Impact of Information and Communication Technology (ICT) on the Development of Small and Medium Enterprises (SMEs): An Insight from Bangladesh

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ABSTRACT: *In this promising country, Information Communication Technology is the key to instill paradigm shifting. Bangladesh, having diversified economy, is performing abject the potential. However, it is a good sign that Bangladesh Government is recognizing the importance of small to medium enterprise (SMEs) for the greater economic growth. SMEs encounter many challenges including shortage of skilled labor, limited access to capital, and poor access to IT. This paper demonstrates an investigation into the Information Communication Technology (ICT) strategy of SMEs in Bangladesh using questionnaires and case studies to find out whether ICT strategy is used in SMEs in Bangladesh and also the current scenario of SME in Bangladesh, the impact of ICT in SME in Bangladesh, measures for growth of SME in Bangladesh. It was noticeable that most of the Bangladeshi SMEs don't have the required structure to effectively formulate the ICT strategy. However it was found from three case studies that organizations operating with a structured hierarchy proved to be far more advanced with regard to ICT strategy planning. On top of that, communication between levels was more efficient: that is why alignment of ICT strategy with business strategy was indispensable. It was also noticeable that top management influence is present at the decision making stages and through implementation, and ICT planning is undertaken in some way by Bangladesh SMEs.*

1. Introduction

A business for Small and Medium Enterprise (SME) is an organization that provides goods and services to others who want or need them. The success or failure of an SME depends on the following key areas of internal and external activities and environment, e.g., ICT, management, marketing, finance, production, distribution, research and development, labor, government policies and regulations, and business environment. SMEs are one of the indispensable ways to economic self-sufficiency around the world. Small and Medium Enterprises (SMEs) are in general labor-intensive industries with low capital investment; From the Government of Bangladesh literature and policy is shown for considering private sector-led industrial development to achieve rapid economic growth and also to strengthen the process of industrialization. The government has identified the SMEs as a priority sector. Thus in Bangladesh, SME businesses have come to the forefront of economic activity. Manufacturing sector in Bangladesh has been contributing at a consistent rate of around 15 percent over the last decade. SMEs in manufacturing and services combined have 19 percent share of gross domestic product (GDP). A nationwide survey claims that Micro, Small and Medium Enterprises' (MSMEs) value addition accounts for 20 to 25 percent of Bangladesh's GDP. There are about 6 million

micro, small and medium enterprises (MSMEs) in Bangladesh in 2003. It is adopted only 28% labor force. Improving the performance and sustainability of local entrepreneurs and SMEs, which represent the backbone of economic activity, can help to achieve vision 2021. To achieve a planned and organized industrialization to meet the challenge of free market economy and globalization through SMEs are also analyzed of this paper. The managerial challenge consists of creating new knowledge management (KM) configurations-in term of technological and organizational tools-leading to organizational models sustainable from the competitive point of view (Metaxiotis, 2009). On the other hand, it is nowadays clear that advanced decision support systems (DSS) as well as business information systems assists enterprises in automating and integrating corporate cross-functions and provides the basis for business process management integration in order to minimize costs and increase efficiency and effectiveness of enterprises (Kirytopoulos al, 2009). Considering the above mentioned points, this study has tried to identify the prospects and possibilities of SMEs in Bangladesh. In order to achieve this, we set some specific research objectives to present the current scenario of SME in Bangladesh, to identify the impact of ICT in SME in Bangladesh, and to suggest measures for growth of SME in Bangladesh.

2. Objectives of the Study

This study encompasses following set of objectives:

1. To illustrate present state of ICT adoption in SMEs of Bangladesh.

2. Contribution of SMEs on economic growth of Bangladesh.

3. Role of ICT in the growth of SMEs in Bangladesh.

4. A suggestive guideline to enhance ICT adoption in SMEs of Bangladesh.

3. Literature Review

There is a extensive body of literature available which discuss the adoption of ICT in SMEs in developing countries (Lucchetti & Sterlacchini, 2004; Love et al. 2004; Koellinger, 2006; Stroeken, 2001; (Morikawa, 2004; Caldeira & Ward, 2002; Gregor et al, Doczi, 2002). The importance of adoption of ICT in SMEs has been recognized by governments around the globe. Though various governments has tried hard to encourage SMEs, it has been reported that SMEs are sluggish in adoption process of ICT (Houghton &Winklhofer, 2004; Smallbone et al., 2001; Dawn et al. 2002 and Lawson et al., 2003).

However, there are few studies conducted on the context of developing countries (Temtime et al., 2003; (Mutula et al., 2006; Yeh et al., 2007; Ssewanyana et al., 2007; Kapurubandara et al. 2006; Lal 2007). Dutta et al. (2003) conducted a study on ICT in Nigerian SMEs and found that the major hindrance towards ICT diffusion is the poor physical infrastructure. Legal and regulatory issues, weak ICT strategies, inadequate R&D, etc are major ICT adoption challenges.

Baldwin (2002) conducted a study on Canadian manufacturing establishments and drawn a conclusion that productive plants are using greater number of advanced ICTs. Advanced technology users grew more than not-ICT users in term of productivity and profitability between 1988 to 1997 (Baldwin, 2002). ICTs contribute positively in revenue generation of both formal and informal SMEs. Additionally, ICT use increases labor productivity (Esselaar et al., 2007). Ashrafi & Murtaza (2008) carried out an exploratory study to explore out the use and effect of ICT on Small and Medium Sized Enterprises (SMEs) in Oman. Faster customer service appeared as the main driving forces for ICT investment in Oman. Most of the surveyed SMEs have argued that utilization of ICTs yielded a significant positive impact on their business. Levi & Powell (2010) conducted a study to explore SME internet adoption and found out that the SMEs have perceived value in email and a marketing website. They suggest that the business value of internet is associated with SMEs attitude to business growth.

