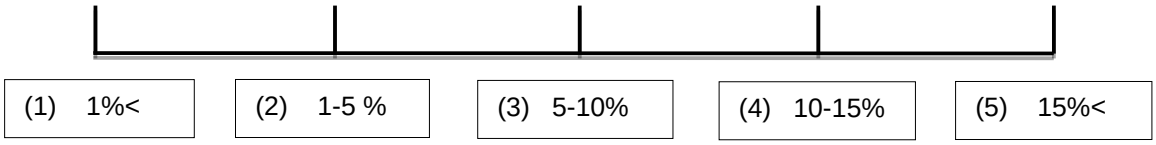

Figure 4 Intervals for Financial Resources

Top Management Support: Top management support has been captured by three questions about support of top management to e-commerce activities. Participants are asked to evaluate the top management support in their company by using 5- point Likert scale shown on figure 5.

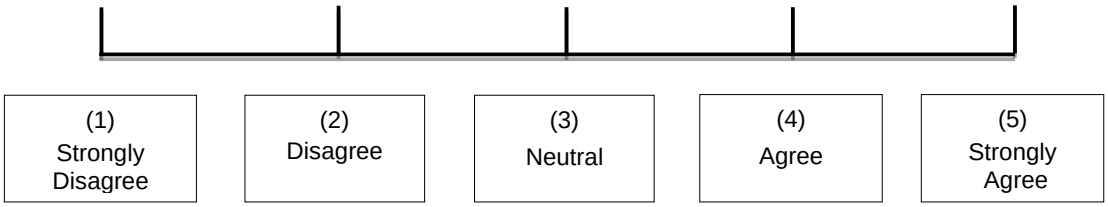

Figure 5 Intervals for Top Management Support

IT Experience: There are two questions regarding IT Experience and Skills of the Employees/manager. Participants are asked to evaluate the IT Experience and Skills of their employees/managers by using 5- point Likert scale shown in figure 5.

In addition, the years of computer usage in the company is added as a component of IT Experience. Participants have been asked to select the year that they started to use computer in their company. Responses have been deducted from current year, 2010 and the years of computer usage is obtained. Years of computer usage in the company has been classified into 5 categories shown in figure 6.

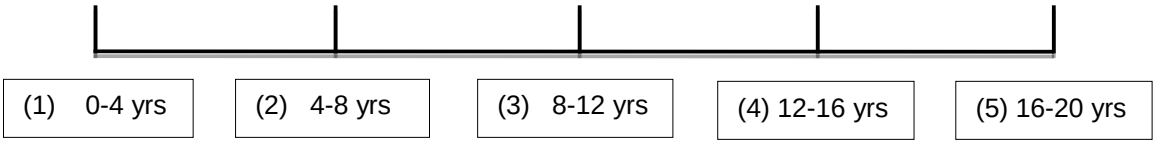

Figure 6 Intervals for Years of Computer Usage

Technological Factors:

Participants are asked to evaluate the technological factors by using 5-point Likert scales provided in the figure 7.

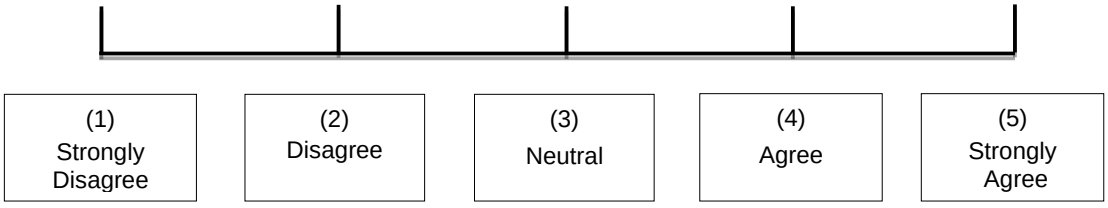

Figure 7 Intervals for Technological Factors

Perceived Benefits: There are 4 questions regarding perceived benefit in the questionnaire. Participants are asked to evaluate the perceived benefits of using e-commerce by using 5- point Likert scale shown in figure 7. Average value of all 4 questions has been calculated in order to quantify a value for perceived benefits.

Compatibility: There are 3 questions regarding compatibility factor in the questionnaire. Participants are asked to evaluate the compatibility of their e-

commerce technology with their information technologies by using 5- point Likert scale shown in figure 7. Average value of questions have been calculated in order to constitute an IT Experience value.

E-commerce Age: The participants are asked to select the date they start using e-commerce. Responses have been deducted from current year, 2010 and the years of computer usage is obtained. Years of e-commerce usage in the company has been classified into 5 categories shown in figure 8.

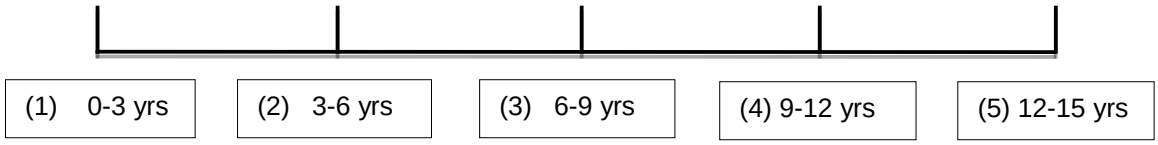

Figure 8 Intervals for Years of E-Commerce Usage

Environmental Factors:

Participants are asked to evaluate the technological factors by using 5-point Likert scales provided in the figure 9.

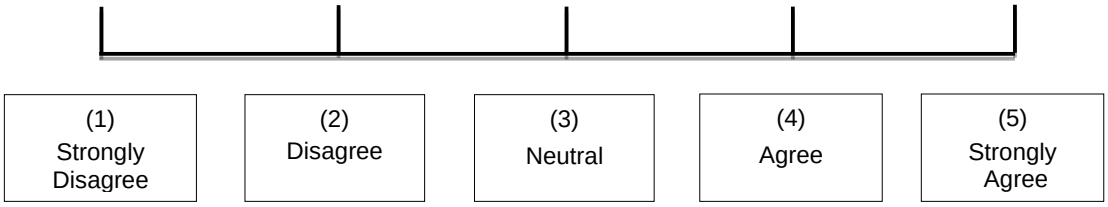

Figure 9 Intervals for Environmental Factors

Industry Pressure: 2 questions have been employed to analyze the industry characteristics. Participants are asked to evaluate the pressure from their industry by using 5- point Likert scale shown in figure 9.

Competition: 6 questions have been used to capture competition in the industry that company is operating. Participants are asked to evaluate the competition in their industry by using 5- point Likert scale shown in figure 9.

External IT Support: There are 3 questions regarding external IT support in the questionnaire. Respondents are asked to evaluate the external IT support by using 5-point Likert scale shown in figure 9.

E-commerce Application Properties:

Participants are asked to evaluate the properties of their e-commerce applications by using 5-point Likert scales provided in the figure 10.

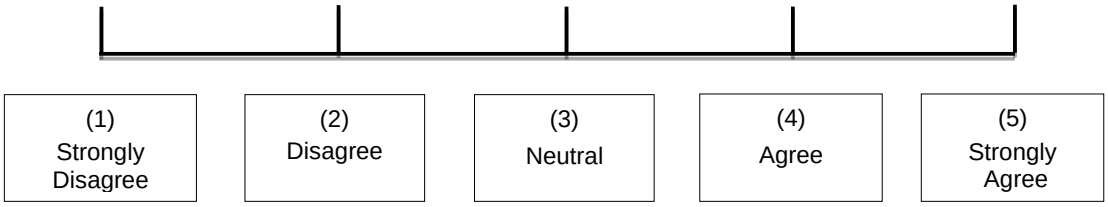

Figure 10 Intervals for E-Commerce Application Properties

Interactivity: There are 3 questions regarding interactivity of their e-commerce website in the questionnaire. Respondents are asked to evaluate the interactivity by using 5-point Likert scale shown in figure 10.

Content: There are 3 questions regarding interactivity of their e-commerce website in the questionnaire. Participants are asked to evaluate the interactivity by using 5-point Likert scale shown in figure 10.

Convenience: There are 3 questions regarding convenience of using their website in the questionnaire. Participants are asked to evaluate the convenience by using 5-point Likert scale shown in figure 10.

Transaction: There are 3 questions regarding transaction features of their website in the questionnaire. Participants are asked to evaluate the transaction features of their website by using 5- point Likert scale shown in figure 10.

Data Collection and Responsiveness

The questionnaire has been sent to employees/owners of small and medium companies that are conducting some of their business online by e-mail. The list of contacts has been obtained from business directories, chamber of commerce databases.

A reminder message has been sent to companies after not receiving response in 10 days. During the application period, around 2000 small business owner/employee have been contacted by e-mail. The questionnaire page has been visited for 263 times, and questionnaire has been filled out by 74 participants. These statistics indicate questionnaire page visit rate as 13% and response rate of around 4%. The low response rate can be attributable to the length of questionnaire and small business owner tendency not to give information about their business.

The sample includes 69 fully and 5 partially completed responses. In order to verify the suitability of the participants for this questionnaire, participants are asked to select the e-commerce technologies they use in the questionnaire. Participants who didn't select any e-commerce technology other than e-mail have been taken out of the data. During the data verification process, 6 observations have been taken out the sample. After the responses are collected and the data is checked for suitability, the data is analyzed with SPSS 15.0.

Descriptive Findings

The sample of study consists of a wide range of industries such as information technology, retailing, services, etc. Table1.1 illustrates a broad industry classification for the population. Detailed industry information is provided in Appendix 1. Participants from information technologies represents 13% of total sample, this can be attributable to high e-commerce usage among companies operating in information technologies. There is considerable number of participants from machinery, services, textile and food industries.

Table 1 Industry Distribution of Sample

Industry	Frequency	Percent	Cumulative Percent
Information Technologies	9	13.24	13.24
Machinery	7	10.29	23.53
Services	6	8.82	32.35
Textile	6	8.82	41.18
Food	5	7.35	48.53
Agriculture	3	4.41	52.94
Electrical Equipment	3	4.41	57.35
Electronics Retailing	3	4.41	61.76
Advertisement	2	2.94	64.71
Automobile	2	2.94	67.65
Construction	2	2.94	70.59
Foods	2	2.94	73.53
Furniture	2	2.94	76.47
Other Industries	14	23.53	100.00
Total	68	100.00	100.00

The participants of the questionnaire are spreaded throughout the country. Table 2 illustrates the distribution of participants based on each region. Marmara region accommodates the highest number of participants. The participants from Marmara

region are representing 57 % of total sample. Considering the dominance of Marmara region in Turkish economy, the percentage of participants from Marmara region should be regarded as usual. Participants from Central Anatolia constitute 12% of total sample and participants from other regions represent 31 %.

