

The Application of Electronic Commerce among Small and Medium Enterprises: from Business Processes View

Asghar Afshar Jahanshahi

Research Scholar in Business Administration, Department of Commerce and Research Center
University of Pune, India,

Phone: 00919890581970, E-mail: Afsharasghar@yahoo.com

Seyed Mohammad Sadeq Khaksar

Master of Information Technology Management

University of Sistan & Bluchestan, Iran

E-mail: sms_khaksar@yahoo.com,

Morteza Jamali Paghaleh

Department of Industrial Engineering, Young Researchers Club

Islamic Azad University, Zahedan Branch, Iran

E-mail: morteza1362@gmail.com

Prof. Dr. Bairagi Kachardas Pitamber

Faculty member, Department of Commerce and Research Center

University of Pune, India

Abstract

Electronic Commerce (EC) has changed and is still changing the way business is conducted around the world. The commercialization of the Internet has driven Electronic Commerce to become one of the most promising channels for inter-organizational business processes. E-commerce evolved in various means of relationship within the business processes. It can be in the form of electronic advertising, electronic payment system, electronic marketing, electronic customer support service and electronic order and delivery. In India, many small and medium enterprises are investing more and more in the Internet business. In order to survive in today's challenging environment, it is imperative that SMEs be competitive and resilient. So, the main purpose of this paper is to study the effect of electronic commerce applications on the business processes in the small and medium enterprises. For analyzing the data derived from questionnaire Regression and ANOVA test were used. According to statistical analysis in this research the results indicates that the electronic commerce applications has a significant and positive impact on the business processes of Indian SMEs.

Keywords: electronic commerce, small and medium enterprise, business processes, management processes, India

1. Introduction

According to Sandy (2006) it has been observed and verified in many studies that small and medium enterprises have been actively looking for suitable solution and methods of adopting and integrating electronic commerce into their business process (Jansen-Vullers, and Reijers, 2004; Sandy, 2006; Dos Santos and Peffers, 1998; Cragg and King, 1993; Benbasat, et al. 1993; Purao and Campbell, 1998; Massey, 1986). Electronic commerce is not just another mechanism to sustain and enhance existing business practices. It is a paradigm shift that is radically changing traditional ways of doing business. (MacGregor and Vrazalic, 2008; Kendall & Kendall, 2001; Kuljis et al, 1998; Fuller, 2000). Many companies have found out the hard way that successful e-commerce requires more than a flashy web presence. Existing business processes must be seamlessly integrated with the new, electronic form of interaction with suppliers and customers (Jansen-Vullers, and Reijers, 2004). Despite this insight, little research has focused on the relationship between business process and successful adoption of electronic commerce. This study focuses on small and medium Enterprises for two key reasons. First, they are important to economic development in developing countries such as India. The second reason is that they are in a very good position to adapt to new technology like e-commerce; they may be able to adapt faster than larger companies that can slowed by bureaucracy and stricter staffing hierarchies.

2. Aim of study

In the present world of globalization, small and medium enterprises (SMEs) are key actors in almost every production system. This paper presents research conducted on small and medium enterprises in India in order to find an impact of electronic commerce on their business processes.

A business process can be decomposed into several sub-processes, which have their own attributes, but also contribute to achieving the goal of the super-process. These sub-processes are including: management, supporting and operational processes. So, The main focus of our research is investigation of e-commerce usage in SMEs, especially different e-commerce applications such as: electronic advertising, payment system, marketing, customer support service and order and delivery , and also, to explore in what extent the usage of e-commerce change, if any, performance of business processes in Indian SMEs.

3. Review of the literature

3.1 Concept of business processes

Many organizations are becoming ever more focused on their business processes. According to Davenport and Short (1990), A business process can be defined as “a set of related tasks performed to achieve a defined business outcome”. Hammer et al., (1994) believed that, a business process is a set of partially ordered activities aimed at reaching a well defined goal. Typically, there are different ways to characterize various types of business processes in an organization. According to literature review (Rummler & Brache 1995; Ulric et al, 2008; Bibiano et al. 2006; Lezoche, 2008 and Thackeray (2009)), most common types of business processes are included: management processes, operational processes, supporting processes. The following table shows briefly the various types of business processes in the different organizations.

