Critical Success Factors Affecting e-commerce Activities of Small and Medium Enterprises

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Abstract: Electronic commerce is redefining business and customer relationships, business processes, even sometimes restructuring the whole industry by providing new distribution channel, new delivery methods, new payment methods and new medium for communication. The aim of this study was to explore the critical success factors that affect e-commerce activities of Small and Medium-sized Enterprises (SMEs). In this study, a model has been developed based on previous researches and a questionnaire has been composed in order to collect data for the research. The 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 factors affecting e-commerce activities of SMEs. The success measures of e-commerce are compared between users and non-users of some e-commerce applications. Findings indicate financial resources, perceived benefits and content as significant factors effecting success of e-commerce in SMEs. The negative relationship between content and performance of the e-commerce can be attributable to the complexity created with the abundance of information which leads to more confused customers.

Key words: Critical success factors, e-commerce, perceived benefits, adoption

INTRODUCTION

SMEs have important role in economies of many countries and contribute to economic growth by continuously creating new jobs even in times of economic crisis. Increasing number of SMEs is adopting e-commerce using their flexibility and ability to respond to new opportunities and innovations (Sudhakar and Ravindran, 2012).

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 and collecting market data (Doherty and Ellis-Chadwick, 2003). The Internet help SMEs to overcome their disadvantages related with size by enabling them to extend their geographical reach and secure new customers (Chong, 2008). The e-commerce allows SMEs to compete on a global scale and provides access to wider markets (Lawson-Body, 2003). Internet based electronic commerce may create direct savings such as product promotion, new sales channels, faster product delivery, higher customer satisfaction, lower cost advertising medium, enhanced company image, new business opportunities, efficiency in information gathering and better support from suppliers (Kaynak et al., 2005; Walczuch et al., 2000; Nath et al., 1998; Poon and Swatman, 1999). All these reasons explain why SMEs adoption and effective usage of e-commerce is crucial to improve the performance of SMEs.

This study focuses on critical success factors of e-commerce. Critical success factor analysis is a method of business analysis which involves identifying the business elements which are crucial for the success of the businesses. Critical success factors are important areas ensuring successful competitive performance of the organization when they are satisfactory (Rockart, 1979).

Previous empirical studies illustrated that financial resources (Zhu et al., 2003b), organizational size (Lun and Quaddus, 2011), top management support (Caldeira and Ward, 2002), previous IT experience (Palvia and Palvia, 1999), perceived benefits (Baldwin et al., 2000), industry characteristic, external pressure (Grandon and Pearson, 2004), compatibility (Sparling et al., 2007), external IT support (Yap et al., 1992) are significant factors effecting adoption and usage of e-commerce by SMEs. In addition to these factors e-commerce capabilities such as interactivity, content, convenience are effecting the website satisfaction of users (Srinivasan et al., 2002). Since satisfaction creates loyalty and increases possibility of repetitive orders they are expected to affect the success.
of the company in e-commerce (Watson et al., 1998). This study was conducted to explore the critical success factors that affect e-commerce activities of SMEs.

**ORGANIZATIONAL AND TECHNOLOGICAL FACTORS**

**Financial resources:** Financial resources have been a significant factor affecting operations of firms due to the high investment requirements in hardware, software and employee training. Adequacy of financial resources enables firms to make necessary investments for developing superior e-business functionalities and e-business value. Zhu et al. (2003b) indicated financial resources as significant facilitators of e-business value creation in their empirical study of analyzing e-business value drivers. On the other hand, Mehrten et al. (2001) showed that financial resources are not a major factor affecting internet adoption by SMEs. Similarly, Scupola (2003) illustrated that although financial resources are an important factor in e-commerce adoption, it is not a determinant in e-commerce adoption. In the context of this study, financial resources can be defined as the budget for Information Technology (IT) and Web applications as a percentage of total revenue (Mahmood and Marr, 1993).

**Size:** Organizational size which indicates the level of operational resources of the company has been regarded as a significant factor affecting performance of companies (Lun and Quddus, 2011). It is indicated as a factor affecting organizational capability to adopt innovation positively by researchers studying organizational innovation (Lee and Xin, 2006). Similarly, in the context of e-commerce, organizational size has been found to be a significant factor affecting e-commerce adoption (Weiss, 2000; Zhu and Kraemer, 2002; Ling, 2001).