Table 2 Geographic Distribution of Sample

Location			
	Freq	%	Cumulative %
Marmara	39	57.35	57.35
Central Anatolia	8	11.76	69.12
Aegean	7	10.29	79.41
Mediterranean	6	8.82	88.24
Black Sea	3	4.41	92.65
Southeastern Anatolia	3	4.41	97.06
Eastern Anatolia	2	2.94	100.00
Total	68	100	

Table 3 below illustrates the distribution of number of observations based on organizational size. Small and micro size enterprises constitute significant portion of the total observation. Companies with 1-5 employees, composes 43 % of the total observations, companies with 5-20 employees composes 21 % of total observations. These figures are similar to the actual distribution of SMEs by size.

Table 3 Distribution of Sample Based on Organizational Size

Organizational Size			
Number of Employees	Frequency	Percent	Cumulative Percent
1-5	29.00	42.60	42.60
5-20	21.00	30.90	73.50
20-50	8.00	11.80	85.30
50-100	6.00	8.80	94.10
100+	4.00	5.90	100.00
Total	68.00	100.00	

Table 4 Mean Values for Dependent and Independent Variables

	N	Mean	Std. Dev.	Minimum	Maximum
Dependent Variable					
Performance Measure	68	3.5	0.91	1	5
Independent Variables					
Technological Factors					
E-commerce Age	68	1.99	1.25	1	5
Perceived Benefits	68	4.24	0.78	1	5
Compatibility	68	3.67	0.81	1	5
Organizational Factors					
Size	68	2.04	1.20	1	5
IT Experience	68	4	0.80	1	5
Financial Resources	66	2.64	1.32	1	5
Top Management Support	68	4.23	0.69	2.67	5
Environmental Factors					
Competition	67	3.66	0.80	1.7	5
External IT Support	66	3.47	0.94	1	5
E-commerce Properties					
Interactivity	66	3.63	1.15	1	5
Content	65	3.76	0.99	1	5
Convenience	66	4.12	0.78	1	5
Transaction	66	3.80	1.06	1	5

*These values are calculated with the questionnaire items after the factor and reliability analysis which will be discussed in chapter 4.

Independent and dependent variable descriptive statistics shows the range of population. Table 8 illustrates the range of responses for both the dependent and independent variables.

The mean value for the performance measure, 3.5 indicates that participants to this questionnaire evaluated the impact of e-commerce on their performance in several dimensions between moderate and high.

Based on the mean value of the participants' answers, the participants are using e-commerce applications between 3-6 years on average though standard

deviation is noted to be significant. On average, participants perceive the benefits of e-commerce at high levels. Participants perceive the compatibility level of e-commerce applications with their current, values and their strategy between moderate and high. The average size of the participant fall into the 5-20 group. Participants evaluated the IT experience and skills of their staff as between moderate and high. On average, participants of this survey devote sources on e-commerce amounting around 5 % of their sales. Top management support for e-commerce and innovations has been observed to be high. There is a moderate to high industry pressure to adopt e-commerce. Competition is observed to be moderate to high in the industries of the participants. Participants' dependency on external IT support for continuation of their e-commerce operations has been observed to be between moderate to high. On average, participants' websites offer interactive features, rich content, convenience and secure transaction methods at high level.

CHAPTER IV

HYPOTHESIS FORMING AND ANALYSIS

Factor Analysis

Factor analysis was used in order to validate independent variable constructs. Principal component analysis with Varimax rotation was used in all cases. Factor analysis is appropriate to use with the sample which is at least 4-5 times of the number of variables (questionnaire items). For this reason, factor analysis is applied within group of variables (organizational, technological, environmental, e-commerce properties).

In order to verify suitability of data for factor analysis, Kaiser-Meyer-Olkin measure of sampling adequacy (MSA) was calculated for each group. Overall MSA and individual values for factors are required to be over 0.50 to be suitable for factor analysis. In addition, probability related with Bartlett's Test of Sphericity should be less than significance level.

Factor Analysis for Dependent Variables

In order to verify construct validity, questionnaire items related with the dependent variable e-commerce performance were tested with factor analysis. The overall MSA was 0.841 and the probability associated with the Bartlett test is <0.001. These are indicating that sample satisfy requirements for factor analysis. Individual MSA's are ranging between 0.811 and 0.861. This indicates that questionnaire items are also suitable for factor analysis.

Communalities show the proportion of the variance in the original variables that are accounted for by the factor solution. Communality value for each variable should be 0.50 or higher in order to maintain the factor solution explaining at least half of each original variable's variance. Communalities values for this data set range between 0.804 and 0.533. For this reason variables met the criteria for communalities.

In this factor analysis, only 1 factor has eigenvalue above 1. It explains 68.566 % of the total variance.

Table 5 Variance Table for Factor Analysis of Organizational Variables

Total Variance Explained						
Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	4.800	68.566	68.566	4.800	68.566	68.566
2	.792	11.308	79.874			
3	.441	6.303	86.177			
4	.367	5.246	91.423			
5	.325	4.638	96.061			
6	.145	2.070	98.131			
7	.131	1.869	100.000			
Extraction Method: Principal Component Analysis.						

Factor loads of variables are provided below. It indicates that all questionnaire items are related with the e-commerce performance and there is no need to extract any of them.

Table 6 Component Matrix for Factor Analysis of Organizational Variables

Component Matrix(a)	
	1
OverallPer1	.897
OverallPer2	.846
SalesIm1	.847
SalesIm2	.870
CompIm1	.831
ProcureIm1	.762
ProcureIm2	.730
Extraction Method: Principal Component Analysis. a 1 components extracted.	

Factor Analysis for Technological Factors

Questionnaire items classified under the technological factors are tested with factor analysis. Overall MSA for the sample is 0.822. Individual MSAs range from 0.545 to 0.879. Communalities values are ranging from 0.776 to 0.942. These show that sample is suitable for factor analysis.

Table 7 below illustrates the factor loadings of the variables. It indicates three factors perceived benefit, compatibility and e-commerce age.

Table 7 Rotated Component Matrix for Factor Analysis of Technical Variables

	Component		
	1	2	3
Comptability1		.843	
Compatibility2	.408	.841	
Compatibility3		.805	
PBen1	.932		
PBen2	.891		
PBen3	.907		
PBen4	.888		
WebAge			.961

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.
a Rotation converged in 5 iterations.

Factor Analysis for Organizational Factors

Questionnaire items classified under the organizational factor are tested with factor analysis in order to verify the construct validity. Overall MSA is found as 0.696. Individual MSAs are ranging between 0.459 and 0.862. Since the MSA of 0.459 indicates unsuitability with general model, the questionnaire item related with size is removed and the factor analysis is retested.

In the second test, overall MSA is found as 0.727. Individual MSAs are ranging between 0.386 and 0.858. The questionnaire item having MSA value of 0.386. IT Experience Question1, is removed and factor analysis is redone.

In the third test, overall MSA is found as 0.751. Individual MSAs are ranging between 0.681 and 0.867.Communalities value of all the variables are above 0.50 and they ranging between 0.687 and 0.992. In this model 3 factors are explaining 82.80 % of the total variance. As it is shown on table 8, factor 1 includes data related with top management support, factor 2 includes questions data related with IT experience and factor 3 includes the financial resources.

Table 8 Rotated Component Matrix for Factor Analysis of Organizational Variables

Rotated Component Matrix(a)			
	Component		
	1	2	3
FinR			.965
TopS1	.878		
TopS2	.651		
TopS3	.905		
ITExp2		.842	
ITExp3		.835	
Extraction Method: Principal Component Analysis. Rotation Method: Varimax with Kaiser Normalization. a Rotation converged in 4 iterations.			

Factor Analysis for Environmental Factors

Items for environmental factors are tested by factor analysis in order to verify the construct validity. The overall MSA value for variable set is 0.766. Individual MSA values are ranging between 0.649 and 0.882. For this reason, all variables are suitable with respect to MSA. However, communalities are ranging between 0.389 and 0.782. For this reason variables with communality value less than 0.50 will be taken out and the sample will be retest. With this respect variables related with industry Pressure 1 and Industry Pressure 2 are taken out.

In the second test, the overall MSA value is observed as 0.769. Individual MSA values are ranging between 0.651 and 0.887. However, there are some variables with communality value less than 0.50. For this reason this variable Competition 3 (MSA: 0.445) will be taken out and the sample will be retested.

In the third test, the overall MSA value is observed as 0.741. Individual MSA values are ranging between 0.645 and 0.828. Communalities values are ranging between 0.579 and 0.797. The factor analysis found three factors explaining this data set. 69.50 % of the total variance can be explained by these three variables. These are Competition 1 (Comp4, Comp5, Comp7),Competition 2 (Comp1, Comp6, Comp2) and External Support. Table 9 illustrates the factor loads for environmental variables.

Table 9 Rotated Component Matrix for Factor Analysis of Environmental Variables

Rotated Component Matrix(a)			
	Component		
	1	2	3
Comp1			.812
Comp4	.833		
Comp6	.448		.595
ExITS1		.773	
ExITS2		.876	
EXITS3		.799	
Comp2			.887
Comp5	.812		
Comp7	.728		

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.
a Rotation converged in 4 iterations.

Factor Analysis for E-Commerce Properties

Items related with factors about e-commerce properties are tested by factor analysis. The overall MSA value for variable set is 0.820. Individual MSA values are ranging between 0.663 and 0.921. For this reason, all variables are suitable with respect to MSA. Communalities are ranging between 0.682 and 0.918. According to the result of factor analysis, the questionnaire variables should be reclassified.

Convenience1 should be reclassified to factor 1 which is related with "transaction" variable. Interaction1 and Content1 should be regarded as a variable for factor 2 which is related with "convenience". Factor 3 is related with Content and factor 4 is representing interaction variables.

Table 10 Rotated Component Matrix for Factor Analysis of Ecommerce Properties

Rotated Component Matrix(a)				
	Component			
	1	2	3	4
Interact1		.899		
Interact2				.927
Interact3				.801
Cont1		.686		
Cont2			.827	
Cont3			.652	
Conv1	.527			
Conv2		.684		
Conv3		.642		
Trans1	.855			
Trans2	.853			
Trans3	.863			
Extraction Method: Principal Component Analysis. Rotation Method: Varimax with Kaiser Normalization. a Rotation converged in 7 iterations.				

Reliability Analysis

Reliability analysis was applied for the factors that are captured with more than one question. "Reliability is an indication of measurement accuracy, that is, the extent to which instrumentation produces consistent or error-free results"(Zhu, 2002). The Cronbachs alpha coefficient has been used in this research to examine the internal consistency of scales of variables. The Cronbachs alpha coefficient values range between 0 and 1. Higher Cronbachs Alpha coefficients indicate greater reliability among the indicators. Cronbach's alpha coefficients above 0.60 are regarded as internally consistent. Cronbachs alpha values are provided in table 11.