Insert Table (1) about here

The management process is a human-made system consisting of the people, authority, organization, policies, and procedures whose objective is to plan and control the operations of the organization (Ulric et al 2008). Operational processes, processes that constitute the core business and create the primary value stream. Typical operational processes are Purchasing, Manufacturing, Advertising and Marketing, and Sales. Supporting processes, which support the core processes. Examples include Accounting, Recruitment, Call center, Technical support.

3.2 definition of Small and medium enterprises in India

Previous literatures used to define SMEs from different perspectives such as defining based on number of employees, paid-up capital, sectors of operations, and also the intensity of investment incurred. As such there is no one acceptable standard about defining SMEs (Abdullah, 1997). Enterprise in India is broadly classified into two categories: Manufacturing and those engaged in providing/rendering of services. (Ravi, 2009) The” Micro, Small and Medium Enterprises Development (MSMED) Act, 2006” is the first Act for MSMEs which, provides for establishment of a statutory National Board for Micro, Small and Medium Enterprises, filing of memoranda, measures for promotion, development and enhancement of competitiveness of MSMEs, credit facilities, procurement preference and provisions related to delayed payments to micro and small enterprises. The medium sector has been defined for the first time in India and Micro enterprises have been defined for the first time in this Act. Under the MSMED Act 2006, the earlier, rather limited, concept of ‘Industries’ has been widened to that of ‘Enterprises’ (Ghatak, 2010).

Insert Table (2.1) about here

Insert Table (2.2) about here

3.3 Applications of Electronic commerce

E-commerce is changing all business functional areas and their important tasks, ranging from advertising to paying bills. Electronic commerce has attracted significant attention in the last few years. This high profile attention has resulted in significant progress towards strategies, requirements, and development of e-commerce applications (Upkar, 2002; Kalakota and Robinson, 1999 and Afshar et al, 2010). The earliest electronic commerce studies can be traced back to those published in 1994 (Cronin et al., 1994; Barker, 1994). Barker (1994) provided one of the first surveys on how small businesses used the Internet for business purposes. Cronin et al. (1994) discussed how e-commerce might change how competitive intelligence was being gathered. They also discussed briefly how small businesses could benefit from such a tool.

In the next year or so, more research was published focusing on SMEs and e-commerce (e.g., Cockburn & Wilson, 1995; Dou, 1996; Fuller & Jenkins, 1995; Poon & Swatman, 1995). Since then, much has been published from the perspective of information systems, marketing, and management (Cited in Poon and Huang, 2004). Turban et al (2002) define e-commerce as: “An emerging concept that describes the process of buying, selling, or exchanging services and information via computer networks”. Raymond (2001) defines e-commerce as: “The functions of information are exchange and commercial transaction support that operate on telecommunications networks linking business partners (typically customers and suppliers).” Although there are many different types of e-commerce applications, we can group them according to categories. The following table shall describe five different categories of electronic commerce applications in small and medium enterprises.

Insert Table (3) about here

Thus, we may hypothesize that:

H1: Electronic commerce Applications has a significant and positive impact on business process in small and medium enterprises

H1.1 Electronic order and delivery has a significant and positive impact on business process in small and medium enterprises

H1.2 Electronic marketing has a significant and positive impact on business process in small and medium enterprises

H1.3 Electronic customer support service has a significant and positive impact on business process in small and medium enterprises

H1.4 Electronic advertising has a significant and positive impact on business process in small and medium enterprises

H1.5 Electronic payment system has a significant and positive impact on business process in small and medium enterprises

4. Study Population and Sample

In this study we used *Stratified Random Sampling* for collect necessary data. The population of the research will be all the Small and Medium Enterprises in Pune which are using E-commerce applications and own internet website which is estimated to be 395 units. Out of 395 units, a sample of 120 SME units is to be taking to obtain the primary data. Therefore, 150 questionnaires have been distributed in 3 months period between population samples randomly. After several attempts, only 135 responses were collected. Through the data screening process only 121 responses found to be usable for further analysis.