**Top management support:** Previous studies indicate that top management support has been an important factor in IS/IT adoption (Caldeira and Ward, 2002) and is a significant factor in differentiating adopters and non-adopters of e-commerce in small businesses (Mirchandani and Motwani, 2001). Since behaviors and subjective norms have strong influence on adoption intentions, managers’ attitudes must change and “social referents surrounding the adoption” must be stressed upon to motivate managers to adopt e-commerce (Nasco et al., 2008). Top management support is also a significant critical success factor for Business to Business Electronic Commerce (B2BEC) adoption (Tsao and Koong, 2004). Furthermore, Kutlu and Ozturkan (2008) indicated that business owners and managers with positive attitude towards IT tend to be more successful in adoption and implementation of new technology with the evidence from SMEs.

**IT skills and experience:** IT skills and experience of its employees are key knowledge assets of a company (Bharadwaj, 2000). IT experience can be in the form of previous experience of owner or employees with computers and 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 IT adoption. Findings from Palvia and Palvia (1999) and Sparling et al. (2007) indicate that age and experience of owner are very important factors in the success of IT adoption.

**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 include increased sales, improved communication with customers, suppliers and employees and easier order tracking (Baldwin et al., 2000). Perceived benefits are observed to be an important factor in both IT (Kutlu and Ozturkan, 2008) and e-commerce adoption (Mehrtens et al., 2001; Grandon and Pearson, 2004; Al-Qirim, 2007; Beatty et al., 2001).

**Compatibility:** Compatibility refers to the degree to which e-commerce applications are compatible with the current practices of the company such as value chain relations and firm’s processes. In the literature, compatibility is observed to be affecting the adoption of innovation (Sparling et al., 2007), the rate of adoption of innovation (Rogers, 1995) and adoption of e-commerce technologies (Kendall et al., 2001) positively.

**e-commerce age:** The e-commerce age refers to the number of years that companies have been using the e-commerce. Companies having earlier online presence are likely to enjoy first mover’s advantage (Auger, 2005). However, in their study of determinants of e-commerce website development, Korthwa and Ip Choon (2001) didn’t support the effect of website age on e-commerce website success.

**Environmental factors**

**Industry pressure:** Competitors, suppliers and customers may force small businesses to engage in e-commerce
activities (Scupola, 2003). External pressure from competitors, government and industry are of great importance in the adoption decision (Grandon and Pearson, 2004), adoption and implementation (Scupola, 2003) of e-commerce in SMEs and it is an important influencing factor in corporate website adoption (Beatty et al., 2001).

**Competition:** Existence of intense competition is a motivating factor for companies in order to differentiate and stay at least one step ahead of their competitors. As the number of competitors adopting innovation increases, small firms have more tendencies to adopt the innovation for sustaining their competitive position (Sparling et al., 2007). A positive association between the competition intensity and e-commerce adoption decisions (Al-Qirim, 2007; Zhu et al., 2003a; Wongpiromwutana and Lertwongsatien, 2003) has been identified in the literature. However, findings of Jeon et al. (2006) did not provide support for competitive pressure of the industry as a critical factor affecting e-commerce implementation success.

**External IT support:** Companies increasingly prefer outsourcing their information system developments 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. Positive association is observed between level of vendor support and successful adoption of Information Systems (IS) (Yap et al., 1992). 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. In addition, vendors can assist e-commerce adoption by providing simple explanations and recommendations about the IT systems (Scupola, 2003).

External IT support is indicated as a significant factor effecting adoption of new information system (Thong, 2001), enterprise systems (Ramdani and Kawalek, 2007; Guinea et al., 2005) and e-commerce adoption decisions (Al-Qirim, 2007) positively.

**e-commerce application properties:** The utilization of e-commerce capabilities will lead to superior performance for net enhanced organizations (Lederer et al., 2001). The e-commerce capabilities may range from static information to online order tracking and from digital product catalogues to integration with suppliers' databases (Zhu and Kraemer, 2002). Electronic commerce resources have been observed to be positively related with the firm performance (Auger, 2003). In the context of our 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. Srinivasan et al. (2002) defines interactivity as "the availability and effectiveness of customer support tools on a website and the degree to which the two-way communication with customers is facilitated".

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 and e-mail based support or other pre- and post-sale support tools (Ghose and Dou, 1998).