Table 11 Cronbach's Alpha Values

Factor	Component	Cronbach's Alpha
Performance Measures	Impact on Overall Performance 1 Impact on Overall Performance 2 Impact on Sales 1 Impact on Sales 2 Impact on Competition 1	

	Impact on Procurement 1 Impact on Procurement 2	0.920
Organizational Factors	Financial Resources IT Experience 2 IT Experience 3 Top Management Support 1 Top Management Support 2 Top Management Support 3	0.800
Technological Factors	Compatibility 1 Compatibility 2 Compatibility 3 Perceived Benefits 1 Perceived Benefits 2 Perceived Benefits 3 Perceived Benefits 4	0.850
Environmental Factors	Competition 1 Competition 2 Competition 4 Competition 5 Competition 6 Competition 7 External IT Support 1 External IT Support 2 External IT Support 3	0.789
E-commerce Properties	Interactivity 1 Interactivity 2 Interactivity 3 Interactivity 4 Content 1 Content 2 Content 3 Convenience 1 Convenience 2 Convenience 3 Transaction 1 Transaction 2 Transaction 3	0.920

The Cronbach's alpha values show high reliability for the scales for performance measure (0.920) and for factors related with e-commerce properties (0.920). Reliability for organizational factors (0.800), environmental factors (0.789) and technological factors (0.850) have been observed to be at moderate levels. Based on the reliability analysis, all components of the questionnaire have been found to be internally consistent.

Hypothesis Forming

Organizational Factors

Financial Resources:

Adequacy of financial resources is an important factor affecting companies to realize potential e-business value (Zhu et al., 2003a). The affect of financial resources on e-commerce adoption studies showed mixed results. Findings of Scupola (2004) and (Zhu et al., 2003a) are supporting financial resources as a significant factor affecting e-commerce adoption and usage by SMEs. On the other hand, Mehrstens et al. (2003) claims that financial factors are not influencing internet adoption by SMEs. In the context of this study financial resources can be defined as the budget for IT and Web applications as a percentage of total revenue (Mahmood and Mann, 1993).

H_1: Financial Resources do not affect the e-commerce success of SMEs

H_{1A}: Financial Resources affect the e-commerce success of SMEs

Top Management Support

Previous studies indicate that top management support, has a critical role in developing IS/IT competencies, in the IS/IT success (Caldeira and Ward, 2002) and in e-commerce adoption decision (Mirchandani and Motwani, 2001; Nasco et al., 2008). In addition, it is identified as a significant critical success factor for Business to Business Electronic Commerce (B2BEC) (Tsao&Koong, 2004).

H_2: Top Management Support does not affect the e-commerce success of SMEs

H_{2A}: Top Management Support affect the e-commerce success of SMEs

IT Skills and Experience

IT skills and experience of its employees are critical knowledge assets of the companies (Bharadwaj, 2000). Previous studies indicate that IT experience of owner

is an important factor in success of information technology adoption (Palvia and Palvia, 2000) and e-commerce adoption (Sparling et al., 2007).

H_3: IT Skills & Experience does not affect the e-commerce success of SMEs

H_{3A}: IT Skills & Experience affect the e-commerce success of SMEs

Technological Factors

Perceived Benefit

Perceived benefits are the benefits that are offered by e-commerce in comparison to the traditional way of doing business. Previous studies indicate perceived benefit as a significant factor affecting e-commerce adoption by SMEs (Grandon and Pearson, 2004; Al-Qirim, 2007; Beatty et al, 2001).

H_4: Perceived Benefits does not affect e-commerce success of SMEs

H_{4A}: Perceived Benefits affect e-commerce success of SMEs

Compatibility:

Compatibility refers to how well e-commerce suits with the value chain (customers and supplier) processes, and how well e-commerce matches with the firm's current business processes (Sparling, 2007).Previous studies indicate that level of compatibility and adoption of the innovation are positively related (Sparling, 2007; Roger, 1995). In addition, compatibility with current business practice is a significant factor affecting adoption of e-commerce technologies (Al-Qirim, 2007; Kendall et al., 2001).

H_5: Compatibility does not affect the e-commerce success of SMEs

H_{5A}: Compatibility affects the e-commerce success of SMEs

E-Commerce Age:

E-commerce age refers to the number of year that the companies have been using the e-commerce. Companies that have earlier online presence are likely to enjoy first mover's advantage (Auger, 2005). However, in their study of determinants of e-commerce website development, Kowtha and Choon (2001) didn't support for the affect of website age on e-commerce website success.

H_6 : E-Commerce Age does not affect the e-commerce performance of SMEs

H_{6A}: E-Commerce Age affects the e-commerce performance of SMEs

Environmental Factors

Competition:

Competition has been found to be a motivator factor for Small and Medium Enterprises to adopt e-commerce (Al-Qirim, 2007; Lertwongsatien et al., 2003). Zhu et al.. (2003) claims that companies operating in highly competitive industries tend to pay more attention on IS innovations. On the contrary, Jeon et al. (2006) didn't find support for competitive pressure of the industry as a critical factor affecting the e-business implementation success in Korea. In addition, in their study of analyzing e-business value drivers, Zhu et al. (2003) did not find competition intensity as a significant factor improving e-business performance of the company.

H_7: Competition does not affect the e-commerce performance of SMEs

H_{7A}: Competition affect the e-commerce performance of SMEs

External IT Support:

The empirical evidence from previous studies suggests that External IT support and e-commerce adoption success are positively related. (Yap et al., 1992) Similarly, external IT support is a catalyzer factor to adopt new Information System (Thong, 2001) and Enterprise Systems (Ramdani et al., 2007; Guinea et al., 2005) and e-commerce (Al-Qirim, 2007).

H_8: External IT Support does not affect the e-commerce performance of SMEs

H_{8A}: External IT Support affects the e-commerce performance of SMEs.

E-Commerce Properties

Interactivity:

The empirical evidence from previous studies indicates a positive relationship between the level of interactivity of a website and its performance (Auger, 2005). In addition, the level of interactivity have a critical role in online buying activities regardless of the shopping orientation (Kim & La Rose,2004).It improves customers satisfaction with online shopping (Agarwal et al.,2002) , improves customer loyalty (Watson, Akselsen,& Pitt, 1998),provides better perceived value that customer places on a transaction (Sirinivasan et al., 2002).

H_9: Interactivity does not affect e-commerce performance of SMEs

H_{9A}: Interactivity affect e-commerce performance of SMEs

Convenience:

Convenience refers to the usability of the web site for the purpose for which it was designed such as to assist buying or selling or to find information (Feindt, 2002).Convenient features such as short response time enables customers to have more satisfying experience (Sirinivasan,2002).

H_{10}:Convenience does not affect the e-commerce performance of SMEs

H_{10A}:Convenience affect the e-commerce performance of SMEs

Content/Information:

Content/Information involves presentation of information about products and services offered on a web site. Palmer (2002) indicates that download delay, navigation, content, interactivity and responsiveness significantly affect the success of website. Accessible information and simplicity in completing transactions are important factors for successful completion of transactions (Sirinivasan, 2002).

H_{11}: Content does not affect the e-commerce performance of SMEs

H_{11A}: Content affect the e-commerce performance of SMEs

Transaction:

Zhu and Kramer (2002), studied transaction aspect of e-commerce competencies by using 5 indicators: buy capabilities, online order tracking, account management, return information and security.

H_{12} : Transaction feature does not affect the e-commerce performance of SMEs

H_{12A}: Transaction feature affect the e-commerce performance of SMEs

CHAPTER V

ANALYSIS FINDINGS AND RESULTS

In the first part of the analysis section, level of e-commerce usage has been analyzed in order to gain information about the relationship between e-commerce success and the e-commerce technologies SMEs they use.

Level of E-commerce Usage

In the questionnaire, participants are asked to select the e-commerce technologies they use. The participation of SMEs in electronic commerce can be in various ways. SMEs can use website to communicating and conduct sales transaction with their customers and suppliers, they can use online advertising to promote their goods and services, they can provide after sale support through their website or internet, they can procure goods online and they manage their supply chain over internet. As the degree of complexity of e-commerce application increases, the frequency rate of usage is decreasing.

Table 12 Level of E-commerce Usage

Level of E-commerce Usage		
	Frequency	Percent
Web Site	62	91.18
Online Sales	36	52.94
Online Advertisement	30	44.12
Online Procurement	29	42.65
After Sale Support	24	35.29
EDI	17	25.00
Internet Based SCM	15	22.06
Total	68	100.00

Table 12 illustrates the frequency of usage for different e-commerce applications by the participants. 91 % of the participants of my questionnaire uses website for their business, while, 53% of participants enable their customers to order goods or services online. 44 % of participant uses online advertisement. As its shown on the table internet based supply chain management is used by the lowest number of participant.

E-Commerce Performance Comparison

The degree of e-commerce usage information creates chance to analyze questions if the e-commerce success on various dimensions is different between users and non-users of an individual e-commerce applications.

Online Sales

Online Sales enables companies to access new markets, new customers. For this reason, companies using online sales should have better e-commerce performance relatively to the non-user of online sales. By using the following hypothesis tests, e-commerce performance will be compared between users and non-users of online sales in various dimensions of e-commerce performance measure.

Impact on Sales

H_{13} = There is no difference in impact on sales between users and non-users of online sales

H_{13A} = Impact on Sales is different between users and non-users of online sales.

This hypothesis has been tested by independent samples t-test. 95% has been taken as the confidence level. Thus, significance levels less than 5%, rejects null hypothesis accepts the hypothesis that impact on sale is different between users and nonusers of online sales.

Sign. $= 0.005 < 0.05$ H_{13} → rejected. The impact on sales is different for users and non-users of online sales. Mean values of impact on sales for the subgroups indicate that companies using online sales benefit from more satisfying sales performance.

Impact on Profitability

H_{14} = There is no difference in impact on profitability between users and non-users of online sales.

H_{14A} =Impact on profitability is different between users and non-users of online sales.

Sign. $= 0.032 < 0.05$ H_{14}→ rejected. The impact on profitability is different for users and non-users of online sales. E-commerce is impacting profitability of the companies using online sales in a better way relative to non-users of online sales.

Impact on Competition

H_{15} = There is no difference in impact on competition between users and non-users of online sales.

H_{15A} = The Impact on Competition is different between users and non-users of online sales.

Sign. $=0.052 > 0.05$ H_{15} → not rejected. There is no difference in impact on competition between users and non-users of online sales.

Based on the hypothesis analysis with the data, companies that use online sales enjoy higher impact on sales and profitability from e-commerce compared to companies that don't use online sales. On the other hand, there is no evidence that impact on competition differs between users and non-users of online sales.

Online Advertisement

Impact on Sales

H_{16} = There is no difference in impact on sales between users and non-users of online advertisement.

H_{16A} = Impact on Sales is different between users and non-users of online advertisement.

Sign. = 0.061 > 0.05 H_{16}→ is not rejected. There is no difference in impact on sales between users and non-users of online advertisement.

