Impact of Information System on Firm's Performance: Small and Medium Enterprises (SMEs) in Bangladesh

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ABSTRACT

The challenge for Bangladesh today is how to make her existing SMEs better able to compete with their SME rivals from abroad. One way to overcome this challenge is by modernizing their operations with the inception of contemporary technologies into their production processes. Along with this comes the challenge of aligning and enhancing the prevalent culture and practices in line with the needs of these new industries so as to ensure not only survivability but also effectively compete globally. Globalization, as one knows, does not only have challenges but also enormous opportunities for those who have the capability of utilizing this phenomenon. The major issue that is implied for this to take place is the ability to adopt not only any technology but having the ability to choose the most appropriate technology. The primary purpose of this study is to investigate the impact of information systems on the performance of SMEs in Bangladesh which more often than not is related to technology adoption. To accomplish this objective, data was collected through the use of questionnaires from the samples which targeted the organizations operating in the industrial zone in Dhaka, Bangladesh. From the data analysis conducted the results indicate a positive relationship between ease of use ($IV^{1)}$ and skills and knowledge (IV^{2}) with the performance (DV) of SMEs in Bangladesh.

Keywords: Information Systems, Ease of Use, Performance, SME, Bangladesh.

1. Introduction

The economy of Bangladesh is at a crossroad. Rapid liberalization has put most existing industries under severe strain because of their inability to compete with consumer goods being freely imported from abroad after the withdrawal of quantitative restrictions on imports coupled with the drastic reduction of import tariffs. Some producers have been successful in enhancing their products and significantly increasing their external market access, while are majority are languishing. The challenge at present is identify the needs that will allow the local SMEs to compete with top class branded products which are abundantly available in the local market. The challenge before Bangladesh today is how to better equip her existing SMEs to compete with foreign SMEs who are marketing their products in Bangladesh. One avenue open to these SMEs to overcome this challenge is to modernize by incorporating up-to-date technologies into their production processes. Along with this comes the question of how to develop the appropriate culture and practices required when setting up new industries which will be able to thrive when faced with global competition. Globalization does not only pose challenges but also provides enormous opportunities for those who have the skills and capabilities to take advantage of it. Therefore the issue here is the choice of the correct or in other words the most appropriate technology to realize the chosen strategy.

Most information systems (IS) adoption research studies involving SMEs have identified the factors that most influence IS adoption behaviour by organizations both big and small. Closer inspection of

these studies reveals that only a limited number of factors actually influence the adoption behaviour. External expertise as well as the skills and knowledge of top management are some of the important factors that influence IS adoption by SMEs (Chau and Hui, 2001). Perceived benefits are also an important factor affecting SMEs willingness to adopt IS (Levy and Powell, 2003). The rapid growth of technological innovations and the diffusion of information technology have drastically changed the way companies compete. Many business enterprises today are implementing information technology (IT) for the purpose of gaining competitive advantage in their industry. In its various manifestations, IT processes data, gathers information, stores collected materials, accumulates knowledge and expedites communication (Chan, 2000). Gaining competitive advantage through the use of information technology requires business owners to have a firm grip over this vital corporate resource and manage its use (Beheshti, 2004).

IT is recognized as a viable, competitive actor via increased productivity, better profitability, and value for customers (Hitt and Brynjolfsson, 1996). Role of IT in competitiveness has been primarily focused on large organizations. However, in today's global market, and in the era of e-commerce, small and medium sized enterprises (SMEs) can employ IT to increase their competitive position along with their larger counterparts (Beheshti, 2004). Barau *et al*. (2001) for example found that small businesses were utilizing the Internet more than their larger counterparts. In order to take full advantage of IT and to compete effectively in the global business environment, top executives must recognize the strategic value of IT and exploit it accordingly to their advantage. However, there has been little research on the factors inducing small and medium-sized firms (SMEs) to introduce information technology as a means to compete (Premkumar, 2003; Morgan et al., 2006). SMEs are the growth engine many economies in the world. They contribute a major proportion of towards the growth of national GDPs. For instance, in the United States, small businesses create two-thirds of the new jobs, produce 39% of the gross national product (GNP), and generate more than half of the technological innovation (Kuan and Chau, 2001). In Europe, 99.8% of the firms are SMEs, responsible for two-thirds of turnover and business employment (Carayannis et al., 2006).

Small and medium business enterprises, being the economic pillars that they are, need to respond to the competitive environment that they face presently. In many countries, small and medium business enterprises play an important role in the creation of employment and generating economic growth. This said Bangladesh is no different, especially because the country is primarily driven by small and medium business enterprises. These enterprises within Bangladesh lend towards rural growth by increasing income when its people seek employment in the towns and cities. SMEs also have an important role in creating employment opportunities and generating income, especially in rural areas (Tambunan, 2000). Small and medium business enterprises play an important role in supporting economic growth in Bangladesh.