Previous studies on the role of interactivity in e-commerce shows a positive relationship between the level of interactivity of a website and customer loyalty (Watson et al., 1998) and e-commerce 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 and Venkatesh, 2002). Interactive characteristics of e-commerce websites have a critical role in online buying activities regardless of the shopping orientation (Kim and LaRose, 2004). Interactive search process may help e-retailer to increase the perceived value that customer places on a transaction (Srinivasan et al., 2002).

**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 et al., 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" (Srinivasan et al., 2002). A short response time which enables fast completion of transactions is one of the features of a convenient website (Schaffer, 2000). Additionally, a convenient website is expected to minimize the probability of mistakes by customers making the shopping experience more satisfying for them (Srinivasan et al., 2002).

**Content/information:** Content/information refer to the presentation of information about products and services offered on a web site. Download delay, navigation, content, interactivity and responsiveness significantly affect the success of website (Palmer, 2002). Providing
access to information and simplicity are important factors for successful completion of transactions (Srinivasan et al., 2002). Zhu and Kraemer (2002) developed a set of indicators to measure information aspect of e-commerce capabilities. These indicators are product information, search capabilities, product review and product update.

**Transaction:** Transaction dimension of e-commerce competencies is measured with 5 indicators (Zhu and Kraemer, 2002). These are buying capabilities, online order tracking, account management, return information and security.

**e-commerce performance measures:** The e-commerce success/performance refer 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 e-commerce value/performance (Geyskens et al., 2002; Albers and Clement, 2007).

In their investigation of technological, organizational and environmental factors effecting e-business use and value, Zhu and Kraemer (2005) measured firm performance by the changes in downstream sales, upstream procurement and internal operations. Similarly, Zhu et al. (2003b) used three dimensions of e-business value in terms of its impact on firm performance: impact on commerce, impact on internal efficiency and impact on coordination. In our research, different dimensions are chosen as creators of e-business value: impact on sales, impact on competition, impact on procurement and impact on overall performance. These factors of measure are preferred since they are also indicators of e-commerce performance. The following paragraphs show the strong base provided by the literature for building a research model with these variables.

**Impact on overall performance:** Companies can improve their overall performance by utilizing 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 and 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 (Sutanonpaiboony and Pearson, 2006). For these reasons, e-commerce improves the overall performance of the companies.

**Impact on sales:** The impact of e-commerce on sales can be in various ways such as increasing sales, improving customer services or widening the sales area (Zhu and Kraemer, 2002). The internet enables small companies to expand their geographical reach, to access new customers who were formerly only within the reach of larger firms (Chong, 2008), to market their products, to launch new products in a cost-effective way (van Akkeren and Cavaye, 1999). In addition, e-commerce offers direct link between customers, suppliers and distributors which reduces the costs of companies (Kaynak et al., 2005; Sutanonpaiboony and Pearson, 2006). Hence, e-commerce applications are expected to have positive impact on sales.

**Impact on competition:** e-commerce and the internet improve the competitive position of the SMEs by enabling them to extend their geographical reach and bring new customers who previously patronized only larger firms (Chong, 2008; van Akkeren and Cavaye, 1999; Nasco et al., 2008).

**Impact on procurement:** e-commerce enables companies to lower their procurement and inventory costs. Zhu and Kraemer (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). This paper conceptualizes e-commerce success as a combination of increased sales, better competitive position, improved procurement and higher overall performance driven by critical success factors such as technical, organizational and environmental. In dynamic environments, fast changing technological factors create opportunities for competitive edge. Supporting technical advantages with organizational components such as financial resources, top management support and skilled personnel may enhance e-commerce success. In the next section, these linkages are examined empirically based on data drawn from a survey of 68 small-to-medium sized enterprises.

**MATERIALS AND METHODS**

The scope of this study includes small and medium enterprises that are conducting some of their businesses
The main dimensions of the research model includes e-commerce success, impact on overall performance, impact on sales, impact on competition and impact on procurement. The literature provides both supporting and denying evidence about the influence of variables in the model. Figure 1 shows the research model.

