

Factors Influencing the E-commerce Performance of Large-scale Turkish Companies

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Abstract

This study aims to examine the effects of technology integration, competitor and customer pressure on the e-commerce performance of large-scale companies in Turkey. A stepwise regression analysis was employed to identify the variables that significantly contributed to e-commerce performance. The survey method was employed to gather data and 81 questionnaires in all, from different companies were returned to the researchers. The results of our study revealed that factors such as competitor pressure, technology integration, and customer pressure correctly predict e-commerce performance. Of these, competitor pressure has the highest impact. We conclude with managerial implications and recommendations for possible future research.

Keywords

E-commerce performance, technology integration, competitor pressure, customer pressure

1. Introduction

Information technology (IT) has metamorphosed the way companies do business. It has not only changed the rules of competition but has also opened up new avenues for companies to outperform their competitors [1]. Technological advancements in the Internet have especially accelerated the process of change in business activities. E-commerce development has created highly competitive markets across all industries [2]. E-commerce is a method of conducting business transactions, including buying and selling products, services or information via electronic means such as the Internet [3]. B2C e-commerce means selling products or services to individuals. Firms facilitate the advantages of commerce, like product diversification [4], market expansion and operational performance enhancements [5], improved communication, cost saving and increased market performance [6], 24-7 shopping facilities [7], reduced transaction cost, increased market transparency and efficiency [8], convenience and time saving [9], enhancement in company image, decrease in personal, operational and marketing costs, improvement in customer service and flexible working practices [10], through the Internet. Despite the potential benefits derived from e-commerce, some firms fail to reach targeted e-commerce performances. At the same time, some firms are concerned about lagging behind the technology and engage in e-commerce activities without achieving any benefits [11]. A few of them are consistently profitable [12]. What makes companies successful in e-commerce applications, however, remains ambiguous for researchers.

Success in e-commerce can be measured by the benefits accruing to customers from overall satisfactory implementation of e-commerce projects [6]. Reference [4] theorizes that e-commerce may add to the improvement of firm performance. Thus, determining the important factors that affect e-commerce performance also becomes critical for firm performance. Several studies have investigated factors affecting e-commerce performance [13-18]. Reference [14] analyzed the effects of e-commerce technology resources, and complementary human and business resources, on e-commerce performance. Reference [13] investigated the effects of CEO commitment, process redesign, and e-commerce planning on site features and firm performance. Reference [15] explored the effects of technological context, organizational and environmental contexts on e-business value. Reference [17] examined the effect of legal rules and enforcement, creditor and shareholders rights and the level of technology integration on e-commerce revenue. Reference [18] studied whether business resources, IT resources, and dynamic capabilities affect the e-commerce performance in SMEs. However, no research could be identified that dealt with the effects of technology integration, and pressures that customers and competitors exert on e-commerce performance among the

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large-scale companies in Turkey. Therefore, this study attempts to explore the effects of technology integration, competitor and customer pressure on e-commerce performance among the large-scale companies in Turkey.

2. Research Model

2.1 Technology Integration

Technology integration implies the integration of various technologies and applications using the Internet [16]. Organizations are not self-sufficient; they interact with the environment. Thus, many organizations use the Internet to integrate activities of the value chain, including the suppliers, customers, and distribution channels to derive competitive advantage [19]. Global firms especially, are more likely to use the Internet to exchange information with customers and suppliers, integrating business processes, and after sales and support [20]. In terms of customer relationship management, the Internet enables companies to obtain in-depth data on customers and offer them customized preferences [21]. E-commerce also enhances intra-organizational processes by integrating various functions within organizations [22]. Besides, with such integration, companies can operate more efficiently by creating larger inter-organizational virtual structures with their customers, distributors, and suppliers [23]. Although adopting advanced e-commerce technologies is both costly and complicated [16], several studies found technology integration essential and significant for e-commerce performance [19, 15]. Reference [19] refers to the success story of Intel by the application of e-business. Intel earned one billion US dollars in revenue within the first 15 days of adopting its online e-business system, and rose to become the fifth most profitable US company in 2000. Later, Reference [15] analyzed the factors affecting e-business value and identified technology readiness, firm size, global scope, financial resources, and regulatory environment as the significant predictors. Of these, technology readiness — which includes infrastructure, Web site functionality, and information integration — is the most effective factor in e-business value. Therefore, we hypothesize:

H1: Technology integration increases e-commerce performance.