Impact on Profitability

H_{17} = There is no difference in impact on profitability between users and non-users of online advertisement.

H_{17A} = Impact on profitability is different between users and non-users of online advertisement.

Sign. = 0.1 > 0.05 H_{17}→ is not rejected. There is no difference in impact on profitability between users and non-user of online advertisement.

Impact on Competition

H_{18} = There is no difference in impact on competition between users and non-users of online advertisement.

H_{18A} = The Impact on Competition is different between users and non-users of online advertisement.

Sign. =0.029<0.05 H_{18}→ is rejected. The impact on competition is different between users and non-users of online advertisement.

According to hypothesis analysis, companies that use online advertising benefits from higher impact on competition with e-commerce compared to companies that don't use online advertisement. On the other hand, there is no

evidence that impact on sales and profitability differs between users and non-users of online advertisement.

Online Procurement

Impact on Procurement

H_{19} = There is no difference in impact on procurement between users and non-users of online procurement.

H_{19A} = Impact on Procurement is different between users and non-users of online procurement.

Sign. $=0.045 < 0.05$ $H_{19}\rightarrow$ is rejected. Impact on procurement is different between users and non-users of online procurement.

Impact on Overall Performance

H_{20} = There is no difference in impact on overall performance between users and non-users of online procurement.

H_{20A} = Impact on Overall performance is different between users and non-users of online procurement.

Sign. $=0.092 > 0.05$ $H_{20} \rightarrow$ is not rejected. Impact on Overall Performance is not different between users and non-users of online procurement.

Impact on Competition

H_{21} = There is no difference in impact on competition between users and non-users of online procurement.

H_{21A} = Impact on Competition is different between users and non-users of online procurement.

Sign. $= 0.456 > 0.05$ $H_{21}\rightarrow$ is not rejected. Impact on Competition is not different between users and non-users of online procurement.

The hypothesis testing indicates that companies that use online procurement benefit from higher impact on procurement with e-commerce in comparison to the companies that don't use online procurement. However, no evidence was found to infer that impact on overall performance and competition differs between users and non-users of online procurement.

Electronic Data Interchange (EDI)

Impact on Procurement

H_{22} = There is no difference in impact on procurement between users and non-users of EDI

H_{22A} = Impact on Procurement is different between users and non-users of EDI.

Sign. $=0.027 < 0.05$ $H_{22} \rightarrow$ is rejected. Impact on procurement is different between users and non-users of EDI.

Impact on Overall Performance

H_{23} = There is no difference in impact on overall performance between users and non-users of EDI.

H_{23A} = Impact on Overall performance is different between users and non-users of online EDI

Sign. $= 0.011 < 0.05$ $H_{23} \rightarrow$ is rejected. Impact on Overall Performance is different between users and non-users of EDI.

Impact on Competition

H_{24} = There is no difference in impact on competition between users and non-users of EDI

H_{24A} = Impact on Competition is different between users and non-users of EDI.

Sign. $= 0.51 < 0.05$ $H_{24} \rightarrow$ is not rejected. Impact on Competition is not different between users and non-users of EDI.

Impact on Sales

H_{25} = There is no difference in impact on Sales between users and non-users of EDI

H_{25A} = Impact on Sales is different between users and non-users of EDI.

Sign. $=0.026 < 0.05$ $H_{25} \rightarrow$ is not rejected. Impact on Sales is not different between users and non-users of EDI.

According to findings of hypothesis testing, companies which use EDI utilize from higher impact on procurement, overall performance, sales relative to the companies that do not use EDI. On the other hand, there is no evidence to infer that impact on competition is different between users and nonusers of EDI.

After Sales Support

Impact on Sales

H_{26} = There is no difference in impact on Sales between on providers and non-providers of After Sale Support.

H_{26A} = The Impact on Sales is different between providers and non-providers of After Sale Support.

Sign. $=0.029 < 0.05$ $H_{26} \rightarrow$ rejected. Impact on Sales varies between enablers and non-providers of After Sale Support.

Impact on Competition

H_{27} = There is no difference in impact on competition between providers and non-providers of After Sale Support.

H_{27A} =The Impact on Competition is different between providers and non-providers of After Sale Support.

Sign. $= 0.042 < 0.05$ $H_{27} \rightarrow$ rejected. Impact on competition varies between providers and non-providers of After Sale Support.

Impact on Overall Performance

H_{28} = There is no difference in impact on overall performance between providers and non-providers of After Sale Support.

H_{28A} = Impact on Overall performance is different between providers and non-providers of After Sale Support.

Sign. = 0.079>0.05 H_{28} → is not rejected. The impact on overall performance is not different for providers and non-providers of after sale support

Impact on Procurement

H_{29} = There is no difference in impact on procurement between providers and non-providers of After Sale Support.

H_{29A} = Impact on procurement is different between providers and non-providers of After Sale Support.

Sign. =0.045<0.05 H_{29}→ Rejected. The impact on procurement is different between providers and non-providers of After Sale Support.

Based on the hypothesis analysis, companies that provide After Sale Support within their e-commerce practices enjoy higher impact on sales and procurement in comparison to the companies which do not provide after sale support.

Internet Based Supply Chain Management (ISCM)

Overall Performance

H_{30} = There is no difference in impact on Overall Performance between users and non-users of ISCM

H_{30A} = Impact on Overall Performance is different between users and non-users of ISCM.

Sign. $=0.011 < 0.05$ H_{30} → is rejected. Impact on Overall Performance is different between users and non-users of ISCM.

Impact on Procurement

H_{31} = There is no difference in impact on Procurement between users and non-users of ISCM

H_{31A} = Impact on Procurement is different between users and non-users of ISCM.

Sign. $=0.027 < 0.05$ H_{31} → is rejected. Impact on Procurement is different between users and non-users of ISCM.

Impact on Sales

H_{32} = There is no difference in impact on Sales between users and non-users of ISCM

H_{32A} = Impact on Sales is different between users and non-users of ISCM.

Sign. $=0.026 < 0.05$ H_{32} → is rejected. Impact on Sales is different between users and non-users of ISCM.

H_{33} = There is no difference in impact on Competition between users and non-users of ISCM

H_{33A} =Impact on Competition is different between users and non-users of ISCM.

Sign. $=0.051 > 0.05$ H_{33} → is not rejected. Impact on Competition is different between users and non-users of ISCM.

According to the results of hypothesis analysis, companies that use ISCM enjoy higher impact of e-commerce on overall performance, sales and procurement in comparison to the companies which don't use ISCM. However, there is no evidence to conclude impact on competition is different between users and nonusers of ISCM. Table 13 summarizes the results of hypothesis test.

Table 13 Application and Impact of E-commerce on Various Dimensions

	Impact of E-commerce on			
Application	Overall Performance	Sales	Competition	Procurement
Online Sales	Higher	Higher	N.S	N.S
Online Advertisement	N.S	N.S	Higher	N.S
Online Procurement	N.S	N.S	N.S	Higher
After Sale Support	N.S	Higher	Higher	Higher
EDI	Higher	Higher	Higher	Higher
Internet Based SCM	Higher	Higher	N.S	Higher
N.S: Not Significant				

Correlation Analysis

A correlational analysis was performed to investigate relationships between the variables. Pearson Correlation coefficients were calculated with two tailed significant test. In this analysis, some significant correlation has been observed. Statistically significant observations are illustrated in table 14.

Correlations between variables, range between 0.246 and 0.689 which is indicating a moderate positive correlation between variables statistically significant.

Table 14 Correlations between Variables

Performance	Financial Resources .507(**)	IT Experience .524(**)	Top Management Support .417(**)	Competition .492(**)	Perceived Benefits .633(**)	Convenience .371(**)
Perceived Benefits	Compatibility .539(**)	IT Experience .534 (**)	Top Management Support .682(**)	Transaction .372 (**)	Content .485(**)	Convenience .464 (**)
	Performance .633(**)					
Compatibility	Perceived Benefit .539(**)	IT Experience .484(**)	Financial Resources .417(**)	Top Management Support .512(**)	External IT Support .297(*)	Interactivity .288(*)
	Content .489(**)	Convenience .488(**)	Transaction .468(**)	Performance .492(**)		
E-Commerce Age	Convenience .244(*)					

IT Experience	Financial Resources .429 (**)	Perceived Benefit .534 (**)	Compatibility .484 (**)	Top Management Support .562(**)	Content .496 (**)	Convenience .398 (**)
	Performance .524(**)	Transaction .246(*)				
Financial Resources	Compatibility .417(**)	Top Management Support .271(*)	Interactivity .353(**)	Content .392(**)	Convenience .306(*)	Transaction .430(**)
	Performance .507 (**)	IT Experience .429(**)				
Top Management Support	Perceived Benefits .682(**)	Compatibility .512(**)	IT Experience .562(**)	Financial Resources .271(*)	Content .373(**)	Convenience .457(**)
	Transaction .444(**)					
Competition	External IT Support .285(*)	Content .270(*)				
External IT Support	Compatibility .297(*)	Competition .285(*)	Content .290(*)			
Transaction	Financial Resources .430(**)	IT Experience .246(*)	Top Management Support .444(**)	Compatibility .468(**)	Perceived Benefits .372(**)	Convenience .689(**)
	Content .638(**)	Interaction .536(**)				
Convenience	Performance .371(**)	Financial Resources .306(*)	IT Experience .398(**)	Top Management Support .457(**)	Compatibility .488(**)	Perceived Benefit .464(**)
	Transaction .689(**)	Content .643(**)	Interactivity .374(**)	E-Commerce Age .244(*)		
Content	Financial Resources .392(**)	IT Experience .496(**)	Top Management Support .373(**)	Compatibility .489(**)	Perceived Benefits .485(**)	Competition .270(*)
	External IT Support .290(*)	Transaction .638(**)	Convenience .643(**)	Interactivity .392(**)		

Interactivity	Financial Resources	Compatibility	Transaction	Convenience	Content	
	.353(**)	.288(*)	.536(**)	.374(**)	.392(**)	

Most of the correlations indicate weak to moderate correlation between variables. Some variables are observed to be correlated with a large number of variables. Content is correlated with the 10 variables while convenience is correlated with 9 variables. This can be result of multicollinearity. For this reason, multicollinearity should be tested when estimating the regression model.

In addition, significant correlations have been discovered between dependent variable, e-commerce performance, and some independent variables. Perceived benefits, Compatibility, IT Experience, Financial Resources, Top Management Support, and Convenience are correlated with performance at 1% level of significance. Content is correlated with e-commerce performance at 5% level of significance. Moderate correlation exists between e-commerce performance and perceived benefits, financial resources and compatibility. Correlation coefficients between e-commerce performance and IT experience, top management support, convenience, content were observed to be weak.

These correlations indicate positive relationship between the independent variable and the dependent variable and they can give clue about the statistically significant variables in the regression results.