A questionnaire has been developed based on the research model in order to obtain responses from employees/owners of SMEs that are using e-commerce to some extent. The list of contacts has been obtained from business directories and chamber of commerce databases. The pilot questionnaire has been applied to a group of respondents and then the structure of the survey has been finalized. The questionnaire involved 5 point Likert scale questions from “totally agree” to “totally disagree”. During the application period, around 2000 small business owner/employee have been contacted by e-mail. A reminder message has been sent to companies after not receiving response in 10 days. 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 due 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. The respondents are asked to select e-commerce technologies they use and 6 of the questionnaires indicating only e-mail activity which means they do not have e-commerce are taken out of sample. The sample of the study consists of a wide range of industries such as information technology (13%), machinery (10%), services (9%), textile (9%) and food related industries (7%). The companies having up to 5 employees are 44% of the sample while 31% have a maximum of 20 employees and 12% of the sample has 21-50 employees.

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**Fig. 1: Research model for e-commerce success factors**
The hypotheses of the study stand on the strong basement of the literature review. Financial resources have been observed as a significant factor affecting e-commerce adoption and usage of SMEs by Scopola (2003) and Zhu et al. (2003a). On the other hand, Mehrten et al. (2001) claim that financial factors are not influencing internet adoption by SMEs.

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 and Koong, 2004).

IT skills and experience of its employees are critical knowledge assets of the companies (Bharadwaj, 2000). When these assets are insufficient an organization has to arrange training programs for creating new IT skills or new employees with IT skills and experience are employed. Even with new employees having IT skills and experience time is needed to gain organizational experience which is unique to each and every organization due to its distinctive characteristics such as organizational culture, organizational climate, interpersonal relations, rights, privileges and norms. IT experience of owner is also an important factor in success of IT adoption (Palvia and Palvia, 1999) and e-commerce adoption (Sparling et al., 2007). When a company owner who actually has great influential power on top management explains the role of IT in achieving his/her vision, attitudes of managers will be affected and the level of priority of IT related issues in all decisions will increase.

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).

Level of compatibility and adoption of the innovation are positively related (Sparling et al., 2007; Rogers, 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).

Companies that have earlier online presence are likely to enjoy first mover’s advantage (Auger, 2005). However, Kowtha and Ip Cho (2001) could not find additional evidence for the effect of website age on e-commerce website success. Competition has been found to be a motivator factor for Small and Medium Enterprises to adopt e-commerce (Al-Qirim, 2007; Wongpmunwatana and Lertwongsatien, 2003) and IS innovations (Zhu et al., 2003b). On the contrary, Jeon et al. (2006) did not find support for competitive pressure of the industry as a critical factor affecting the e-business implementation success in Korea.

The empirical evidence suggest that External IT support is a catalyzer factor for e-commerce adoption (Yap et al., 1992; Al-Qirim, 2007), adoption of new IS (Thong, 2001) and Enterprise Systems (Ramdani and Kawalek, 2007; Guiney et al., 2005) and e-commerce.

The empirical evidence from previous studies indicates a positive relationship between the level of interactivity of a website and its performance (Auger, 2005). Interactivity which is the communication between the individual and the web site improves customers satisfaction of online shopping (Agarwal and Venkatesh, 2002), enhances customer loyalty (Watson et al., 1998), provides better perceived value that customer places on a transaction (Srinivasan et al., 2002) and has critical role in online buying activities regardless of the shopping orientation (Kim and LaRose, 2004).

Convenience refers to the capacity for letting individuals to get in and out of the web site as quickly as possible for the purpose for which it was designed such as to assist buying or selling or to find information (Feindt et al., 2002). Convenient features such as short response time enables customers to have a more satisfying experience (Srinivasan et al., 2002).

Another e-commerce property, content/information involves presentation of various messages about products and services offered on a web site. Palmer (2002) indicates that not only download delay, navigation and interactivity but also content significantly affect the success of website. Information access and simplicity are important factors for successful completion of transactions (Srinivasan et al., 2002).

The last e-commerce property in the model, transaction, is related to usage of a number of e-commerce applications which may influence the success of e-commerce activities. Zhu and Kraemer (2002) indicated positive effect of transaction related aspects of e-commerce competencies by using 5 indicators: buy capabilities, online order tracking, account management, return information and security. Based on the literature findings mentioned above the following hypotheses are developed:

- $H_1$: Performances of companies using e-commerce applications are higher than non-users of these applications
- $H_2$: Technological, organizational, environmental factors and e-commerce properties determine the level of e-commerce performance
RESULTS

The software tool used for the analysis of collected data is SPSS 17.0. The results of reliability analysis are demonstrated in Table 1. The highest Cronbach’s alpha belongs to performance measures and e-commerce properties dimensions with 0.92 while the lowest Cronbach’s alpha is 0.79 for environmental factors.