Schubert & Leimstoll (2006) enumerated a longitudinal study demonstrating the importance and application of information and communication technology in Swiss small and medium-sized companies. They suggest that Swiss SMEs are benefitted by adopting ICT. About 30% of small firms and 50% of medium-sized firms (OECD, 2004) reported on-line purchases in Norway (OECD 2004). SMEs are predominant in the industrial superstructure of Bangladesh. It comprises of more than 90% of all industrial units. In all available sources of statistics this numerical predominance become prevalent (Ahmed, M.U, 2001). SMEs constitute the largest portion of employment generation in many developing countries and often regarded as the foundation of private sector of the economy (Rosen, 2003). SMEs contribute over 85 percent of industrial employment. More specifically, SMEs employed 1.3 million people in Bangladesh (Zaman et al. 2011). Ahmed (2008) claimed that the contribution of SME to manufacturing value added ranged between 20 to 25 percent in Bangladesh. Rahman (2007) urged that SMEs employ 40 percent

of total working population of Bangladesh. In other direction, The exact figure is 31 million people.

In a report it is claimed that limited access to finance appeared as the major hindrance towards the development of SMEs (IFC Annual Review, 2004). The study of Akterujjaman (2010) has revealed that due high interest rates and loan duration rates, SMEs choose informally way of doing business rather than formal banking system. This is due to cumbersome banking procedures, prerequisites for loans and inexperience of bank's in this field. The study also found there is lack of perspective of banks. Zaman et al (2011) conducted a study to identify major financing frontiers. They also suggested some policy implications to overcome those hindrance. In its editorial the Daily Star (2006) pointed out that SME owners face difficulties at the time of requirement of bank loans. Experts identified that this is one of foremost impediments faced by SMEs in Bangladesh.

SMEs in Bangladesh has very limited bank finance, which accounts a tiny amount of 10 percent. 76.5 percent of finance comes from fixed capital and the rest of 51.8 percent comes from working capital (Mahmud, 2006). 55 percent of SMEs in Bangladesh reports that lack of finance appeared as a great problem for them (World Bank Survey, 2002). SMEs constitutes the largest portion of employment generation in many developing countries and often regarded as the foundation of private sector of the economy (Rosen, 2003).

In a report it is claimed that limited access to finance appeared as the major hindrance towards the development of SMEs (IFC Annual Review, 2004). The resource allocation towards private sectors especially to SMEs suffered due to some regulations of Bangladesh Bank. In addition, inadequacy of supply-side policy exacerbate the situation further. Demand side policies are not measured in both directed lending and deregulated lending measures Bhattacharya and Chowdhury, 2003). Hossain (1998) also mentioned lack of sufficient capital as the major constraint towards the growth of SMEs. Additionally, awkward procedures of loaning and lengthy loaning process also makes formal financial sources a aching gizmo. SME's sources of finances are mostly friends and family member. The contribution of different sources are: 41 percent from informal sector, 24 percent from family members, 17 percent from NGO and 18 percent from banks (MIDAS, 2004).

From the review of existing literature as portray above it is clear that there are a lot number studies conducted on SMEs role economy, ICT diffusion in SMEs and problems of SMEs in developing countries. But there is no notable study on ICT's role on SMEs, especially in the context of developing countries like Bangladesh. So, this research will be an unique one in this field and might be handy for policy makers of developing countries.

4. Current Scenario of SME in Bangladesh

SMEs are recognized as engine of economic growth and employment generation for sustainable industrialization in both developed and developing countries of the world. In context of Bangladesh, there is no alternative of small and medium enterprises for rapid industrialization and national economic growth through lower capital investment and employment generation.

Bangladesh's small and medium enterprises (SMEs) can play a big role in pushing national economy up to the level required to achieve the millennium development goal of halving poverty over the next five years. Bangladesh's economy, which grew by 5 to 6 per cent on average since 1996, could see gross domestic products (GDP) rise between 8-10 per cent by 2015, helped by the SMEs. There are about 6 million SMEs in Bangladesh, making up about 90 percent of all industrial units in the country that employ about 31 million people and contribute around 25 percent of the GDP. While large and heavy industries will be set up in the natural course, the exciting prospect as always lies with the SMEs. About 60 to 65 percent of SMEs are located outside the metropolitan areas of Dhaka and Chittagong, having easy access to labor and less problematic business environment. Business costs in rural areas were also low. "*SME*'s contribution to national exports is significant through different industries such as ready-made garments, jute, and leather. If Bangladesh authorities focus more on the SMEs and support them by all means, the SMEs could become a lasting backbone of the nation's economy and help it achieve the vital MDG of halving poverty by 2015.