Linear Regression

The relationship with dependent variable and independent variables is analyzed by using linear regression. As the first step of analysis, dependent variable of sample is examined by using Kolmogorov Smirnov test in order to check if the distribution of

sample is normally distributed. Significance level of the distribution is found as 0.516.

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

Sign: 0.516 > 0.05 H_0 accepted.

This indicates that, the distribution of the e-commerce performance measure is normally distributed. For this reason, the sample is suitable to use for regression analysis.

In the regression analysis, "E-commerce Performance" which has been calculated as the mean value of impact of e-commerce on four dimensions (overall performance, sales, competition, procurement), is used as dependent variable. Compatibility, IT Experience, Financial Resources, Top Management Support, Competition, Perceived Benefits, E-commerce Age, External IT Support, Interactivity, Content, Convenience, Transaction are used as independent variable. The regression model below is estimated.

$$Y = X_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \beta_6 X_6 + \beta_7 X_7 + \beta_8 X_8 + \beta_9 X_9 + \beta_{10} X_{10} + \beta_{11} X_{11}$$

R^2 of the regression model above is 0.632(R adjusted : 0.545). This suggests that 64 % of the variance in the dependent variable can be explained by the independent variables in the model. ANOVA table illustrates that level of significance of the equation for F test is 0.000.This indicates the model is meaningful.

H_0 =The model is not meaningful Sign=0.000< 0.05 Ho rejected. Model is meaningful.

The existence of significant correlations between some independent variables triggered the suspicion about the existence of multicollinearity which is a problem of

independent variables affecting each other. For this reason, to test multicollinearity variance inflation factor (VIF) for independent variables have been calculated.

VIF values greater than 10, indicates the existence of multicollinearity. Table 15 illustrates the variance inflation factors and the tolerance levels for VIFs.

Table 15 Variance Inflation Factor for Linear Regression

	Tolerance	VIF
Compatibility	0.607	1.648
IT Experience	0.485	2.062
Financial Resources	0.608	1.644
Top Management Support	0.542	1.844
Competition	0.709	1.411
External IT Support	0.787	1.271
Perceived Benefits	0.439	2.280
Interactivity	0.602	1.662
Content	0.382	2.618
Convenience	0.395	2.535
Transaction	0.344	2.904

According to table 15, although some variables such as perceived benefits, content, convenience, transaction have high VIF, since they are still under the threshold for variance inflation factor which is 10, I can conclude that multicollinearity is not a problem for my sample. In addition, Durbin Watson- test result of 1.817 indicates that there is no autocorrelation. Thus, residual terms are not correlated.

After the confirming statistical fitness of model with test, results of the model can be interpreted. Table 16 illustrates the results of regression analysis between independent variables and dependent variable, e-commerce performance.

Table 16 Outcome of Linear Regression

		Unstandardized Coef.		Std. Coef.	T	Sig.
	Dependent Variable: E-commerce Performance	B	Std. Error	Beta		Partial
X_0	(Constant)	-0.065	0.802		-0.081	0.936
X_1	Financial Resources	0.292	0.072	0.442	4.054	0.000
X_2	Top Management Support	-0.229	0.175	-0.151	-1.308	0.197
X_3	IT Experience	0.227	0.155	0.178	1.459	0.151
X_4	Perceived Benefits	0.675	0.164	0.530	4.130	0.000
X_5	Compatibility	0.176	0.128	0.150	1.374	0.175
X_6	E-Commerce Age	0.043	0.074	0.060	0.587	0.560
X_7	Competition	0.078	0.114	0.069	0.685	0.497
X_8	External IT Support	-0.155	0.088	-0.169	-1.768	0.083
X_9	Interactivity	-0.008	0.083	-0.011	-0.101	0.920
X_{10}	Convenience	0.279	0.150	0.252	1.861	0.068
X_{11}	Content	-0.312	0.122	-0.352	-2.559	0.013
X_{12}	Transaction	-0.112	0.119	-0.137	-0.943	0.350

As it is shown on the table 16, only coefficients of financial resources, perceived benefits and content variables has been found to be statistically significant at 5 %. All other variables are found not to be statistically significant. Hypothesis testing for individual coefficients are provided below.

H_{1A} : Financial Resources affect the e-commerce success of SMEs.

P value < P critical 0.000< 0.05 → H_{1A} is supported, null hypothesis (H_1) is rejected

Based on hypothesis testing, financial resources affect the e-commerce success of SMEs. The sign of beta value indicates a positive relationship between e-commerce success and financial resources.

H_{2A} : Top management support affects the e-commerce success of SMEs.

P value > P critical 0.197 >0.05 → H_2 is not rejected

Based on hypothesis testing, top management support does not affect the e-commerce success of SMEs

H_{3A} : IT Skills and Experience affect the e-commerce success of SMEs.

P value > P critical 0.151 > 0.05 → H_3 is not rejected

Based on hypothesis testing, IT Experience does not affect the e-commerce success of SMEs

H_{4A} : Perceived benefits affect the e-commerce performance of SMEs.

P value < P critical 0.000 < 0.05 → H_{4A} is supported , null hypothesis, H_4 is rejected,

Based on hypothesis testing, perceived benefits affect the e-commerce success of SMEs. The sign of beta value indicates a positive relationship between perceived benefits and e-commerce performance.

H_{5A} : Compatibility affects the e-commerce performance of SMEs

P value > P critical 0.175 > 0.05 → H_5 is supported , H_{5A} is rejected.

Based on hypothesis testing, compatibility does not affect the e-commerce success of SMEs

H_{6A} : E-Commerce Age affects the e-commerce performance of SMEs.

P value > P critical 0.56 > 0.05 → H_6 is supported , H_{6A} is not supported.

Based on hypothesis testing, e-commerce age does not affect the e-commerce success of SMEs

H_{7A} : Competition affects the e-commerce performance of SMEs.

P value > P critical 0.497 > 0.05 → H_7 is supported , H_{7A} is not supported.

Based on hypothesis testing, competition does not affect the e-commerce success of SMEs

H_{8A} :External IT Support affects the e-commerce performance of SMEs.

P value > P critical 0.083 > 0.05 → H_8 is supported , H_{8A} is not supported.

Based on hypothesis testing, external IT support does not affect the e-commerce success of SMEs.

H_{9A} : Interactivity affects the e-commerce performance of SMEs.

P value > P critical 0.920 > 0.05 → H_9 is supported , H_{9A} is not supported.

Based on hypothesis testing, external IT support does not affect the e-commerce success of SMEs.

H_{10A} :Convenience affects the e-commerce performance of SMEs.

P value > P critical 0.068 > 0.05 → H_{10} is not rejected , H_{10A} is not supported.

Based on hypothesis testing, convenience does not affect the e-commerce success of SMEs.

H_{11A} :Content affects the e-commerce performance of SMEs.

P value < P critical 0.013 < 0.05 → H_{11A} is supported , H_{11} is not supported.

Based on hypothesis testing, content affects the e-commerce success of SMEs. The sign of beta indicates that content is negatively related to the e-commerce performance of SMEs.

H_{12A} :Transaction features affect the e-commerce performance of SMEs.

P value > P critical 0.350 > 0.05 → H_{12} is not rejected , H_{12A} is not supported.

Based on hypothesis testing, external IT support does not affect the e-commerce success of SMEs.

The number of insignificant factors is 3 times more than the significant factors. For this reason, a stepwise regression has been used in order to include only the significant variables in the regression model.

Revised Model:

$$Y = X_0 + \beta_1 X_1 + \beta_4 X_4 + \beta_{11} X_{11}$$

R^2 of the regression model above is 0.524 (adjusted $R^2$is 0.500) . This suggests that 52% of the variance in the dependent variable can be explained by the independent variables in the model. ANOVA table illustrates that level of significance of the equation for F test is 0.000. It confirms the fitness of the model. Durbin Watson and collinearity statistics for the second regression are within acceptable limits.

Table 17 Linear Regression Result for Revised Model

		Unstandardized Coef.		Std. Coef.	T	Sig.
	Dependent Variable: Performance	B	Std. Error	Beta		Partial
X_0	(Constant)	0.220	0.501		0.440	0.661
X_1	Financial Resources	0.321	0.064	0.485	5.011	0.000
X_4	Perceived Benefits	0.770	0.129	0.604	5.952	0.000
X_{10}	Content	-0.220	0.096	-0.248	-2.286	0.026

T test values for coefficients indicate coefficients for all variables except constant are statistically significant at 5 %. Final model is shown below.

Final Model:

$$Y = 0.321X_1 + 0.770X_4 - 0.220X_{10}$$

According to model, one unit increase in financial resources contributes 0.321 unit increase in the e-commerce success. Similarly one unit increase in perceived benefits increases e-commerce success by 0.770 units. However, one unit increase in content variable reduces the e-commerce success by 0.220. Since the variables are based on Likert Scale, one unit increase should be regarded as increasing to a one higher category.

Financial resources have been observed to have positive affect on e-commerce performance by some previous researchers (Scupola,2004; Zhu et al., 2003a). Findings of my study confirm their findings. Since, financial resources have been defined as the ratio of budget for e-commerce / sales in the context of this research, incremental spending on e-commerce returns as improvement in e-commerce performance based on my findings.

Similarly, in the literature many researchers (Grandon and Pearson, 2004; Al-Qirim, 2007; Beatty et al, 2001) have indicated perceived benefits as a significant

factor affecting e-commerce adoption and usage success. The findings of my study are in line with these researches. According to results of my model, increases in perceived benefit, improves the e-commerce performance of SMEs. Companies can increase perceived benefits by training their employees about the potential benefits of e-commerce. This can improve the importance of e-commerce for the company, thus, it results in better performance in e-commerce.

In the literature, content has been indicated as a significant factor affecting website success (Palmer, 2002; Sirinivasan, 2002). However, based on the results of my study, a negative relationship has been observed between content and e-commerce performance.

CHAPTER VI

CONCLUSION

In this dissertation, I aimed to discover factors that are affecting the success of the e-commerce activities of small and medium enterprises in Turkey. Research model for success factors has been developed based on the literature survey. In order to collect data, a questionnaire has been applied to employees/managers of SMEs. The construct validity and reliability of the questionnaire items were tested by using Cronbach's Alpha and factor analysis.

In addition to regression model, the impact of using or not using several e-commerce technologies, on e-commerce performance has been analyzed. According to results of this research, companies using online sales are enjoying better overall performance and higher sales relatively to the non-users of online sales. Users of online advertising are observed to benefit from more satisfying results in competition in comparison to non-users of online advertisement. Users of online procurement are enjoying better results in procurement relatively to non-users. After sale support in e-commerce was noted as an important application in improving e-commerce performance in sales, competition and procurement. Companies using internet based supply chain management have better performance in overall, sales and procurement.