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 performance and the e-commerce technologies that SMEs use. SMEs participation in e-commerce can be through use of web site, online sales, online advertisement, online procurement, online after sale support, Electronic Data Interchange (EDI) and internet based Supply Chain Management (SCM). The respondents are asked to select the e-commerce technologies they use. Table 2 shows that as the degree of complexity of e-commerce application increases, the frequency rate of usage is decreasing. The highest level of e-commerce usage is for web sites with 91.18% and the lowest usage is for internet based SCM with 22.06%.

Table 3 shows mean values for performance measures, technological, organizational, environmental factors and e-commerce properties. The mean value for the performance measure, 3.5 indicates that respondents evaluated the impact of e-commerce on their firm performance between moderate and high. The participants have been using e-commerce applications for 3 to 6 years though standard deviation is noted to be significant. On the average, participants perceive the benefits of e-commerce at high level and evaluate the compatibility level of e-commerce applications with their current values and their strategy between moderate and high. The average size for participant firms is “5-20 employees”. Respondents evaluated the IT experience and skills of their staff as between moderate and high. On the average, participants of this survey allocate resources for e-commerce as about 5% of their sales. Top management support for e-commerce and innovations is high. Industry pressure to adopt e-commerce and competition, participants’ dependency on external IT support for continuation of their e-commerce operations has been observed to change from moderate to high. Participants’ websites offer interactive features, rich content, convenience and secure transaction methods at high level.

In order to test H1, e-commerce performance in various dimensions (impact on overall performance, sales, competition and procurement) is compared between users and non-users of various e-commerce applications by using independent samples t-tests. Companies using online sales applications have significantly higher overall sales performances. However there is no statistically significant difference between companies having online sales and companies having no online sales in regard to competition and procurement. Online advertisement creates a significant difference from competitive aspect. Online procurement does not bring significant overall performance, sales, competitive strength differences but only a significant superiority in procurement. After sales support provides significant differences in sales, competition and procurement but not in overall performance. EDI has very strong effect in a firm’s success with significantly higher overall success, sales, competitive strength and procurement capability. Internet based SCM also adds strength to a firm with significantly higher overall performance, sales and procurement capability than non-users of these applications but does
not provide a significant difference from competition aspect. Table 4 summarizes all the significant differences in performance measures between users and non-users of various e-commerce technologies and represents strong evidence for supporting H1.

In order to test H1, Pearson Correlation coefficients were calculated as a first step and statistically significant observations are illustrated in Table 5. The e-commerce performance has the strongest correlations with perceived benefits (the Pearson correlation coefficient = 0.633 (Sig < 0.05), n = 68) and financial resources (the Pearson correlation coefficient = 0.507 (Sig < 0.05), n = 66) as well as medium strength correlations with other variables.

Some variables are observed to be correlated with a large number of variables which can be a result of multicollinearity. For this reason, multicollinearity should be tested when estimating the regression model. Statistically significant correlations have been discovered between dependent variable, e-commerce performance

<table>
<thead>
<tr>
<th>Application</th>
<th>No. of users</th>
<th>Overall performance</th>
<th>Sales</th>
<th>Competition</th>
<th>Procurement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Online sales</td>
<td>36</td>
<td>Higher (0.002)</td>
<td>Higher (0.005)</td>
<td>NS</td>
<td>NS</td>
</tr>
<tr>
<td>Online advertisement</td>
<td>30</td>
<td>NS</td>
<td>Higher</td>
<td>NS</td>
<td>NS</td>
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<tr>
<td>Online procurement</td>
<td>29</td>
<td>NS</td>
<td>NS</td>
<td>Higher</td>
<td>(0.029)</td>
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<tr>
<td>After sale support</td>
<td>24</td>
<td>NS</td>
<td>Higher (0.029)</td>
<td>Higher</td>
<td>(0.040)</td>
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<tr>
<td>EDI</td>
<td>17</td>
<td>Higher (0.012)</td>
<td>Higher (0.016)</td>
<td>Higher</td>
<td>(0.008)</td>
</tr>
<tr>
<td>Internet based SCM</td>
<td>15</td>
<td>Higher (0.011)</td>
<td>Higher (0.026)</td>
<td>Higher</td>
<td>(0.027)</td>
</tr>
</tbody>
</table>