4.1 Statistics on SCI
Salient features of SCI in Bangladesh

Number of small industries (up-to June 2011) : 93, 660

Number of cottage industries (up-to June 2011) : 6, 36, 577

Number of employment in the SCI (up-to June 2011) : 33.37 lakh

Contribution of Industry Sector to GDP (in %)

Type	Fy05-06	Fy06-07	Fy07- 08	Fy08-09	Fy09-10	Fy10-11
Industry*	29.03	29.45	29.7	29.86	29.93	30.33
Medium & large Ind.	12.14	12.47	12.63	12.71	12.68	13.12
Small & Cottage Ind.	4.94	5.08	5.14	5.18	5.26	5.29
Total Industry (Mfd.)	**17.08**	**17.55**	**17.77**	**17.9**	**17.94**	**18.41**
Nation	100.0	100.0	100.0	100.0	100.0	100.0

(*Industry Included minerals; Industries (mfd.); Electric, Gas & Water resource; Construction)
Source: Bangladesh Economic Review -2011

Growth of Industry Sector to (in %)

Type	Fy05-06	Fy06-07	Fy07- 08	Fy08-09	Fy09-10	Fy10-11
Industry	10.77	9.72	7.21	6.68	6.50	9.51
Medium & large Ind.	11.41	9.74	7.26	6.58	5.98	10.41
Small & Cottage Ind.	9.21	9.69	7.10	6.90	7.77	7.34
National	6.63	6.43	6.19	5.74	6.07	6.66

Source: Bangladesh Economic Review -2011

Size and Growth Rate of Manufacturing Sector (Taka in crore)

Type of Industry	2003-04	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10	201011 (Provisional
Small & Cottage	11496.5	12408.5	13551.5	14865.1	15920.0	17018.9	18091.1	19686.8
	(7.45)	(7.93)	(9.21)	(9.69)	(7.1)	(6.90)	(7.77)	(7.34)
Medium & large	27572.3	29860.5	33268.2	36507.1	39157.2	41735.0	44229.8	48835.0
	(6.95)	(8.3)	(11.41)	(9.74)	(7.26)	(6.58)	(5.98)	(10.41)
Total	39068.8	42269.0	46819.7	51372.2	55077.2	58753.9	62570.7	68521.8
	(7.1)	(8.19)	(10.77)	(9.72)	(7.21)	(6.68)	(6.50)	(9.51)

Note: Figures in parenthesis indicate rate of growth.
Source: Bangladesh Economic Review -2011

4.2 Constraints for Bangladesh SMEs

It is important to understand the operational strengths and weaknesses of the SME sector for pragmatic policy making and effective implementation of such policies. Given an excessive heterogeneity and almost a bewildering diversity in the type, composition and characteristics of the members of the SME facilities it is exceedingly difficult to have any precise diagnosis of their operational constraints. Over the years many studies have been carried out to identity the operational bottlenecks encountered by the SME entrepreneurs. One of the most recent studies (Sarder, 2001) based on a small sample of 19 entrepreneurs identified the following (as perceived by the respondents) as the major difficulties faced by them:

• Lack of modern technology

• Lack of adequate investments

• Irregular/inadequate supply of power

• High rate of interest on bank loans

• Inadequate availability of raw materials

• Absence of clear-cut government policies

- Fierce competition

- Lack of skilled technicians and workers

- Lack of research and development facilities

These are very commonly perceived and also generally encountered difficulties of operation of SMEs. However, close scrutiny and careful interpretation tends to reveal that lack of institutional credit, non-availability of working capital, low levels of technology, low productivity, and lack of marketing facilities and market access problems are the major bottlenecks to SME growth in Bangladesh. In the recent years, domestic law and order conditions, unreliable power supply and stiff competition both in domestic and international markets seem to have been the added dimensions to the SME operational bottlenecks.

4.3 Government Support to SMEs
The fundamental key to a successful SME development strategy according to SME policies is the establishment of a business environment that helps SMEs compete on a more equal basis (Levy and Powell, 2005). There are many advantages to SMEs and Levy et al. (2003) and Levy and Powell (2005) highlighted some of the important points:

- Create jobs with low capital costs.

- Create conditions for development and introduction of new technologies.

- Function as subcontracts for large corporations.

- Adapt faster to the demand and fluctuations of the market place.

- Fill marginal areas of the market, which are not targeted by large corporations.

- Decentralized business activity and help foster faster development of regions, small towns and rural communities.

- Alleviate the negative impact of structural changes.

The Bangladesh Government needs to develop a strong private sector, stimulate ownership solutions, significantly increase the number of entrepreneurs and in particular, develop the SME sector (Ministry Of Industries, 2005). It is obvious that maximum efforts are being made to increase the trade of SMEs and the Bangladesh economy can benefit greatly. A key component of successful SME development strategy is the establishment of business environment that helps SMEs compete on more equal basis. To establish a level playing field for SMEs the Bangladesh Government need to (Ministry Of Industries, 2006):

- Re-evaluate the costs and benefits of regulations that place a disproportionate burden on SMEs.

- Implement regulations with the flexibility needed by SMEs.

- Place greater emphasis on competition and opening procurement practices to small firms.

5. Research Methodology

Though interpretative tradition using qualitative data (Powell, 2006) suits best with this research, this study envisages both qualitative and quantitative discussion on 300 respondents covering three areas: Dhaka, Rajshahi and Manikgonj. The sample has been selected based on stratified sampling technique. Qualitative analysis provides better-off descriptive data and enables a rich, in-depth exploration of complex phenomena in a way that quantitative data cannot. This approach is consistent with the construction of the social world characterized by interaction between the researcher and the participants (Mingers, 2001). The researcher's interpretations play a key role in this kind of study bringing "*such subjectivity to the fore, backed with quality arguments rather than statistical exactness*" (Garcia & Quek, 1997, p. 459).