Insert graph (1) about here

As we can observe from the above graph, the survey sample consisted of representatives from two major groups, namely: the Manufacturing Sector and the Service Sector. The results show that most firms in the sample belong to the manufacturing sector. Of the 121 respondent firms,

- ✓ 58% (70 firms) belong to the small sized enterprises
- ✓ 42% (51 firms) belong to the medium sized enterprises

And On the other hand

- ✓ 53% (64 firms) belong to the manufacturing sector
- ✓ 47% (57 firms) belong to the service sector

5. Research Methodology

In this study, because of dealing with testing the effect of electronic commerce variables on business processes, from the aiming view point is practical and from method of data collection and analysis view point is descriptive and is of correlative type.

6. Research instrument

A questionnaire, designed to assess the impact of electronic commerce applications (electronic marketing, advertising, order and delivery, costumer support service and payment system) on business processes in the small and medium sized enterprises. Respondent were asked to indicate their extent of agreement using a five point likert scale (with 5 = completely agree, to 1 = completely disagree).

7. Testing hypotheses of the study using Regression test and ANOVA

For this reason and for all hypotheses of the study below test assumption has been used at 95% confidence interval.

$$\left\{ \begin{array}{l} H_0: \beta_i = 0 \\ H_1: \beta_i \neq 0 \end{array} \right. \quad \begin{array}{l} \text{Null hypothesis: Regression is not significant} \\ \text{Alternative hypothesis: Regression is significant} \end{array}$$

Insert Table (4) about here

The above Table shows regression test for hypotheses of the study. As can be seen R and R square of second and fourth sub- hypotheses are high. Therefore, we can assume a high correlation for variables of these hypotheses. As significance (sig.) in, second, third and fourth sub-hypotheses are less than 0.05 therefore, these hypotheses are approved. So, applications of electronic marketing, advertising and costumer support services have a significant and positive impact on business process in small and medium enterprises. On the other hand, Sig. in first and fifth sub-hypotheses are more than 0.05 therefore, these hypotheses are rejected. Finally, As can be seen in the table above, the correlation coefficient (.443) in Main hypothesis shows a good correlation between the electronic commerce applications and the business processes and the results analyzed by ANOVA and Coefficients shows significant in regression and coefficient β in Regression equation (sig=0.000<0.05 , 0.01). Therefore, main hypothesis of the study is confirmed.

According to statistical analysis in this research the results indicates that the electronic commerce applications has a significant and positive impact on business process in three sections: marketing, advertising and customer support system.

8. Conclusion

With the direction of major companies to online transactions and the growth of electronic commerce accelerating growth and entering the world economy, as one of the most important features of the modern digital economy, small and medium enterprises are still lagging behind larger organizations in the adoption and evaluation of e-commerce despite the benefits it offers. This study presents research conducted on small and medium enterprises in India in order to find an impact of electronic commerce on their business processes. There are many different types of e-commerce applications; we can group them according to five categories: electronic marketing, electronic advertising, electronic order and delivery, electronic payment system and electronic customer support service. As a result, Use of the electronic commerce in Indian SMEs can have a positive impact on the business processes in three main sections: marketing, advertising and customer support services. In India, electronic commerce have created new cost effective means for both small and medium enterprises in order to enhance their customer relations, Provide product information to customers, Tracking incoming and outgoing goods delivery and Share information with competitors, customers and suppliers.

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Table 1: Various types of business processes

Author	Various types of business processes
Davenport and Short (1990) Wenhong and Tung (1999)	Entities (inter-organizational, inter-functional, and inter-personal processes) Objects (physical and informational processes) Activities (operational or managerial processes)
Harrington (1991)	Production processes Business processes
Davenport (1993)	Customer-facing processes Product and service development processes Delivery processes Management processes
Rummler & Brache (1995)	Primary processes Support processes Management processes
Denna et. al. (1995)	Acquisition/payment Conversion Sales/collection
Lind (2006)	Condition-creating processes Providing processes Delivery processes
Bibiano et al. (2006) Lezoche (2008) Thackeray (2009)	Management processes Operational processes Supporting processes
Ulric et al (2008)	Information process Management processes Operational processes

Table 2.1: Definitions before 2 October 2006 (Ravi, 2009)

Investment ceiling for plant, machinery or fixed assets (land & building)		
Classification	Manufacturing enterprises	Service enterprises
Micro	Up to Rs. 2.5 million (US\$ 50,000)	Up to 1 million Rs. (\$ 20,000)
Small	Between 2.5 & 10 million Rs (\$ 50,000 & \$ 0.20 million)	Up to 1 million Rs. (\$ 20,000)
Medium	Not defined before 2006	Not defined before 2006