NS: Not Significant, Sig. (2-tailed) (sig < 0.05)

<table>
<thead>
<tr>
<th>Variable</th>
<th>Pearson correlation coefficients for significantly correlated variables</th>
</tr>
</thead>
<tbody>
<tr>
<td>Performance</td>
<td>Financial resources - IT experience 0.507**</td>
</tr>
<tr>
<td></td>
<td>IT experience 0.524**</td>
</tr>
<tr>
<td></td>
<td>Top management support 0.417**</td>
</tr>
<tr>
<td></td>
<td>Competition 0.492**</td>
</tr>
<tr>
<td></td>
<td>Perceived benefits 0.633**</td>
</tr>
<tr>
<td></td>
<td>Convenience 0.371**</td>
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<tr>
<td>Compatibility</td>
<td>Perceived benefits 0.530**</td>
</tr>
<tr>
<td></td>
<td>IT experience 0.534**</td>
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<tr>
<td></td>
<td>Top management support 0.682**</td>
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<tr>
<td></td>
<td>Transaction 0.372**</td>
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<tr>
<td></td>
<td>Content 0.485**</td>
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<tr>
<td></td>
<td>Convenience 0.464**</td>
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<tr>
<td>Financial resources</td>
<td>Financial resources 0.484**</td>
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<tr>
<td></td>
<td>Top management support 0.417**</td>
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<tr>
<td>Top management support</td>
<td>Transaction 0.417**</td>
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<tr>
<td></td>
<td>Top management support 0.512**</td>
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<td></td>
<td>Competitiveness 0.562**</td>
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<td></td>
<td>Convenience 0.496**</td>
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<td></td>
<td>Perceived benefits 0.306**</td>
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<tr>
<td></td>
<td>Convenience 0.358**</td>
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<tr>
<td>Competition</td>
<td>Top management support 0.492**</td>
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<td>External IT support</td>
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<td></td>
<td>Content 0.306**</td>
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<td></td>
<td>Competitiveness 0.398**</td>
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<td>Transaction</td>
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<td></td>
<td>Perceived benefits 0.372**</td>
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<tr>
<td></td>
<td>Convenience 0.689**</td>
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<td>Perceived benefits 0.457**</td>
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<td>Convenience 0.488**</td>
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<td>e-commerce age 0.244**</td>
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<td>Transaction 0.496**</td>
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<tr>
<td></td>
<td>Top management support 0.373**</td>
</tr>
<tr>
<td></td>
<td>Convenience 0.374**</td>
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</tbody>
</table>

**Correlation is significant at 0.01 level (two-tailed); *Correlation is significant at 0.05 level (two-tailed)

Although $H_2$ is supported with correlation analysis, existence of a linear relationship will prove stronger evidence. Kolmogorov Smirnov test statistic of the sample, 0.516 indicates that there is no difference between the distribution of sample and normal distribution.

In the linear 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. A stepwise regression has been used in order to include only the significant variables in the regression model. $R^2$ of the accepted regression model 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 illustrates that the 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 the acceptable limits and the final model is the following:

$$\text{e-commerce performance} = 0.321 \times \text{Financial resources} + 0.770 \times \text{Perceived benefits} - 0.220 \times \text{Content}$$

**DISCUSSION**

While every organization needs to show its existence in virtual environments for various purposes, commercial companies aim to increase their performances through e-commerce. The e-commerce is not only a growing trend but also it is irreversible (Liou and Wang, 2011). Organizations redesign their structures, business processes and IT infrastructure in order to capitalize on the opportunities provided by the internet as an effective medium of commercial transactions (Grigoryan, 2006).

This study contributes to e-commerce literature by finding evidence about significant positive and linear relation of financial resources and perceived benefits on e-commerce performance. Another contribution is that online advertisement, SCM and EDI can serve as higher e-commerce performance and sales. The last important contribution is detecting negative influence of content on e-commerce performance.

Current business issues in e-commerce are related to security and privacy, processing capabilities and order fulfillment. The e-commerce storefront should be kept free of popup, secure all transactions with latest security standards, respect the privacy of visitors and be protected from any security threats. The speed and accuracy of order fulfillment with secure payment processing by including all pay methods and allowing customers to track their order online, real time are the most important e-commerce issues. Although this study does not have a focus for security related issues, other areas of current concern are covered in the study. Applications of current interest such as online sales, online advertisement, online procurement, after sales support, EDI and internet based SCM are among the main components of order fulfillment process and processing power of e-commerce web site. Our study shows that EDI provides significant superiority in sales, competition, procurement and overall performance. EDI increases the speed of processing between trading partners and decreases errors and costs by allowing a company to have benefits of storing and using data electronically without paper work.