These observations give information about the potential impact of different e-commerce applications on various performance measures. According to their priorities, companies can decide which e-commerce technology to use in order to improve their performance in desired dimension. For example, if the companies want

to improve their e-commerce performance in sales, they should consider using online sales, after sale support and internet based supply chain management in their e-commerce systems.

Before regression analysis, correlations between variables have been estimated. Moderate correlations have been discovered among some variables. Independent measure, e-commerce performance was moderately correlated with several independent variables such as financial resources, IT experience, top management support, competition, perceived benefits, and convenience. This correlation between e-commerce performance and independent variables could indicate the effect of factors on e-commerce performance.

In order to find out the effect of factors on e-commerce performance, a regression model was estimated. Financial resources, perceived benefits and content have been observed as significant factors affecting e-commerce success. However, in order to estimate the exact coefficients of factors another regression was run by using the significant factors. The coefficients of final regression model are shown below.

$$Y = 0.321X_1 + 0.770X_4 - 0.220X_{10}$$

The result of the regression model illustrates that financial resources and perceived benefits are factors contributing to the e-commerce performance. However, content has been indicated as a factor reducing the e-commerce performance.

Within the context of this research, financial resource was defined as percentage of e-commerce budget to sales. According to model, one unit increase in financial resource contributes 0.321 unit increase in the e-commerce success. Since the variables are based on Likert Scale, one unit increase should be regarded as increasing to a one higher category.

Adequate financial resources enable firms to make necessary investments to develop superior e-business functionalities, thus enables companies to realize the potential e-business value (Zhu et al., 2003a). The result of the research model complies with the findings of Zhu et al. (2003a) and Scupola (2004).This finding implies that in order to improve their performance in e-commerce companies should allocate more budget for their e-commerce activities.

Perceived benefits are the benefits that are offered by e-commerce in comparison to the traditional way of doing business. Perceived benefits are supported as an important factor affecting e-commerce adoption in the literature by a large number of researchers (Mehrstens et al., 2001; Kutlu and Özturan,2008; Grandon and Pearson ,2004;Al-Qirim,2007;Beatty et al. ,2001). The results of the model confirm the findings in the literature. According to model, one unit increase in perceived benefits contributes e-commerce success by 0.770 units. Companies where employees perceive benefits of e-commerce better, benefit from superior performance in e-commerce. Companies can increase awareness about the benefits of e-commerce by training their employees.

Content/Information involves presentation of information about products and services offered on a web site. In the literature content is supported as a significant factor affecting success of websites (Palmer, 2002; Sirinivisan,2002) However, according to model, one unit increase in content variable reduces the e-commerce success by 0,220. This implies that providing a rich content reduces the performance of the e-commerce. This can be attributable to the complexity created with the abundance of information which leads to more confused customers. Thus, lower e-commerce performance.

These results have strong implications for managers, based on the findings of the regression, in order to improve e-commerce performance managers should allocate more financial resources for e-commerce, they take measures to improve the understanding of perceived benefits of e-commerce among their employees and due to the negative effect of content on e-commerce success, they should be selective with the content they are providing to their website.

The aim of this dissertation was to discover critical success factors that are affecting e-commerce activities of SMEs, the regression study indicates financial resources and perceived benefits as critical success factors positively affecting e-commerce success, whereas content was indicated as a factor that is negatively affecting e-commerce success.

Limitations and Future Research

This research contributes the literature by confirming the positive contribution of financial factors and perceived benefits on e-commerce success and different from previous researchers content is found to have a negative impact on e-commerce success. In addition, this research indicates the contribution of each e-commerce related application (such as online sales, advertisement) on the success of e-commerce.

However, this study is not free from limitations. First, regarding the e-commerce performance measures, calculating the performance measure from accounting data could lead to more objective representation of e-commerce performance. However, it would be very hard to obtain these data due to not sufficient and inaccurate accounting records of SMEs and unwillingness SME of owners to share information about their accounting records.

Second, company owners/employees are asked to evaluate the properties of their website. This can lead to biased results. The ideal way can be obtaining data for e-commerce website properties from the customers. However, it would be practically impossible to apply for all companies in my sample (67 companies). Maybe, a detailed analysis of e-commerce success can be conducted to fewer companies by obtaining input from all stakeholders.

Third limitation of this study can be the response rate of the survey. If there were enough number of participants from different industries, it would enable different analysis.

This research can be further studied by conducting the analysis independently for each industry and critical success factors can be discovered for each industry. In addition, the scope of the study can be extended internationally, and critical success factors for different countries can be compared.

APPENDICES

A.DETAILED INDUSTRY LIST

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Information Technologies	4	5.7	5.7	5.7
	Textile	4	5.7	5.7	11.4
	Construction	3	4.3	4.3	15.7
	Food	3	4.3	4.3	20.0
	Advertisement	2	2.9	2.9	22.9
	Agriculture	2	2.9	2.9	25.7
	Automobile	2	2.9	2.9	28.6
	Computer	2	2.9	2.9	31.4
	Construction Machinery	2	2.9	2.9	34.3
	Electricity	2	2.9	2.9	37.1
	Healthcare	2	2.9	2.9	40.0
	Services	2	2.9	2.9	42.9
	Software	2	2.9	2.9	45.7
	Accessories	1	1.4	1.4	47.1
	Automobile Dealer	1	1.4	1.4	48.6
	Construction Material Retailing	1	1.4	1.4	50.0
	Dried fruit/nuts	1	1.4	1.4	51.4
	Education	1	1.4	1.4	52.9
	Electrical Equipments	1	1.4	1.4	54.3
	Electronics Retailing	1	1.4	1.4	55.7
	Energy Efficiency Consultancy	1	1.4	1.4	57.1
	Finance	1	1.4	1.4	58.6
	Florist	1	1.4	1.4	60.0
	Furniture	1	1.4	1.4	61.4
	Healthcare Products	1	1.4	1.4	62.9
	Heating	1	1.4	1.4	64.3
	Heating Systems	1	1.4	1.4	65.7
	Herbal Products Retailing	1	1.4	1.4	67.1
	Industrial Kitchen Production	1	1.4	1.4	68.6
	Information Technology	1	1.4	1.4	70.0
	Insurance	1	1.4	1.4	71.4
	Internet	1	1.4	1.4	72.9
	IT	1	1.4	1.4	74.3
	Lighting and Electricity	1	1.4	1.4	75.7
	Machinery	1	1.4	1.4	77.1
	Machinery Production	1	1.4	1.4	78.6
	Marble-Granite Trading	1	1.4	1.4	80.0
	Marketing	1	1.4	1.4	81.4
	Metal Processing	1	1.4	1.4	82.9
	Organic Foods	1	1.4	1.4	84.3
	Photography Electronics	1	1.4	1.4	85.7
	Production	1	1.4	1.4	87.1
	Restaurant	1	1.4	1.4	88.6

Seal Ring and Liming Production	1	1.4	1.4	90.0
Special Security	1	1.4	1.4	91.4
Sport Equipment Retailing	1	1.4	1.4	92.9
Telecommunications	1	1.4	1.4	94.3
Tourism	1	1.4	1.4	95.7
Water	1	1.4	1.4	97.1
Water Insulation	1	1.4	1.4	98.6
Web Designing	1	1.4	1.4	100.0
Total	70	100.0	100.0	

B.QUESTIONAIRE IN ENGLISH

Input for	Questions	Reference

Organizational Size

How many people are working for your company ?

1-5 5-20 20-50 50-100 100+

Descriptive Statistics

In which region your company is located at ?

In which industry your company is operating at ?

Please select the type of e-commerce applications that you use ?

E-mail	Online Procurement
Web Site	After Sale Support
Online Sales	EDI
Online Advertisement	Internet Based Supply Chain Management

E-Commerce Age

When did you start using e-commerce ?

Impact on Overall Performance

Overall performance of our company is improved after e-commerce adoption.

E-commerce applications have dramatically increased profitability.

Zhuang&Lederer(2004)

Impact on Sales

Using e-commerce has increased our sales.

Zhuang&Lederer(2004)

Using e-commerce widened our sales area.

Zhuang&Lederer(2004)

Impact on Competition

E-commerce applications have improved our position in competition

Zhuang&Lederer(2004)

Impact on Procurement

Using e-commerce technologies reduced our procurement costs

Using e-commerce improved the coordination with suppliers

Compatibility

The technologies that we were using before e-commerce are compatible with e-commerce.

Our E-commerce applications are compatible with the values ,strategies of our company.

Grandon et.al(2004)

Our e-commerce applications are compatible with the preferred work practices

Financial Resources

The total budget for e-commerce / revenue is *Mahmood and Mann (1993)*

<1 % 1-5 % 5-10 % 10-15 % 15+ %

IT Experience and Skills

Please evaluate the IT skill of employees of our company

Please evaluate the IT skills of your manager/CEO

When did you start using computer in your company ?

Now-X

Top Management Support

Top management of our company supports new technology implementations

Top managements role has been critical in our decision to adopt e-commerce system

Top management of our company supports innovations.

Perceived Benefits

Using e-commerce would improve overall performance of my company.

Grandon et.al(2004)

Using e-commerce would enhance business performance of my company.

Grandon et.al(2004)

Using electronic commerce would enhance my effectiveness on the job.

Grandon et.al(2004)

Using electronic commerce would enable my company to accomplish specific tasks more quickly.

Grandon et.al(2004)

Industry Pressure

In our industry not using e-commerce creates disadvantage in competition.

In our industry it hard for small companies to reach to customers via traditional channels

Competition

Competition is intense in our industry .

Customers can switch easily between suppliers without significant cost.

Products/Services in our industry are easily substitutable

Our industry is composed of small companies with small market shares

Bargaining power of buyers are high in our industry

Bargaining power of sellers are high in our industry

It is easy to enter our industry

External IT Support

We receive IT support from an external party on a regular basis

External IT support is important for continuity of our e-commerce activities

Vendors support our e-commerce activities by giving information and recommendation about IT systems.

Interactivity

We reply quickly to e-mails from customers

Zhuang, A.L. Lederer(2004)

Our e-commerce site enables customer collobration via product reviews etc.

Zhuang, A.L. Lederer(2004)

Our website offers interactive features to our customers

Zhuang, A.L. Lederer(2004)

Content

Our e-commerce site provides rich product descriptions

Our customers can access to frequently asked question in our website.

Our e-commerce site contains useful general company information (e.g., company history, background)

Zhuang, A.L. Lederer(2004)

Convenience

Our e-commerce site allows customers to compare several products

Our e-commerce site is easy to use

Our e-commerce site allows customers to search our product catalog easily

Transaction

Our e-commerce site allows customers to complete their orders online easily

Zhuang, A.L. Lederer(2004)

Our e-commerce site enables secure transactions

Zhuang, A.L. Lederer(2004)

Our customers can track their order status from our website.