Most of the previous research has centred on large firms. Some studies suggest that information system theories and practices developed for large firms may not be suitable for smaller entities (Premkumar, 2003). SMEs are different from large firms in several ways. In SMEs, decision-making is centralized, with a small number of employees where standard operating procedures are not well laid out with limited long-term planning and a higher degree of dependence on external expertise and services for information systems use (Premkumar, 2003).

2. Literature Review

The study of people's reactions to computing technology has been an important topic in IS research since the 1980s. The theoretical foundation for the study of whether a person is willing to use a technology comes from research on adoption and diffusion (Moore and Benbasat, 1991; Rogers, 2003).). Researchers have studied different aspects of the phenomenon and have produced insights

into the cognitive, affective, and behavioural reactions of individuals to technology and into the factors which influence these reactions. No theoretical framework has been more successful at this than the TAM by Davis et al. (1989).

2.1 Information System and Firm's Performance

SMEs information systems implementation and success have been extensively researched. Recent research development focuses on the relationship between firms and its strategic alignment with information systems (Li and Ye, 1999). These studies suggest that there are positive relationships between the strategy of the firm and information technology. A study conducted by Shin (2001) discovered that IT investments will be more efficient if the systems implementation is aligned with the firms' strategy.

This argument is supported by Cragg et al. (2002) when asserting that IT implementation which is aligned with business strategy had a positive impact on firms' performance. In addition, Davenport (1998) highlighted the importance of having a good fit between the firms' requirement and technology capabilities. The mismatch between what is needed by the firms and service offered by the new technology will yield poor performance. Nevertheless, HyvOnen (2007) opined that sophisticated information technology aligned with ineffective performance measure will yield lower performance outcome. This raises the need for careful planning and a strong justification process be undertaken before a firm reaches the decision to implement an information system. This issue is more profound within SMEs due to their limited resources and experience in the IT field (Mitchell, Reid, & Smith, 2000).

Many firms invest in advanced information technology aiming to collect as much information as possible to assist in the decision making (performance) of the firm which will eventually lead to improved efficiency and enhance the firms' profitability. Studies have shown that firms' that acquire extensive IT resources are able to create enforceable competitive advantage (King, 1989). Nevertheless, prior researches have difficulty providing evidence on the positive relationship between IT investments and firms' performance (Mahmood & Mann, (1993), Ismail, (2007). Bitler (2001) investigated the relationship between information technology investment and small firms' performance, using a regression model. Results of his study found that there was a significant performance difference between firms adopting information technology and those who are non-adopting information technology.

2.2 IS Skills and Knowledge

Top management with higher levels of IS skills and knowledge have a better understanding of the perceived net benefits of ISs and in most instances will be more comfortable and enabled to use and utilize IS (Thong, 2001). In addition, SMEs are likely to rely on external experts during their IS implementations (Thong, 2001). Thus, the support from the external experts' makes it easier for SMEs to understand the perceived net benefits that can be realized from becoming enabled and utilizing IS (Lee, 2004).

Despite the significant contribution that IT has made to business, many studies indicate that there are a large number of unsuccessful IT implementations in SMEs and that the adoption rate is very slow (Shin, 2006). Research has given three main reasons for this. First, management doesn't know or is unclear on how and why their firms adopt IT in the first place (Levy et al., 2001). Second, there is a misconception toward the IT adoption process mainly because managers do not understand the relationship between IT and the firms themselves (Bull, 2003) or are uncertain about the opportunities that IT can offer (Southern and Tilley, 2000). Finally, firms do not have the capabilities to expand

their IT resource (Claessen, 2005) because of lack of business and IT strategy, limited access to capital resources, emphasis on automating, influence of major customers and limited IS skills (Bruque and Moyano, 2007).

2.3 Ease of Use

Davis (1985] defined perceived ease of use as, the degree to which an individual believes that using a particular system would be free of physical and mental effort. Tornatzky and Klein's (1982) suggested that, support for the importance of perceived ease could be found in the meta-analysis of innovation adoption. Similarly, Swanson's research (1982) provided evidence that perceived ease of use is an important behavioural determinant. Swanson hypothesized that potential users will select and use information reports based on a trade-off between perceived information quality and associated cost of access. Davis (1985) concluded that people tend to use or not to use a system to the extent that they believe it will help them perform their job better and also that the beliefs of the efforts required to use a system can directly affect system usage behaviour (perceived ease of use).