This study is descriptive in nature carried out using primary quantitative data. Two groups have been identified based on whether ICT is used in the educational institution (ICT based institutions and non-ICT based institutions). A total of 8 variables have been selected from the findings of qualitative analysis based on which the groups seemed to differ. Discriminant analysis has been conducted to identify the predictors that significantly discriminate between the groups. To conduct this analysis, 300 respondents have been selected based on stratified sampling technique. The entire sampling frame counted manufacturing and service sector equally i.e., 120 respondents belonged to manufacturing sector and 120 from service sector who use ICT in doing their businesses. Among the respondents, 90 used computer as part of ICT operations (45 manufacturing and 45 service sector), 150 used mobile as part of ICT functions (75 manufacturing and 75 service sector), and 60 used both computer and mobile to do

their tasks (30 manufacturing and 30 service sector). Thus the study has considered the SMEs dealing with both manufacturing and service sector for the qualitative study as well as for quantitative aspects to ensure viability, reliability, and generalize ability of the study. Statistical software SPSS 16 has been used to analyze the data.

5.1 Study Area

Three SMEs were chosen to compile case studies to gain a more in-depth insight into their ICT behavior. Due to confidentiality purpose, these three SMEs are given name as "*Firm A*", "*Firm B*", and "*Firm C*". These firms, located in Dhaka, Rajshahi and Manikganj, adopted ICT strategy to facilitate their functional activities although Firm B did not recruit any IS manager to implement ICT strategy. Some information about these three firms is as follow:

Location	Firm	Established Year	Employees	IS Department	Investment for annual turnover
Dhaka	Firm A	1979	380	Yes	$ 3 million
Rajshahi	Firm B	1995	105	No	$1 million
Manikganj	Firm C	1987	345	Yes	$ 4 million

Table 2. Contextual data on three firms

5.2 Respondents

In this research purposive sampling is used to select respondents. All respondents are involved in SMEs sectors including both male and female. For getting desired sample size and study related information we have to interview 300 respondents including top level and IS manager from selected study sites.

		Dhaka	Rajshahi	Manikganj	Total
Gender	Male	70	40	50	300
	Female	60	40	40	
Age	Less than 20 years	10	10	10	300
	20-29	40	30	20	
	30-39	40	30	40	
	40-49	20	10	10	
	More than 50 years	10	10	10	
Education Level	Primary	10	10	10	300
	Secondary	20	10	20	
	Higher Secondary	30	20	20	
	Honors	30	30	30	
	Masters	20	20	20	
Type of Business	Manufacturing	50	50	50	300
	Services	50	50	50	
Type of ICT using in Business	Computer	30	20	10	300
	Mobile	60	40	50	
	Both	30	30	30	

Table 3. Socio Economic background of the respondents

6. Field Results

6.1 Qualitative Perspective

Interview is taken to some selected respondents who are living any of the three districts and involved in SMEs sectors including the top manager, IS manager and employees of the above referred three Firms.

6.1.1 Top manager Involvement in Adopting ICT in SMEs

Top managers hold the superior power in decision making regarding any issues in most of the SMEs in Bangladesh. To implement the ICT strategy, top management is a must and those who understand the benefits of ICT in SMEs have come forward to adopt ICT in their SMEs.

> Anwara, 40, owns a factory in the city's Mohammadpur area. She employs 20 workers who make furniture from cane and bamboo. A leading boutique house in the country is in her list of clients. She said, "*My children use the computer at home but I had never used it. It would have been better if I had learnt how to use it much earlier. It helps me to communicate with large number of clients over internet*"

ICT is a means of accelerating the growth of SMEs that is why "*Mila*" is going to adopt the ICT to soak up the benefits of ICT.

> Mila, 45, has a boutique and beauty parlour in Tejgaon area. She said she had to take help from one of her nephews to communicate with buyers. "*Now I will be able to do that on my own*". "*Even if my businesses are based in Tejgaon and buyers come from across the country or even abroad, I will be able to contact them, sitting here in Dhaka. I can also inform the clients about the products and services at the shortest possible time. That's the biggest advantage of technology*".

Top level management always remains mystified regarding the investment in ICT stemming from the uncertainty of not getting expected return. But the reality on the ground is completely different. Most of the time entrepreneurs could efficiently conduct their business through effective accomplishment of ICT.

> Nazrul Islam, 40, said technology has become a major determinant in helping achieve business goals and affording the SMEs a competitive edge over competitors. The sales of my produced products are increasing day by day. This is because I got ten to twelve orders from the clients per day over phone and email. I can promote my products through social networking website. "*We cannot ignore benefits of technology.*"

6.2 Quantitative Perspective

6.2.1 Impact of ICT on SME in Bangladesh

By observing the current scenario of SMEs in Bangladesh alongside reviewing related literature as well as going through detailed qualitative findings, several variables have been identified that may affect the SMEs scenario of Bangladesh by the impact of ICT. This section elaborates the variables by comparing between two types of SMEs in Bangladesh: ICT based SMEs and non-ICT based SMEs. Discriminant analysis has been conducted that highlights the aspects in which these two types of SMEs are different from each other. The variables under study assure their impact of ICT on SMEs as these are derived from the literature and qualitative study.