Zhuang, A.L. Lederer(2004)

C.QUESTIONAIRE IN TURKISH

Firmanızın çalışan sayısı nedir ?*

Seçiniz

Firmanız hangi bölgede faaliyet göstermektedir ?*

Seçiniz

Firmanız hangi sektorde faaliyet göstermektedir ?*

Elektronik ticareti ne zaman kullanmaya basladiniz ?*

Seçiniz

Elektronik ticareti hangi amaçlarla kullanıyorsunuz ? (Birden çok seçebilirsiniz)*

- E-mail
- Web Sitesi
- Online Satış
- Tedarikçilerle Elektronik Data Değişimi
- Satış Sonrası Destek
- Online Satınalma
- Online Reklam
- İnternet Üzerinden Tedarik Zinciri Yonetimi

Aşağıdaki soruları 1-Çok Düşük 5-Çok Yüksek olmak üzere cevaplayınız.*

	Çok Düşük	Düşük	Ortalama	Yüksek	Çok Yüksek
E-Ticareti kullanmanın firmanızın genel performansının iyileştirilmesi üzerindeki etkisini değerlendiriniz	○	○	○	○	○
E-Ticareti kullanmanın karlılığınızın arttırılması üzerindeki etkisini değerlendiriniz	○	○	○	○	○

Aşağıdaki ifadeleri 1-Çok Az 5- Çok Fazla olmak üzere değerlendiriniz.*

	Çok Az	Az	Normal	Fazla	Çok Fazla
E-ticareti kullanmak satışlarımızı arttırmıştır.	○	○	○	○	○
E-ticareti kullanmak satiş alanımızı genişletmiştir.	○	○	○	○	○
E-ticareti kullanmak firmamızın rekabetçi durumunu iyileştirmiştir.	○	○	○	○	○
E-ticareti kullanmak satınalma maliyetlerimizi azaltmıştır.	○	○	○	○	○
E-ticareti kullanmak tedarikçilerle olan kordinasyonumuzu iyileştirmiştir.	○	○	○	○	○

Aşağıdaki ifadeleri 1-Kesinlikle Katılmıyorum 5-Kesinlikle Katılıyorum olmak üzere değerlendiriniz.*

	Kesinlikle Katılmıyorum	Katılmıyorum	Kararsızım	Katılıyorum	Kesinlikle Katılıyorum
E-ticaretten önce kullanmakta olduğumuz teknoloji şu anki e-ticaret uygulamamıza uyumludur.	○	○	○	○	○
E-ticaret uygulamalarımız firmamızın değerleri ve stratjileriyle uyumludur.	○	○	○	○	○
E-ticaret uygulamaları tercih edilen iş yapma şekline uyumludur.	○	○	○	○	○

E-ticaret için ayırdığınız bütçenin toplam satışlara oranı yaklaşık ne kadardır ?*

○ %1'den az ○ %1-5 ○ %5-10 ○ %10-15 ○ %15+

Firmanızda ne zamandan beri bilgisayar kullanıyorsunuz ?*

Seçiniz

Lütfen aşağıdaki soruları 1-Çok Zayıf 5-Çok iyi olmak üzere değerlendiriniz.*

	Çok zayıf	Zayıf	Ortalama	İyi	Çok İyi
Çalışanlarınızın bilgisayar beceri ve tecrübesini değerlendiriniz	○	○	○	○	○
Firmanızın ya da Müdür/CEOsunun bilgisayar beceri ve tecrübesini değerlendiriniz	○	○	○	○	○

Aşağıdaki ifadeleri 1-Kesinlikle Katılmıyorum 5-Kesinlikle Katılıyorum olmak üzere değerlendiriniz.*

	Kesinlikle Katılmıyorum	Katılmıyorum	Kararsızım	Katılıyorum	Kesinlikle Katılıyorum
Firmamızın üst yönetimi/patronumuz yeni teknoloji uygulamalarını desteklemektedir.	○	○	○	○	○
E-ticarete geçiş kararının verilmesinde üst yönetimin/patronumuzun kararı kritik olmuştur.	○	○	○	○	○
Firmamızın üst yönetimi/patronumuz yenilikleri destekler.	○	○	○	○	○

Aşağıdaki ifadeleri 1-Kesinlikle Katılmıyorum 5-Kesinlikle Katılıyorum olmak üzere değerlendiriniz.*

	Kesinlikle Katılmıyorum	Katılmıyorum	Kararsızım	Katılıyorum	Kesinlikle Katılıyorum
E-ticaret teknolojileri firmamın genel performansını artırır.	○	○	○	○	○
E-ticareti kullanmak firmamın iş performansını artırır.	○	○	○	○	○
E-ticareti kullanmak işteki verimliliği artırır.	○	○	○	○	○
E-ticareti kullanmak firmamın bazı görevleri daha çabuk yapmasını sağlar.	○	○	○	○	○

Aşağıdaki ifadeleri 1-Kesinlikle Katılmıyorum 5-Kesinlikle Katılıyorum olmak üzere değerlendiriniz.*

	Kesinlikle Katılmıyorum	Katılmıyorum	Kararsızım	Katılıyorum	Kesinlikle Katılıyorum
Sektörümüzde rekabet çok yoğundur.	○	○	○	○	○
Sektörümüzde müşteriler önemli bir maliyete katlanmadan tedarikçi değiştirebilirler	○	○	○	○	○
Sektörümüzde e-ticaret kullanmamak dezavantaj yaratır.	○	○	○	○	○

Aşağıdaki ifadeleri 1-Kesinlikle Katılmıyorum 5-Kesinlikle Katılıyorum olmak üzere değerlendiriniz.*

	Kesinlikle Katılmıyorum	Katılmıyorum	Kararsızım	Katılıyorum	Kesinlikle Katılıyorum
Sektörümüzde ürünlerin muadili kolay bulunabilir.	○	○	○	○	○
Sektörümüz küçük pazar paylarına sahip firmalardan oluşur.	○	○	○	○	○
Sektörümüzde tedarikçilerin pazarlık gücü yüksektir.	○	○	○	○	○
Sektörümüzde müşterilerin pazarlık gücü yüksektir.	○	○	○	○	○
Sektörümüze girmek kolaydır.	○	○	○	○	○
Sektörümüzde küçük firmaların geleneksel yöntemlerle müşteriye ulaşması zordur.	○	○	○	○	○

Aşağıdaki ifadeleri 1-Kesinlikle Katılmıyorum 5-Kesinlikle Katılıyorum olmak üzere değerlendiriniz.*

	Kesinlikle Katılmıyorum	Katılmıyorum	Kararsızım	Katılıyorum	Kesinlikle Katılıyorum
Bilgisayar sistemleriyle ilgili düzenli olarak bir firmadan destek almaktayız.	○	○	○	○	○
Dışarıdan alınan BT desteği e-ticaret aktivitelerimizin devamlılığı için önemlidir.	○	○	○	○	○
BT desteği aldığımız firma bilgisayar sistemlerimizle ilgili bilgi vererek ve öneride bulunarak e-ticaret aktivitelerimizi destekler.	○	○	○	○	○

Aşağıdaki ifadeleri 1-Kesinlikle Katılmıyorum 5-Kesinlikle Katılıyorum olmak üzere değerlendiriniz.*

	Kesinlikle Katılmıyorum	Katılmıyorum	Kararsızım	Katılıyorum	Kesinlikle Katılıyorum
Müşterilerden gelen e-mailleri hızlı bir şekilde cevaplarız.	○	○	○	○	○
Websitemiz ürün yorumları gibi özelliklerle müsterilerini sitemize katkıda bulunmasını sağlar.	○	○	○	○	○
Websitemiz müşterilerimize interaktif özellikler sunar.	○	○	○	○	○

Aşağıdaki ifadeleri 1-Kesinlikle Katılmıyorum 5-Kesinlikle Katılıyorum olmak üzere değerlendiriniz.*

	Kesinlikle Katılmıyorum	Katılmıyorum	Kararsızım	Katılıyorum	Kesinlikle Katılıyorum
E-ticaret sitemiz kullanıcılara zengin ürün tanımları sunar.	○	○	○	○	○
Müşterilerimiz e-ticaret sitemizde sık sorulan sorulara ulaşabilirler	○	○	○	○	○
E-ticaret sitemiz firma ile ilgili genel bilgileri (geçmişi, organizasyon yapısı vb) içerir.	○	○	○	○	○

Aşağıdaki ifadeleri 1-Kesinlikle Katılmıyorum 5-Kesinlikle Katılıyorum olmak üzere değerlendiriniz.*

	Kesinlikle Katılmıyorum	Katılmıyorum	Kararsızım	Katılıyorum	Kesinlikle Katılıyorum
E-ticaret sitemiz kullanıcıların firmamızın ürün/hizmetlerini karşılaştırmasına olanak tanır.	○	○	○	○	○
E-ticaret sitemizin kullanımını kolaydır.	○	○	○	○	○
E-ticaret sitemiz müşterilerimizin ürün katalogunukolaylıkla gezmesine olanak tanır.	○	○	○	○	○

Aşağıdaki ifadeleri 1-Kesinlikle Katılmıyorum 5-Kesinlikle Katılıyorum olmak üzere değerlendiriniz.*

	Kesinlikle Katılmıyorum	Katılmıyorum	Kararsızım	Katılıyorum	Kesinlikle Katılıyorum
E-ticaret sitemiz müşterilerin siparişlerini kolaylıkla tamamlamasına olanak sağlar.	○	○	○	○	○
E-ticaret sitemiz işlemlerin güvenli bir şekilde tamamlanmasını sağlar.	○	○	○	○	○
E-ticaret sitemizi kullanarak müşteriler sipariş durumlarını takip edebilirler.	○	○	○	○	○

D.RESULTS OF E-COMMERCE PERFORMANCE COMPARISON

a.COMPARISON OF USERS AND NON USERS OF ONLINE SALES

Group Statistics

	OSales	N	Mean	Std. Deviation	Std. Error Mean
PIMR	0	32	3,3594	,96916	,17132
	1	36	3,8333	,81941	,13657
SIMR	0	32	3,1094	1,05291	,18613
	1	36	3,8333	,98561	,16427
CIMR	0	32	3,2188	1,12836	,19947
	1	36	3,7500	1,07902	,17984
PRIMR	0	32	3,2188	,91526	,16180
	1	36	3,5647	1,16236	,19373