2.2. Customer Pressure

E-commerce will not be successful without recognition of market makers, participants, and environmental factors, as it is a much broader concept than a merely inter-organizational information system [25]. A firm's beliefs, attitudes, and behaviors have a bearing on the beliefs, attitudes, and behaviors of other players in the network to which they are linked [26]. Customers are one of the main players to achieve the targeted performance, which is why companies aim to satisfy customers' expectations in terms of e-commerce. Otherwise, customers will eventually seek out other suppliers who will meet their needs [27]. Market-oriented companies that study their markets and act on that information may smoothly respond to customers' needs and competitors' actions [28]. IT firms also assume that involving the Internet would enhance the credibility of the firm in the eyes of potential employees, clients, and suppliers [29]. Reference [30] also found that institutional pressures such as those from partners, major customers, and suppliers have a substantial impact on the objectives of virtual organizing, which is an integral part of e-commerce. Therefore, we hypothesize:

H2: Customer pressure increases e-commerce performance.

2.3 Competitor Pressure

A company that intends to step into e-commerce applications should first understand its market position vis a vis its competitors [31]. Organizations may model themselves on others, especially under the cloud of uncertainty [32] and resemble successful organizations in their environment [33]. Firms also mimic successful firms, expecting that the strategies adopted by successful firms will more likely yield successful outcomes. Competitive pressure may also arise from the threat of losing competitive advantage [26]. Competitive pressure was also noted to be an important factor in the adoption of e-business [24]. Therefore, we hypothesize:

H3: Competitor pressure increases e-commerce performance.

In light of the hypotheses discussed above, this study aims to explore the effects of technology integration, competitor and customer pressure on e-commerce performance among the large-scale companies in Turkey. The research model tested in this study is shown in Figure 1.

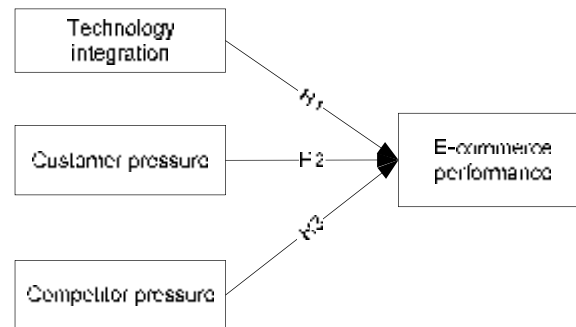


Figure 1. Research model

3. Methodology

The survey method was employed to gather data. A questionnaire was developed, based on an extensive review of the literature in the fields of IT, e-commerce, and factors affecting e-commerce performance. Many survey questions were adopted from previous literature and suggestions from academics [14, 16]. After the initial development of the survey questionnaire, it was sent to 10 managers who were responsible for e-commerce projects to assess its comprehension. Based on information provided by these managers, the instrument was “fine-tuned” and finalized.

The final questionnaire consisted of two major divisions. The first section involved demographic questions designed to elicit information on the ownership of the company, industry, annual revenue, age of the firm, total number of its employees, working experience of the firm in its field, position of the managers, and working experience of the managers in their current positions. In the second part, respondents were asked to indicate their agreement on the statements related to technology integration, competitive and customer pressure, and e-commerce performance items on a 5-point Likert scale, where 1 represented ‘strongly disagree’ and 5 represented ‘strongly agree’.

The target population for the study was managers who were responsible for e-commerce projects in large-scale companies in Turkey. The survey consisted of the questionnaire and a cover letter, which were mailed to a sample of 450 managers in April 2007. By the end of October 2007, 81 questionnaires in all, from different companies were returned to the researchers. An initial analysis of the data revealed that the questionnaires were returned from a variety of industries including, service, textile, chemical, food, electronic, automobile, construction, machine-production, petrochemical, iron and steel, glass and glass products, and paper and paper products. Seventy-six percent of the companies were domestic corporations, while the rest were foreign-owned companies. Most firms showed annual revenue of greater than 100 million TL. The average age of the firms was 40 years, and employees had an average of 98 months’ working experience in their respective sectors. Additionally, the positions held by the respondents were CEO/top managers, IS managers, finance managers, marketing and sales managers, and purchasing managers. Of them, 38% of the respondents were IS managers. Also, managers had an average of 47 months of working experience in their current positions.

4. Results

4.1 Reliability

The psychometric properties of the instrument were evaluated in terms of reliability. Cronbach’s alpha values were calculated for all multi-item variables. The entire instrument, as well as the individual variables, exceeded the minimum alpha of 0.60 and achieved high levels of reliability ranging from 0.86 to 0.90.

4.2 Regression on Performance Measures

A stepwise regression analysis was employed to identify the variables that significantly contributed to e-commerce performance. A measure of the e-commerce performance was the average of the performance items. The average values of the items related to technology integration, customer and competitor pressure were used as potential predictors in the model. The results of the analysis are shown in Table 1.