Group Mean									
ICT based organization	Customer Communication	Product Update	Product Promotion	Global Exposure	Training Resources	Govt. Policies	Top Management Support	Minimizing Cost	Achieving Goal
Yes	4.23	4.28	4.18	3.74	3.62	3.49	3.87	3.87	4.00
No	3.10	3.23	2.92	2.36	2.44	2.46	2.79	2.95	3.13
Avg.	3.67	3.76	3.55	3.05	3.03	2.97	3.33	3.41	3.56
Group Standard Deviation									
Yes	.742	.724	.756	.880	.744	.644	.732	.732	.795
No	.940	.777	1.036	.873	.852	.854	.978	.857	.833
Avg.	1.015	.914	1.101	1.115	.993	.911	1.015	.918	.920

From the table above, it is apparent that the two groups are widely separated in terms of almost all the aspects. The greater

difference can be seen in case of Customer Communication, Product promotion, Global exposure, Training Resources, Govt. Policies and Top Management Support is higher than that of Product Update, Minimizing Cost and Achieving Goal. The standard deviations in case of Customer Communication, Product promotion, Govt. Policies and Top Management Support are higher than rest of the variables.

Tests of Equality of Group Means			
	Wilks' Lambda	F	Sig.
Communicability With Large Customers	.687	34.604	.000
Fast Information Update About Product	.665	38.250	.000
Product Promotion	.670	37.423	.000
Global Exposure	.610	48.643	.000
Availability of Training Resources	.643	42.231	.000
Presenceof Government Policies	.679	35.891	.000
Top Management Support	.715	30.304	.000
Possibility to Minimize Total Cost	.744	26.168	.000
Achievement of Business Goal	.773	22.367	.000

While finding the discriminating factors among the groups, predictors have to be somewhat distinct and uncorrelated. To check the multicollinearity problem, the pooled within-groups correlation matrix has been developed. It is found that there is very low correlation between the predictors indicating the uniqueness in the variables. Thus, multicollinearity is unlikely to be a problem. The significance of the univariate F ratios indicates that when predictors are considered individually, all of the variables under study significantly differentiate between ICT based SMEs and non-ICT based SMEs.

Eigenvalues				
Function	Eigenvalue	% of Variance	Cumulative %	Canonical Correlation
1	1.218	100.0	100.0	.741

As there are two groups, only one discriminant function is possible. The eigenvalue associated with this function is 1.218 and it accounts for 100% of the explained variance. The canonical correlation associated with this function is 0.741. Thus, 55% of the variance in the dependent variable can be accounted for by this model.

Wilks' Lambda				
Test of Function(s)	Wilks' Lambda	Chi-square	Df	Sig.
1	.451	56.968	9	.000

The value of Wilks-Lambda is 0.451, when transformed to a chi-square of 56.968 with 9 degrees of freedom, is significant beyond the 0.05 level.

Functions at Group Centroids	
	Function
	1
ICT based institution	
Yes	1.090
No	−1.090
Unstandardized canonical discriminant functions evaluated at group means	

Group 1 has a positive value (1.090), whereas group 2 has an equal negative value. The signs of the coefficients associated with

all the predictors are positive. This suggests that ICT based SMEs can communicate with large customer base, transmit product update information fast, promote products more effectively, secure global exposure, train employees with rich resources, enjoy favorable govt. policies, ensure support of top management, minimize the cost, and successfully achieve overall goal of business.

7. In Depth Discussion

This section discusses the results supplemented by evidence from the three case studies. First, it appears that most of SMEs recognized the importance of top management support in ICT. Top management support means active top management participation and involvement. This may prove to be due to the fact that SME usually have a flatter hierarchy, therefore not as many levels as large organizations. The minimum levels of hierarchy may prove to be a reason that many organizations do not have an ICT department, as it is not seen as a necessity. Many of the SMEs investigated were found not to have and ICT department and IS manager. It would have responsibility of ICT decision-making to the general manager of the organization, increasing the participation and involvement.

As the case study of Firm B shows, top management support is imperative as they have no such position as an IS manager, therefore all decisions are down to the senior vice president. Delone and Melean(2003) believe that top management support is an important variable for success. If ICT is to be a strategic tool, it is important for top management to understand and appreciate IS and control it as a strategic resource. Gunasekaram et al. (2001) argued that SMEs that do not include top management top management in IS decision are underdeveloped when considering ICTS, unless top management are fully convinced of the benefits of to deliver quality applications on time, resources necessary to translate IS plans into actual implementation are likely to be used for other projects. There are, however, SMEs that leave all the ICT decision-making to the IS manager (53.8%), as in the ease study of Firm C. Firm C do not believe that top management involvement is necessary and operate self-sufficiently unless decisions need to be made regarding important issues that will affect the organizations turnover. Many reason can contribute to top management not getting involved with IS decisions. Either top management does not appreciate the impact the ICT planning process has on the outcome of the company's total performance or if it does, top management does not deem it sufficiently important enough to warrant their direct involvement (Teo and Ang, 2001).

8. Recommendations for Growth of SMEs in Bangladesh

In response to the findings, some recommendations have been made that would accelerate the growth of SMEs in Bangladesh which are given below

• Government can promulgate rules in favor of SMEs by easing the coverage and making ICT available for them. Here to say, the governmental policies should be favorable enough for new firms to enter into the venture.

• At present SMEs access to institutional finance is very limited. A minuscule portion of total SMEs sector has access to institutional finance. Growth of SMEs can be accelerated by providing augmented access to SME finance.

• Another way to facilitate the growth of SMEs is the development of infrastructure (e.g., roads, gas, electricity and power services, etc). The development of SMEs is hindered by infrastructural backwardness. So infrastructure should developed in line with SMEs development process.

