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APPLICATION OF INFORMATION SYSTEMS IN SMALL AND MEDIUM ENTERPRISES IN SRI LANKA

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ABSTRACT

SMEs have become an important factor in the developing economies in the world, especially to economies like Sri Lanka. It contributes largely to the socioeconomic stability and poverty reduction process of the Sri Lankan economy in terms of employment generation while contributing to the GDP, equitable distribution of income, embarking on innovations, balancing regional development, lowering transaction cost and inspiring other economic activities. SMEs are the most dynamic businesses as they play a critical role in achieving socio-economic goals in developing countries with a low level of investment. Globally, information technology has become a key element in the economic development of many countries in the world. The objectives of the study were to explore the types of information technology/information systems existing in small and medium-scale enterprises in Sri Lanka, examine the advantages of the use of integrated systems by owner-managers of small and medium-scale enterprises in Sri Lanka, investigate the benefits of information systems to the small and medium-scale enterprises in Sri Lanka, and identify any problems encountered by small and medium-scale enterprises in exercising information systems. The response rate was 59.9%, which represented 91 manufacturing SMEs in the Colombo District of Sri Lanka. The study employed a questionnaire for owner-managers of SMEs. The stratified sampling technique was applied to obtain the sample size of the study and descriptive statistics were used for the analysis. The findings of the research revealed that e-mail is the most popular method of communication among SMEs in Sri Lanka and that SMEs are well aware about the benefits of information systems/information technologies. This study found that almost all SMEs are looking for government support for creating basic infrastructure, training and technical support.

Key words: Small and Medium-scale enterprises, Information technology, Information systems

1. Introduction

Small and medium-scale enterprises (SMEs) are considered a significant component for the development of economies (Ayyagari, Demirguc-Kunt, &

Maksimovic, 2011; Kongolo, 2010). The relevant statistics for many countries show that the SMEs are predominant in the economy, representing more than 99 per cent of the companies (Tayebi, Razavi, & Zamani, 2011). Cross country evidence gathered from multiple sources by the Edinburgh Group of the Kingston Business School (2015) reflects the importance of SMEs in the global economy. Their report points out the need for financial and non-financial resources in order to support the SME sector, while highlighting the importance of SMEs in the global economy. The research of Kachembere (2011) noted that SMEs are playing a pivotal role in promoting economic growth and sustainable development and so it is crucial to employment creation opportunities. (For example, in Asia, SMEs are accountable for up to 50 per cent of all jobs, mainly in the private sector (Hall, 2002; Tambunan, 2011)).

Not only in developed economies, but also in developing economies, SMEs are seen to play an important role in the economic development. They play a major role in poverty reduction by means of employment generation. Lukacs (2005) states, "in much of the developing world, the private economy almost completely includes SMEs and they generate employment opportunities for millions of poor people all over the world" (p.10).

Table 1 shows the contribution of the SME sector to the national economy of Sri Lanka in terms of number of establishments and persons engaged. According to the table, there are 1,019,681 registered and informal industrial units in the country producing various types of products and employing 3,003,119 persons. According to the definitions of the Department of Census and Statistics, SMEs were determined as firms with 5-24 employees in small sized enterprises and firms with 25-199 employees in medium sized enterprises.

Table 1. Distribution of Persons Engaged and Establishments across SME groups in Sri Lanka

	No. of Establishments		Persons Engaged	
	Number	**%**	**Number**	**%**
Total	1,019,681	100.0	3,003,119	100.0
Micro	935,736	91.8	1,338,675	44.6
Small				
Medium	71,126	7.0	529,751	17.6
SMEs	10,405	1.0	386,756	12.9
	81,531	**8.0**	**916,507**	**30.5**
Large	2,414	0.2	747,937	24.9

Source: Department of Census and Statistics – Industrial Survey (2013/14)

SMEs account for a very high percentage of the total number of industrial and business establishments in Sri Lanka and have been identified as an important strategic sector for promoting high economic growth. SMEs generate economic growth by producing import substitutes as well as through direct exports, and they mostly supply goods and services to large exporting organizations (Hewaliyanage, 2001).

According to the Department of Census and Statistics of Sri Lanka, SMEs are said to be the lowest in terms of 'investment to generate employment' or 'investment per employee' compared to large scale enterprises. Nevertheless, the SME sector contributes largely to support the Government's effort in promoting balanced regional development and developing the rural economy. So, the government can use SME sector as a means to build human capital where the potential benefits could be fully achieved. As per the Government estimates, around 80 per cent of the businesses in Sri Lanka are SMEs. They contribute over 50 per cent to the Gross Domestic Production (GDP) and accounts for a share of 35 per cent of the total employment in the county (Central Bank of Sri Lanka, 2015**)**. Hence, these statistics show that there is an enormous potential for economic development in Sri Lanka by enhancing the present contribution made by the SMEs to the economy.

On the above statistics, it is highly evident that SMEs are considered as the key contributors in developing countries and play a significant role in the overall economy in terms of generating employment, enhancing quality of human resources, nurturing a culture of entrepreneurship, supporting large scale industries and opening new business opportunities.