Table 1: Regression on e-commerce performance

	Sum of squares	df	Mean square	F	Prob>F	
Regression	37.041	3	12.347	55.362	0.000	
Residual	17.173	77	0.223			
Total	54.214	80				
Parameter estimates	Beta	Std error	Partial R ²	Model R ²	F	Prob>F
Intercept	0.254	0.279				
Competitor pressure	0.288	0.096	0.527	0.527	89.962	0.000
Technology integration	0.351	0.065	0.103	0.630	23.114	0.000
Customer pressure	0.295	0.090	0.041	0.671	10.676	0.002

This analysis particularly yielded a regression function with a $R^2 = 0.671$ based on three significant variables: competitor pressure, technology integration, and customer pressure. It should be observed that competitor pressure was weighted most heavily in the regression model predicting e-commerce performance. Also, the contribution of technology integration was considerably greater than customer pressure.

5. Discussion and Conclusion

Despite the great popularity and benefits of e-commerce the world over, not all firms that implement it are successful. However, what really makes companies successful in e-commerce applications is still ambiguous. From this perspective, this study aims to examine the effects on e-commerce performance in a B2C context of technology integration, customer and competitor pressure among large-scale companies in Turkey. In all, 81 questionnaires from 81 large-scale companies in Turkey were collected from the managers who were responsible for e-commerce projects. All the items measuring each construct showed high reliability ($\rho > 0.70$). Stepwise regression analysis was used to analyze the data. The study revealed that competitive pressure, technology integration, and customer pressure predicted 67% variance in e-commerce performance.

The most important factor, however, that explains e-commerce performance is competitor pressure. Companies who intend to enter e-commerce need to survey the market and carefully identify its competitors [3]. Our findings contradict that of [24] which was that the importance of competitive pressure on e-commerce use and value differs among developing and developed countries, where competitive pressure is significantly important for the developed ones. This difference may be explained by the positive changes brought about by Turkey's adaptation to European Union standards.

Another significant finding was that technology integration and customer pressure affect e-commerce performance to a lesser degree than do competitor pressure. Technology integration explains only 10% portion of e-commerce performance variance. However, Reference [34] emphasized the significant effect of technology integration on e-business value. They found that e-business value originates more from internal organizational resources such as technology integration rather than from external pressures. The sample collected from financial services may explain this difference. As financial firms are information-intensive firms, they are expected to emphasize more on systems integration. It could thus be inferred, due to the lesser importance of technology integration, that companies may prioritize the integration of technologies with the Internet, only if they can afford the cost of such integration.

As mentioned earlier, customer pressure may also improve the performance of e-commerce, but only to a smaller degree. As firms do not desire to lose their customers and the market share, customers' demands may play a vital role in e-commerce performance. This is consistent with the results of prior studies that have confirmed the importance of customer pressure on e-commerce [30, 26, 29]. Customer pressure is also an important factor for adoption of e-commerce, even in small firms [29]. Reference [29] found that the perceived benefits, organizational readiness, and external pressure, i.e. customers, influence adopting the Internet by small firms. Although Reference [30] found that pressures from partners, major customers, and suppliers do have a considerable impact on the choice of virtual organizing, in our study customer pressure accounted for only a small part of the variance in e-commerce performance. This may be explained by the argument that the intention to use e-commerce may not always result in its successful adoption.

Although the findings of this study certainly contribute to a better understanding of the factors that affect e-commerce performance, several limitations should be noted. First, the model variables explained 67% of e-

commerce performance variance. Thus, a considerable percentage of the dependent variable remains unexplained, warranting the need for further research incorporating other variables, such as usability, ease of use, trust or security of e-commerce web sites, and quality of network connections. Second, the results of this study are a long way away from understanding the implications for other countries. A similar study examining this subject using an even broader sample of companies located in several different countries could serve to further extend and enhance these findings. Third, regardless of the significance of the relationships among the factors in the regression model, the fact that these relationships may not apply to specific industries should not be overlooked. Therefore, research focusing on specific industries would be useful to determine whether the relationships in the conceptual model would be different if the data gathered came from a specific industry.

5.1 Managerial Implications

Our study offers several significant suggestions for company managers in the early stages of contemplating venturing into e-commerce application. First, the managers should track their competitors and study their distinctive and successful features and applications. However, merely following competitors' methods may not be enough for success; they need to combine their strengths with the benchmarks. Additionally, a long-term strategic plan should be developed incorporating tactics to counter the moves of the competitors. Managers should also analyze whether the inevitable change in their company is compatible to its culture. Second, managers need to build long-term relationships with their partners and customers, as well as understand the expectations of both the customers and suppliers from e-commerce. Managers should ensure that customers and suppliers are able to meet their requirements from the site. Third, prior preparation of the users of the integrated system is essential for a full-fledged implementation of the system. Training and education programs and trial usage are very important to involve employees in the change.

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