• The quality of existing SME products are not up to the mark. Standardization and improvement of quality of SME products can be ensured through effective quality monitoring of BSTI.

• Inadequate training facilities for SME workers appears as a bitter impediments towards the development of SME. However, workers of Bangladesh are very good and prompt at learning. If training institutes like Bangladesh Small and Cottage Industries Corporation (BSCIC)/Small and Cottage Industries Training Institute (SCITI), Bangladesh Institute of Management (BIM), Bangladesh Industrial Technical Assistance Center (BITAC) and National Productivity Organization (NPO) provide training properly, this lacking could be significantly reduced.

• A systematic plan for organizing trade fairs and workshops on SMEs on regular basis should be formulated to accelerate the growth of SMEs.

• If ICT tools such as computer, Internet, mobile, etc. can be used to promote the products and services of the SMEs, it will be easier for the firms to get global exposure. The news of product invention, innovation, and modification will cross the national

boundaries reaching a wide range of customers.

• Better coordination among different relevant Ministries of government can also facilitate the growth of SMEs by augmenting capacity building in less cumbersome manner.

• Private-public cooperation or partnership might be very handy to utilize existing training courses properly and effectively.

• R & D can augment the productivity of SME sector by initiating new and cost-effective techniques for sophisticated goods.

• SME development friendly curriculum of vocational training institutes should be up dated and reshaped in a planned manner.

9. Conclusion

The cultural difference in Bangladesh is a major factor; top management is still seen as the ultimate force within organizations with decisions being made by them. There is a rigid hierarchical structure where management has the overall command over all processes within the organization. As in other developing countries, lack of knowledge on the potential uses of new IT tools and shortage for highly skilled IT professionals are two concerns for ICT management in Bangladesh. In SMEs investigated in this research, this is mainly due to management not understanding the need recruit experienced individuals.

Three SMEs investigated purchased their hardware both through outsourcing and from manufacturers. However, Downing et al. (2003) suggests that there is no significant difference in process performance between outsourcing and in-sourcing. He implies that building a system from scratch will always be superior, from the viewpoint of the needs of the end user. Therefore, Bangladeshi SMEs will not be maximizing their potential by purchasing their hardware off the shelf from manufacturers. Concerning the ICT maintenance service, Earl (1996) suggests that outsourcing of the IT functions can be viewed within the context of a firm's downsizing in which multiple functional areas are affected as a strategy in which only the functions are involved. It is apparent then, that IT outsourcing, not being an end in itself, is a part of the broader context of the firm restructuring.

Some Bangladesh SMEs lack the structure needed to successfully plan an ICTS. However, from the case studies it was discovered that organizations operating with a structured hierarchy proved to be far more advanced with regard to ICTSP. In addition, communication between levels was more efficient; therefore alignment of ICTS with business strategy was inevitable. The more advanced SMEs regarding ICT within the Building and Construction industry, profitably gain from continuously improving their IT knowledge and realize the advantages of outsourcing to specialized vendors, who can extensively advise in new methods and products. In many SMEs this was seen as inappropriate, and preferred to carry out their sourcing internally, or do purchase off the shelf solutions.

References

[1] Abdul Gader, A. H. (1990). End-user computing success factors: further evidence from a developing nation. *Information Resources Management Journal*, 3 (1) 1-13.

[2] Abdul Gader, A. H. (1999). Managing Computer Based Information Systems in Developing Countries: A Cultural Perspective. Hershey, PA: Idea Group Publishing.

[3] AbouAish, E. (2001). A cross-national analysis of bank selection decision and implications for positioning.Unpublished PhD thesis, The University of Nottingham, UK.

[4] Ahmed, M. U. (2001). Globalisation and Competitiveness of Bangladesh's Small Scale Industries (SSIs): An Analysis of the Prospects and Challenges, *In*: CPD/UPL published, Bangladesh facing the Challenges of Globalisation, IRBD.

[5] Ahmed, M. U. (2008). Report of the PRSP-2 Thematic Study on Small and Medium Enterprise Development in Bangladesh, Final Report, March.

[6] Akterujjaman, S. M. (2010). Problems and Prospects of SMEs Loan Management: A Study on Mercantile Bank Limited, Khulna Branch. *Journal of Business and Technology (Dhaka),* 5 (02), July-December.

[7] Aksj, S. A., Arvi, M. (1988). Information systems planning: What makes it successful? *In*: Proceedings of the ACC'88, Conference, Sydney, p. 523–542.

[8] Al-Khatib, J. A., Rawwas, M. Y. A., Vitell, S. J. (1997). Consumer ethics: a cross-cultural investigation, *European Journal of Marketing*, 31 (11-12) 750-767.

[8] Ashrafi, R., Murtaza, M. (2008). Use and Impact of ICT on SMEs in Oman. *Electronic Journal Information Systems Evaluation*, 11 (3) 125-138.

[9] Ball, D., McCulloh, W. (1990). International Business (4thed.). Chicago: Homewood.

[10] Baldwin, J. R., Sabourin, D. (2002), Impact of the Adoption of Advanced ICTs on Firm Performance in the Canadian Manufacturing Sector, STI Working Papers 2002/1, OECD, Paris (available at www.oecd.org/sti/).

[11] Bhattacharya, D., Chowdhury, T. (2003). Financial Sector Reforms in Bangladesh: The Next Round (Paper 22). Centre for Policy Dialogue, Dhaka, p. 06.