Table 2.2: Definitions after 2 October 2006 (Ghatak, 2010)

Investment ceiling for plant, machinery or equipments		
Classification	Manufacturing Enterprises*	Service Enterprises**
Micro	Up to Rs. 2.5 million (US\$ 50,000)	Up to Rs. 1 million (US\$ 20,000)
Small	Rs. 2.5 to Rs. 50 million / (US\$ 1 million)	Rs 1 to 20 million Rs (US\$ 40,00,000)
Medium	Rs.50 million to Rs.100 million (US\$ 2 million)	Rs 20 to 50 million Rs (US\$ 1 million)

* Investment limit in Plant & Machinery ** Investment limit in equipments *** Rs 50 = 1 USD

Table 3: five different categories of electronic commerce applications

Different Applications of E commerce	Description	Researchers
Electronic Advertising	<ul style="list-style-type: none"> ✓ Provide product information to customers ✓ Displaying company information on website ✓ Online electronic brochures or buying guides ✓ Display only a range a products which are relevant to the particular customer 	Block et al. (1996) Ainin, and Jaffar, (2003) Soh et al. (1997)
Electronic Customer Support Service	<ul style="list-style-type: none"> ✓ Online help- Frequently Asked Question ✓ Online products update ✓ Handling customers feedback/queries online ✓ Online application/registration ✓ Personalized email communication 	Turban et al. (2000) Ainin, (2000) Fatimah, et al. (2000)
Electronic Marketing	<ul style="list-style-type: none"> ✓ Allowing a customer to contact a sales office ✓ Share information with competitors, customers and suppliers ✓ Using internet to find out customers’ needs and wants ✓ Using internet for anticipating customer needs ✓ Achieving customer satisfaction through the electronic channel 	Arie et al (1995) Block et al (1996) Johnson, (2003) Kotler, (2000) Smith & Chaffey (2005)
Electronic Payment System	<ul style="list-style-type: none"> ✓ Electronic Fund Transfer(EFT) ✓ Online credit card processing ✓ Electronic money ✓ Smart and prepaid card 	Lawal, (2010) Block et al. (1996) Zwass, (1998) Fatimah, et al. (2000)
Electronic Order and Delivery	<ul style="list-style-type: none"> ✓ Coordinating procurement with suppliers online ✓ On-line ordering of software products ✓ Lower costs per business transaction ✓ Tracking incoming and outgoing goods delivery ✓ Online order entry and delivery ✓ Electronic Data Interchange(EDI) 	Johnson, (2003) Oakes (2002) Turban et al. (2000) Fahri and Omar (2001)

Graph 1: Number of SMEs in multiple sectors

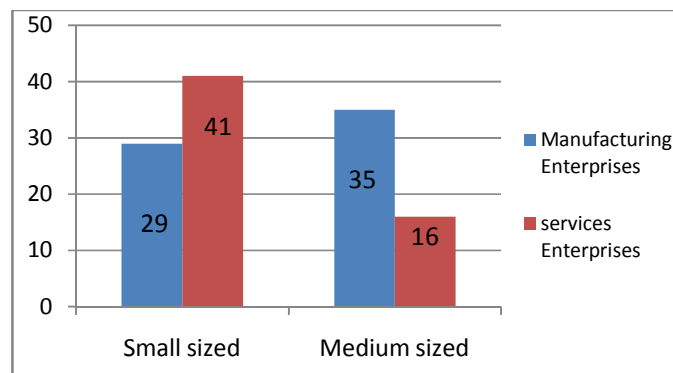


Table 4: Regression and ANOVA test for hypotheses of the study

Research Hypotheses	R	R Square	Adjusted R Square	Std. Error of the Estimate	Sig.	Result
First sub-Hypotheses	.133	.018	.009	.41722	.145	Rejected
Second sub-Hypotheses	.348	.121	.114	.39465	.000	Confirmed
Third sub-Hypotheses	.175	.031	.022	.41447	.045	Confirmed
Fourth sub-Hypotheses	.462	.213	.207	.37335	.000	Confirmed
Fifth sub-Hypotheses	.086	.007	.000	.41939	.346	Rejected
Main Hypotheses	.443	.196	.190	.37737	.000	Confirmed