There are a number of previous studies searching for the success factors of e-commerce. Zhu *et al.* (2003b) determined financial resources as being critical in achieving e-commerce objectives. However, Scupola (2003) and Mehrsen *et al.* (2001) discussed that financial resources are not major determinants in e-commerce adoption. In this study, financial resources provided additional evidence to literature by showing a positive effect on e-commerce performance. Since financial resources have been defined as the ratio of budget for e-commerce to sales, any incremental spending on e-commerce will return as improvement in e-commerce performance.

Variables such as market orientation, innovative capacity and strategic flexibility can be predictors of e-commerce capacity hence the level of organizational performance in virtual environments (Jehangir *et al.*, 2011). According to our research online advertisement, SCM and EDI helps to increase e-commerce performance and sales. However most of the related applications are Web 1.0 based. There are new opportunities with Web 2.0 service such as blogs, wikis, social networking websites, tagging, social bookmarking, multimedia sharing, podcasting and RSS. Usage of these new Web 2.0 tools in SCM and EDI will bring improved e-commerce performance (Ooi *et al.*, 2011).

Perceived benefits are the advantages that are offered by e-commerce in comparison to the traditional ways of
doing business. Importance of perceived benefits in affecting e-commerce adoption has been emphasized in the literature by a large number of researchers (Mehrteras et al., 2001; Kutlu and Ozutan, 2008; Grandon and Peanson, 2004; Al-Qirim, 2007; Beatty et al., 2001). The results of this study's research model confirm the findings in the literature. In companies where the employees perceive benefits of e-commerce more, superior performance in e-commerce is experienced. Additionally, our research shows that the contribution of perceived benefits in e-commerce performance is higher than the contribution of financial resources as it can be seen in regression equation. The study indicates that increasing perceived benefits by training employees about the potential gains of e-commerce will improve the performance in e-commerce.

Although content is found to be a significant factor affecting success of websites in the literature (Palmer, 2002; Srinivasan et al., 2002), in this study, content is observed to have a negative effect on e-commerce success. The negative relationship between content and performance of the e-commerce can be a result of the complexity created with the abundance of information which leads to more confused customers hence lowers e-commerce performance. Website of the firm does not only provide information but also collects information about customers. As customers move to be information sources they become knowledge partners of the firm (Zanjani et al., 2009). Since there is interaction with customer, website content deserves a strategic focus and attention.

CONCLUSION

This study analyzed success factors of e-commerce in SMEs and showed that SMEs using online sales channel have better overall performance and higher sales when compared to SMEs with no online sales. Online advertising brings more competitive strength and online procurement leads to improved performance in supplier related activities. While after sales support increases sales, competitive strength and procurement, internet based supply chain management improves overall performance along with sales and procurement. Electronic connections between suppliers and the organization facilitate efforts for purchasing materials that are necessary for production and allow better inventory control, faster stock replenishment and on time delivery of customer orders. Companies having EDI achieve higher overall performance, sales, competitive strength and procurement capabilities when compared to companies having no EDI. Based on their priorities, each organization can decide which e-commerce technology to use for improving their performances in the desired dimensions. For example, a company decides to improve e-commerce performance in sales, managers should consider using online sales, after sales support, EDI and internet based supply chain management in their e-commerce system.

The study has strong implications for managers about resource allocation and e-commerce strategies. Managers should allocate more financial resources to e-commerce for achieving higher e-commerce performance and they should take measures to improve the understanding of advantages of e-commerce among their employees. Training programs will increase awareness about benefits of e-commerce. Adequate financial resources allow firms to make necessary investments to develop superior e-business functionalities enabling them for realizing the potential e-business value. Due to the negative effect of content on e-commerce success, they should be selective about the content they are providing on their website.

Critical success factors of e-commerce may not be the same for different industries. Therefore this research can be repeated with a greater sample for multiple industries. The sample should contain enough number of companies to represent each specific industry. In addition, the scope of the study can be extended internationally and critical success factors for different countries can be compared in a multinational sample.

REFERENCES