[12] Bllantine, J., Levy, M., Powell, P. (1998). Evaluating information systems in small and medium-sized enterprises: issues and evidence. *European Journal of Information Systems*, 7 (4) 241-251.

[13] Belleflamme, P. (2001). Oligopolistic competition, IT use for product differentiation and the productivity paradox. *International Journal of Industrial Organization*, 19 (1-2) 227-248.

[14] Camfferman, K., Cooke, T. E. (2002). An Analysis of Disclosure in the Annual Reports of UK and Dutch companies. *Journal of International Accounting Research*, 1, p. 3-30.

[15] Cooke, T. E. (1998). Regression analysis in accounting disclosure studies. *Accounting and Business Review*, 23 (3) 209-224.

[16] Caldeira, M. M., Ward, J. M. (2002). Understanding the Successful Adoption and Use of IS/IT in SMEs: an Explanation from Portuguese Manufacturing Industries, *Information Systems Journal*, 12 (2) 121-152.

[17] De Boer, S. J., Walbeek, M. M. (1999). Information Technology in developing countries: a study to guide policy formulation, International Journal of Information Management, 19 (3) 207-218.

[18] Delone, W. H., Melan, E. R. (2003). The Delone and Melean model of information systems success: a ten year update. *Journal of Management Information Systems*, 19 (4) 9-30.

[19] Doczi, M. (2002). *Information and Communication Technologies and Social and Economic Inclusion*, Information technology Policy Group, Ministry of Economic Development, Manatu, Ohanga, NZ, March.

[20] Downing, C. E., Field, J. M., Ritzman, L. P. (2003). The value of outsourcing: a field study. *Information Systems Management*, 20, p. 86-91.

[21] Duan, Y., Mullins, R., Hamblin, D., Stanek, S., Sroka, H., Mavhado, V., Araujo, J. (2002). Addressing ICTs Skill Challenges in SMEs: Insights from three country investigations, *Journal of European Industrial Training*, 26 (9) 430-441.

[22] Duhan, S., Levy, M., Powell, P. (2001). Information Systems strategies in knowledge-based SMEs: the role of core competencies. *European Journal of Information Systems*. 10 (1) 25-40.

[23] Earl, M. L. (1993). Experiences in strategic information systems planning. *Management Information Systems Quarterly*, 17 (1) 1-24.

[24] Esselaar, S., Stork, C., Ndiwalana, A., Deen-Swarray, M. (2007). ICT usage and its impact on profitability of SMEs in 13 African Countries. Information Technologies & International Development, 4 (1) 87-100., In (Esselaar, S., Stork, C., Ndiwalana, A. & Deen-Swarray, M., Eds).

[25] Frgazakis, E., Ergazakis, K., Flamos, A., Charalabidis, Y. (2009). KM in SMEs: a research agenda. *International Journal of Management and Decision Making*, 10 (1/2) 91-110.

[26] Grover, V., Cheon, M. J., Teng, J. T. C. (1996). The effect of service quality and partnership on the outsourcing of information systems functions. *Journal of Management Information Systems*, 12 (4) 89-116.

[27] Gunasekaran, A., Love, P. E. D., Rahimi, F., Miele, R. (2001). A model for investment justification information technology projects. *International Journal of Information Management*, 21 (5) 349-364.

[28] Hossain, N. (1998). Contribution to SME Development in Bangladesh. *Job Opportunities and Business Support* (*JOBS*), Banani, Dhaka, p. 27.

[29] Houghton, K. A. Winklhofer, H. (2004). The Effect of Website and E-commerce Adoption on the Relationship between SMEs and Their Export Intermediaries, *International Small Business Journal*, 22 (4) 369-388.

[30] Hooft, F. P. C. van, Stegwee, R. A. (2001). E-business strategy: How to benefit from a Hype. *Logistics Information Management*, 14 (1/2) 44–54.

[31] Jain, R. (1995). MIS in large public programs: literacy program in India. *Journal of Global Information Management*, 3 (1) 18-30.

[32] Kapurubandara, M., Lawson, R. (2006). Barriers Adopting ICT and E-commerce with SMEs in Developing Countries: An Exploratory Study in Sri Lanka, CollECTeR '06, 9 December, Adelaide, [online], http://www.collecter.org/archives/2006 December/07.pdf [13 March 2008]

[33] Kirytopulos, K., Voulgaridou, D., Panopoulos, D., Leopoulos, V. (2009). Project termination analysis in SMEs: making the right call. *International Journal of Management and Decision Making*, 10 (1/2) 69-90.

[34] Koellinger, P. (2006). Impact of ICT on Corporate Performance, Productivity and Employment Dynamics, Special Report No 01/2006, European Commission Enterprise & Industry Directorate General, Berlin.

[35] Lal, K. (2007). Globalization and Adoption of ICTs in Nigerian SMEs, *Science, Technology Society*, 12 (2) 217-244.

[36] Levy, M., Powell, P. (2010). Exploring SME Internet Adoption: Towards a Contingent Model. *Electronic Markets*. 13 (2).

[37] Levy, M., Powell, P. (2005). Strategies for Growth in SMEs: The rule of information and information systems. Amsterdam: Elsevier.

[38] Love, E.D., Irani, Z., Edwards, D. J. (2004). Industry-centric Benchmarking of Information Technology Benefits, Costs and Risks for Small-to-Medium Sized Enterprises in Construction, *Automation in Construction*, 13 (4) 507-524.