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
										95% Confidence Interval of the Difference
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
PIMR	Equal variances assumed	,547	,462	-2,185	66	,032	-,47396	,21693	-,90707	-,04084
	Equal variances not assumed			-2,163	61,072	,034	-,47396	,21910	-,91206	-,03586
SIMR	Equal variances assumed	,001	,970	-2,928	66	,005	-,72396	,24727	-1,21766	-,23026
	Equal variances not assumed			-2,916	63,810	,005	-,72396	,24825	-1,21992	-,22799
CIMR	Equal variances assumed	,084	,773	-1,983	66	,051	-,53125	,26785	-1,06603	,00353
	Equal variances not assumed			-1,978	64,269	,052	-,53125	,26857	-1,06773	,00523
PRIMR	Equal variances assumed	4,478	,038	-1,352	66	,181	-,34597	,25596	-,85702	,16508
	Equal variances not assumed			-1,371	65,097	,175	-,34597	,25241	-,85005	,15810

b.COMPARISON OF USERS AND NON USERS OF EDI

Group Statistics

	EDI	N	Mean	Std. Deviation	Std. Error Mean
PIMR	0	51	3,4510	,93944	,13155
	1	17	4,0882	,66697	,16176
SIMR	0	51	3,3137	1,09069	,15273
	1	17	4,0294	,83798	,20324
CIMR	0	51	3,2941	1,15402	,16160
	1	17	4,1176	,78121	,18947

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
PIMR	Equal variances assumed	2,183	,144	-2,582	66	,012	-,63725	,24677	-1,12995	-,14456
	Equal variances not assumed			-3,056	38,738	,004	-,63725	,20850	-1,05908	-,21543
SIMR	Equal variances assumed	1,435	,235	-2,469	66	,016	-,71569	,28989	-1,29447	-,13691
	Equal variances not assumed			-2,815	35,545	,008	-,71569	,25423	-1,23151	-,19986
CIMR	Equal variances assumed	2,552	,115	-2,734	66	,008	-,82353	,30122	-1,42494	-,22212
	Equal variances not assumed			-3,307	40,829	,002	-,82353	,24902	-1,32651	-,32055
PRIMR	Equal variances assumed	,471	,495	-2,822	66	,006	-,79745	,28254	-1,36156	-,23334
	Equal variances not assumed			-3,072	32,172	,004	-,79745	,25961	-1,32615	-,26875

c.COMPARISON OF USERS AND NON USERS OF AFTER SALE SUPPORT

Group Statistics

	ASaleSup	N	Mean	Std. Deviation	Std. Error Mean
PIMR	0	44	3,4659	,91752	,13832
	1	24	3,8750	,87539	,17869
SIMR	0	44	3,2841	1,05322	,15878
	1	24	3,8750	1,02416	,20906
CIMR	0	44	3,2955	1,13259	,17074
	1	24	3,8750	1,03472	,21121
PRIMR	0	44	3,2120	1,07065	,16141
	1	24	3,7500	,96684	,19736

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
PIMR	Equal variances assumed	,732	,395	-1,785	66	,079	-,40909	,22916	-,86662	,04844
	Equal variances not assumed			-1,810	49,345	,076	-,40909	,22597	-,86311	,04493
SIMR	Equal variances assumed	,030	,864	-2,232	66	,029	-,59091	,26472	-1,11944	-,06238
	Equal variances not assumed			-2,251	48,547	,029	-,59091	,26252	-1,11858	-,06324
CIMR	Equal variances assumed	,471	,495	-2,077	66	,042	-,57955	,27900	-1,13659	-,02250
	Equal variances not assumed			-2,134	51,191	,038	-,57955	,27160	-1,12475	-,03434
PRIMR	Equal variances assumed	,078	,781	-2,047	66	,045	-,53795	,26281	-1,06267	-,01324
	Equal variances not assumed			-2,110	51,689	,040	-,53795	,25495	-1,04963	-,02628

d.COMPARISON OF USERS AND NON USERS OF ONLINE PROCUREMENT

Group Statistics

	OProc	N	Mean	Std. Deviation	Std. Error Mean
PIMR	0	39	3,4487	,92334	,14785
	1	29	3,8276	,87908	,16324
SIMR	0	39	3,2821	1,06866	,17112
	1	29	3,7759	1,03152	,19155
CIMR	0	39	3,4103	1,09347	,17510
	1	29	3,6207	1,17758	,21867
PRIMR	0	39	3,1751	1,06156	,16999
	1	29	3,7069	,99568	,18489

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means							
										95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference		Lower	Upper
PIMR	Equal variances assumed	,029	,865	-1,708	66	,092	-,37887	,22187		-,82184	,06410
	Equal variances not assumed			-1,720	62,026	,090	-,37887	,22025		-,81913	,06139
SIMR	Equal variances assumed	,001	,980	-1,912	66	,060	-,49381	,25821		-1,00935	,02173
	Equal variances not assumed			-1,923	61,612	,059	-,49381	,25685		-1,00732	,01970
CIMR	Equal variances assumed	,465	,498	-,760	66	,450	-,21043	,27706		-,76360	,34273
	Equal variances not assumed			-,751	57,882	,456	-,21043	,28014		-,77121	,35034
PRIMR	Equal variances assumed	,015	,901	-2,097	66	,040	-,53177	,25357		-1,03804	-,02550
	Equal variances not assumed			-2,117	62,458	,038	-,53177	,25116		-1,03375	-,02978

Group Statistics

	OAdv	N	Mean	Std. Deviation	Std. Error Mean
PIMR	0	38	3,4474	1,00532	,16308
	1	30	3,8167	,75980	,13872
SIMR	0	38	3,2763	1,13719	,18448
	1	30	3,7667	,93526	,17075
CIMR	0	38	3,2368	1,10121	,17864
	1	30	3,8333	1,08543	,19817
PRIMR	0	38	3,2895	1,02424	,16615
	1	30	3,5443	1,10454	,20166

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
PIMR	Equal variances assumed	1,328	,253	-1,670	66	,100	-,36930	,22119	-,81093	,07233
	Equal variances not assumed			-1,725	65,897	,089	-,36930	,21410	-,79678	,05818
SIMR	Equal variances assumed	,920	,341	-1,906	66	,061	-,49035	,25724	-1,00394	,02324
	Equal variances not assumed			-1,951	65,870	,055	-,49035	,25137	-,99225	,01155
CIMR	Equal variances assumed	,034	,854	-2,232	66	,029	-,59649	,26726	-1,13010	-,06288
	Equal variances not assumed			-2,236	62,785	,029	-,59649	,26680	-1,12969	-,06329
PRIMR	Equal variances assumed	,242	,624	-,984	66	,329	-,25486	,25895	-,77187	,26215
	Equal variances not assumed			-,975	60,049	,333	-,25486	,26129	-,77751	,26779

f. COMPARISON OF USERS AND NON USERS OF INTERNET BASED SUPPLY CHAIN MANAGEMENT

Group Statistics

	ISCM	N	Mean	Std. Deviation	Std. Error Mean
PIMR	0	53	3,4623	,91908	,12624
	1	15	4,1333	,71880	,18559
SIMR	0	53	3,3396	1,06867	,14679
	1	15	4,0333	,93478	,24136
CIMR	0	53	3,3585	1,07586	,14778
	1	15	4,0000	1,19523	,30861
PRIMR	0	53	3,2515	1,00399	,13791
	1	15	3,9333	1,11590	,28812

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
PIMR	Equal variances assumed	,642	,426	-2,606	66	,011	-,67107	,25749	-1,18516	-,15698
	Equal variances not assumed			-2,990	28,321	,006	-,67107	,22446	-1,13062	-,21152
SIMR	Equal variances assumed	,046	,831	-2,277	66	,026	-,69371	,30466	-1,30199	-,08544
	Equal variances not assumed			-2,456	25,339	,021	-,69371	,28249	-1,27512	-,11230
CIMR	Equal variances assumed	,164	,687	-1,990	66	,051	-,64151	,32237	-1,28514	,00212
	Equal variances not assumed			-1,875	20,862	,075	-,64151	,34217	-1,35337	,07035
PRIMR	Equal variances assumed	,853	,359	-2,266	66	,027	-,68182	,30087	-1,28253	-,08111
	Equal variances not assumed			-2,135	20,855	,045	-,68182	,31943	-1,34639	-,01725

E.RESULTS OF REGRESSION ANALYSIS

a.RESULTS OF FIRST REGRESSION

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	,793[a]	,630	,551	,58724	1,848

a. Predictors: (Constant), Interactivity, IT Experience, Competition, Ext IT Support, T.Man. Support, Financial Res, Compatibility,Convenience, P. Benefits, Content, Transaction

b. Dependent Variable: E-Commerce Performance

ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	30,473	11	2,770	8,033	,000[a]
	Residual	17,933	52	,345		
	Total	48,406	63			

a. Predictors: (Constant), Interactivity, IT Experience, Competition, Ext IT Support, T. Man. Support, Financial Res, Compatibility,Convenience,P.Benefits, Content, Transaction

b. Dependent Variable: E-Commerce Performance

Coefficients[a]

	Unstandardized Coefficients		Standardized Coefficients			95% Confidence Interval for B		Collinearity Statistics	
	B	Std. Error	Beta	t	Sig.	Lower B	Upper B	Tolerance	VIF
(Constant)	-,170	,777		-,218	,828	-1,729	1,390		
Financial Res	,284	,070	,429	4,044	,000	,143	,425	,634	1,578
IT Experience	,256	,146	,201	1,748	,086	-,038	,549	,540	1,853
Top Man. Support	-,241	,173	-,159	-1,393	,169	-,588	,106	,549	1,820
Compatibilty	,182	,126	,155	1,436	,157	-,072	,435	,611	1,638
P. Benefits	,702	,156	,551	4,500	,000	,389	1,015	,476	2,103
Competition	,089	,112	,078	,789	,434	-,137	,314	,726	1,378
Ext. IT Support	-,167	,085	-,183	-1,972	,054	-,338	,003	,832	1,202
Transaction	-,102	,117	-,124	-,870	,389	-,337	,133	,352	2,837
Convenience	,278	,149	,251	1,868	,067	-,021	,577	,395	2,534
Content	-,324	,120	-,365	-2,710	,009	-,564	-,084	,393	2,547
Interactivity	-,003	,082	-,004	-,035	,972	-,167	-,084	,609	1,641

a. Dependent Variable: E-Commerce Performance

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	,724[a]	,524	,500	,61951	2,159

a. Predictors: (Constant), Content, Financial Res, P.Benefits

b. Dependent Variable: E-Commerce Performance

ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	25,378	3	8,459	22,041	,000[a]
	Residual	23,028	60	,384		
	Total	48,406	63			

a. Predictors: (Constant), Content, Financial Res, P.Benefits

b. Dependent Variable: E-Commerce Performance

Coefficients[a]

	Unstandardized Coefficients		Standardized Coefficients			Correlations			Collinearity Statistics	
	B	Std. Error	Beta	t	Sig.	Zero-order	Partial	Part	Tolerance	VIF
(Constant)	,220	,501		,440	,661					
Financial Res	,321	,064	,485	5,011	,000	,492	,543	,446	,846	1,182
P. Benefits	,770	,129	,604	5,952	,000	,568	,609	,530	,770	1,299
Content	-,220	,096	-,248	-2,286	,026	,231	-,283	-,204	,671	1,490

a. Dependent Variable: E-Commerce Performance

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