3. Method

The primary data for this quantitative research was collected by using questionnaires. They were randomly distributed to samples consisting of managers in SMEs in Bangladesh. Randomly 150 managers were selected from industrial areas in Dhaka, Bangladesh. The questionnaire was distributed personally to the managers by an appointed research assistant. These research methods are important to gather information such as users' preferences, opinions and suggestions.

There are two independent variables. Knowledge and skills related questions have been adopted from D.C. Yen et al (2003). Ease of use variable questions adopted from the Technology Acceptance Model (Davis, 1989). The dependent variable of firm performance and the related questions have been adopted from the Slone (2006).

4. Findings

The result of correlation has indicate that Ease of Use of information system has a positive correlation with performance of SME with the value $r = 0.954$, $p < 0.01$.

Table 1.

Correlation of Ease of Use, Skill Knowledge and Performance of SME

Variables	**1**	**2**	**3**
Ease of Use	1.00		
Skill Knowledge	0.27**	1.00	
Performance of SME	0.95**	0.99**	1.00

Skills and knowledge of information system has a positive correlation with performance of SMEs in Bangladesh with the value $r = 0.99$, $p < 0.01$.

Thus, in this study, all the independent variables are correlated with the dependent variable performance of SME. It indicated that among the manufacturing firms in Bangladesh the aspects of an information system have a strong influence on SMEs performance.

The result revealed in regression that the ease of use coefficient of determination (R^2) is 0.91, representing that 91 % of the cases will be correctly predicted by the regression equation and 9% was not. The variable had a tolerance value of more than 0.10 and a variance inflation factor (VIF) of less than 10. Besides that ease of use has ($\beta = 0.91$, $p < 0.01$) positive impact on SMEs performance in Bangladesh.

Table 2

Regression of Ease of Use with Performance of SMEs

	Standard Beta
Ease of Use	0.95**
R^2	**0.91**
F Change	983.402
Sig. F Change	**0.00**

Based on the linear regression the result is statistically significant; $F(1, 98) = 983.402$, $p < 0.01$. It indicated that there is a positive relationship between ease of use and firm's performance of SMEs in Bangladesh. The skills and knowledge variable had a significantly high positive correlation (0.99). The coefficient of determination (R^2) is 0.99, representing that 99% of the cases will be correctly predicted by the regression equation and 1% not. The variable had a tolerance value of more than 0.10 and a variance inflation factor (VIF) of less than 10.

Table 3

Regression of Skill and Knowledge with Performance of SMEs

	Standard Beta
Skills and Knowledge	**0.99****
R^2	**0.99**
F Change	**857.78**
Sig. F Change	**0.00**

The beta values for the skills and knowledge was significant. This implied that the knowledge and skills has a positive influence on SMEs performance in Bangladesh. Specifically, the result revealed that skills and knowledge has ($\beta = 0.99$, $p < 0.01$) positively related with SMEs performance in Bangladesh.

5. Conclusion

The result of this study has confirmed the direct relationship between ease of use and skills and knowledge with the performance in small and medium sized firms in Bangladesh. The result of

correlation and the regression in assessing the variables of the empirical relationship between independent and dependent variables were positively significant as hypothesized. The positive association between independent and dependent variable was supported. Furthermore, empirical research supports the theoretical framework developed for this study. Analyzing IS adoption is a scientific activity and as a combination of representing (theory) and empirical research to explore the technology acceptance of information system in SMEs.

The results of correlation, the regression in assessing the variables or the empirical relationship between ease of use, skills and knowledge contribute were positively related to firm performance of SMEs in Bangladesh.

The set of items that correspond to each theoretical construct was initially subjected to an examination of Cronbach's alpha which was confidently reliable at more than 0.7 as recommended. Thus, all measures in the ease of use, skills and knowledge and performance of SMEs items appeared internally consistent, reliable and valid. The high influence between the independent variables and the dependent variable confirmed the hypothesis. The main objective (to measure the relationship between the IVs and the DV) is achieved and thus, it clearly concludes the relationship and level of influence of ease of use, skills and knowledge on SMEs performance in Bangladesh.

With regards to the factors, and in the context of SMEs, the findings of this study demonstrate that various elements influence the adoption of information systems. First, there is a broad consensus on the part of the respondents that the adoption is motivated by the growth experienced by the firm. Growth makes it necessary for firms to adopt new and more powerful technological growth solutions. This conclusion is in line with other research demonstrating the importance of size in technology adoption models for SMEs (Premkumar, 2003).

In the race to win the competition among countries, a country should respond to technological change by enhancing its ability to utilize and adopt the resource (IT) not shy away from it. However, the globalization of the economy is forcing many businesses to change in order to survive in this competitive era (Guinea et al, 2005). The ability of a national economy to adapt with the changing demands has been associated and achieved by the flexibility and responsiveness of small and medium business enterprises (Hunter & Long, 2003).

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