[39] Lucchetti, R., Sterlacchini, A. (2004). The Adoption of UCT among SMEs: Evidence from an Italian Survey, *Small Business Economics,* 23 (2) 151-168.

[40] Luftman, J. N. (1996). Competing in the information age. Oxford: Oxford University Press.

[41] Mahmud, W. (2006). Local Business Dynamics: Ground Realities and Policy Challenges. *Institutional Reform and the Informal Sector* (IRIS), Dhaka, p. 13.

[42] Marshall, C., Rossman, G. B. (2006). Designing Qualitative Research (4th ed.). London: Sage Publications.

[43] Mata, F. J., Fuerst, W. L., Barney, J. B. (1995). Information technology and sustained competitive advantage: a resource-based analysis. *Management Information Systems Quarterly*, 19 (4) 487-505.

[44] McKenney, J. L., Copeland, D. C., Mason, R. O. (1995). Waves of change: Business evolution through information technology. Boston: Harvard Business School.

[45] Mills, R. G., Reponen,T., McFarlan, F. W. (1988). Finnpap/finnboard. Harvard Business School Teaching Case Nr. 9–188–103.

[46] Merill Lynch. (2006). Egypt: The investment, Jewel on the Nile. Global Securities Research and Economic Group of Merill Lynch, June.

[47] Metaaxiotis, K. (2009). Editorial to the Special Issue on Decision Support Systems and Knowledge Management in SMEs. *International Journal of Management and Decision Making*, 10 (1/2) 1-3.

[48] Morikawa, M. (2004). Information Technology and the Performance of Japanese SMEs, *Small Business Economics,* 23 (3) 171-177.

[49] Niederman, F., Brancheau, J. C., Wetherbe, J. C. (1991). Information Systems Management Issues for the 1990s. *MIS Quarterly*, 15 (4) 475–495.

[50] OECD. (2004). ICT, E-business and SMEs. 2nd OECD Conference of Ministers Responsible for Small and Medium Sized Enterprises (SMEs). Istanbul, Turkey 3-5 June.

[51] Palvia, P., Midha, V., Pinjani, P. (2006). Research Models in Information Systems. Communications of the Association for Information Systems, 17, 1042-1063. *In*: Proceedings of the ICIS conference, Cleveland, p. 356–368.

[52] Parker, M., Benson, R. (1989). Enterprise wide information economics: Latest concepts. *Journal of Information Systems Management*, 6 (4) 7-13.

[53] Rahman, A. (2009). Atiur Sees Factoring as Ideal Financial Solution for SMEs, *the Financial Express*, July 26, Dhaka.

[54] Raymond, L. (1990). Organizational context and information systems success: a contingency approach. *Journal of Management Information Systems*, 6, p. 5-20.

[55] Reich, B. H., Benbasat, I. (2000). Factors that influence the social dimension of alignment between business and information technology objectives, *Management Information Systems Quarterly*, 24 (1) 81-113.

[56] Rosen, H. (2003). Improved Access to Finance: A Key to SME Growth. World Bank Institute. Schubert, P. Leimstoll, U. (2006). The Importance of ICT: An Empirical Study in Swiss SMEs. 19th Bled eConferencee Values Bled, Slovenia, June 5-7.

[57] Rockart, J. F., Earl, M. J. (1996). Eight imperatives for the new IT organization. *Sloan Management Review*, 38 (1) 43-56.

[58] Sambamurthy, V., Venkatraman, S., DeScantis, G. (1993). The design of information technology planning systems for varying organizational contexts. *European Journal of Information Systems*, 2 (1) 23–35.

[59] Schoemaker, P. J. H. (1995). Scenario planning: A tool for strategic thinking. *Sloan Management Review*, 36 (2) 25–40.

[60] Sikkel, K., Spil, T. A. M., van de Weg, R. L. W. (1999). A real-case study in information technology for undergraduate students. *Journal of Systems and Software*, 49, p. 117–123.

[61] Smallbone, D., North, D., Vickers, I., Roper, S. (2001). Innovation and the Use of Technology in Manufacturing Plants and SMEs: An Inter-Regional Comparison, *In*: Proceedings 24th ISBA National Small Firms Conference: Exploring the Frontiers of Small Business (Hinckley, Leicestershire: ISBA), p. 289-308.

[62] Ssewanyana, J., Busler, M. (2007). Adoption and Usage of ICT in developing Countries: Case of Ugandan Firms, *International Journal of Education and Development using ICT*, 3 (3), [*Online*] *journal*, available at http://ijedict.dec.uwi.edu/viewarticle.php?id=349.

[63] Spil, T. A. M. (1996). The effectiveness of SISP in professional organizations. Ph.D. thesis, University of Twente, Enschede.

[64] Stroeken, J. H. M. (2001). The Adoption of IT by SMES: The Dutch Case, *Journal of Enterprising Culture*, 9 (1) 129-152.

[65] Susman, G. I., Evered, R. D. (1978). An assessment of the scientific merits of action research. *Ministrative Science Quarterly*, 23, p. 582–603.

[66] Venkatraman, N., Henderson, J. C., Oldach, S. (1993). Continuous strategic alignment: Exploiting Information Technology capabilities for competitive success. *European Management Journal*, 11(2) 139–149.

[67] Venkatraman, N. (2000). Five steps to a dot-com strategy: How to find your footing on the web. *Sloan Management, Review, Cambridge*, 41 (3) 15–28.