The enterprise size is strictly related to the application of information systems/information technology. Most SMEs do not function efficiently due to the scarcity of financial resources in setting up and running information systems. However, it seems that many owner-managers have forgotten or neglected the information characteristics, information needs, sources of information, and utility of various types of information to their SMEs.

SMEs need information systems for efficiently running business and also for cost effective and faster means of communication. There is emerging evidence that use of information systems may help to source raw material for their products, find buyer markets for their finished products and staying well informed about environmental conditions, such as market trends, government policy and initiatives, availability of financial resources of efficient technology/machinery. So, it can reasonably be assumed that, there is a vast opportunity for growth in this sector, and that it is imperative to harness the

full benefits of the sector to the domestic economy with the help of networking and forming peer groups for better bargaining from large enterprises.

Therefore, the objectives are:
- to explore the types of information technology/information systems existing in small and medium-scale enterprises in Sri Lanka;
- to examine the advantages of the use of integrated systems by owner-managers of small and medium-scale enterprises in Sri Lanka;
- to investigate the benefits of information systems to the small and medium-scale enterprises in Sri Lanka;
- to identify any problems encountered by small and medium-scale enterprises in exercising information systems.

2. Literature Review

The definition of SMEs varies from country to country and from time to time in the same country depending upon the pattern of and stage of development, government policy and administrative set up of the particular country. All these definitions either relate to capital, employment, or both or any other criteria. Variations still exist in the concept of SME among various countries of the world. European Commission, follow SME definitions according to table 2.

Table 2. European Union (EU) SME Definition

Company Category	Staff headcount
Medium-sized	< 250
Small	< 50
Micro	< 10

Source: European Commission Recommendation 2003/361/EC of 6 May 2003 concerning the definition of micro, small and medium-sized enterprises, available at http://ec.europa.eu/enterprise/enterprise_definition/index_en.htm

Currently, Sri Lanka doesn't have generally accepted criteria for SMEs; instead different agencies use different criteria based on their objectives and there is no consistency between them. With reference to Department of Census and statistics of Sri Lanka (2016), the working definition of SME is adopted for the

study as: SMEs in manufacturing industry will mean enterprises having asset values not exceeding SLRs. 50 million, excluding lands and buildings; SMEs in manufacturing industry will mean, the medium size establishments that employ between 25 and 199 people; SMEs will mean those enterprises whose share is not listed with stock exchange; SMEs shall not include those enterprises which

are involved with professional activities like doctors, lawyers etc; SMEs will mean those enterprises which are operating in the private sector; SMEs will mean those enterprises that are engaged in business operations. (p. 10)

To harness its full potential in the global economy, SMEs need to develop their technical infrastructure, one component of which is represented by information systems/information technology. Studies conducted in the past, relate to information systems applications in SMEs and various methods have been used for assessing the impact of information technology on SMEs. Some of the studies conducted on this subject are reviewed as follows:

Whitley et al. (1992) presented a process of developing a knowledge-based system to support the management of information systems in SMEs based on a case study and the main objective of this study was to provide an overview of the complex issues of information systems for SMEs.

Mazur (1998) concluded that SMEs often lack time and manpower to implement complicated strategic plans and suggested a strategy for deployment of information systems in SMEs. In his case study he further demonstrated that adoption of strategic planning can be implemented quickly in comparison to large enterprises. Riihimaaki (2004) discussed the issues relating to the integration of networks with other business enterprises and pointed out that for survival it is necessary to integrate the value chain for the enterprises to maintain their competitive advantage.

Thorsten et al. (2004) examined the influence of external finance on the enterprises and emphasized that the industrial sector is heavily dependent on finance. They also found that well developed financial systems help small firms to grow disproportionately faster than the large firms and that information technology/information systems can play a major role here.

Sen and Taylor (2007) identified nine critical success factors for SMEs from their study of two small businesses that share staff premises, operating within the same industry, but within different market sectors. One of the success factors was corporate information competence and the paper concluded that it is essential for SMEs to take a strategic approach to their information needs in today's competitive environment to develop and remain competitive.

Buhalis and Hilary (1998) explored the factors determining the application of information technology by examining the stakeholders of small hospitality organizations and stated that information technology will help in mass customization. They said that SMEs are increasingly recognized as pivotal in the ability to benefit tourism, as well as to satisfy tourism demand but they are

marginalized from the mainstream tourism industry owning to their inability and reluctance to utilize information technologies.

Ashrafi and Muhammed (2008) concluded that the business benefits of the application of information technology/information systems are: (i) better relations with customers; (ii) increase in revenue; (iii) reduction in the cost of business; and (iv) increased business performance in future. The main barriers are: (i) internal technical skills; (ii) costs of implementation of information systems; (iii) lack of availability of relevant information and advice on selection of suitable and effective technologies; (iv) lack of time to implement ICT projects; (iv) lack of top management support and commitment; and (iv) bad experiences in the past and government regulations and requirements.

During the growth of a competitive global environment, there is considerable pressure on most organizations to make their operational, tactical, and strategic processes more efficient and effective. An information system is a group of components which can increase competitiveness and gain better information for decision making. Therefore, various organizations have chosen to apply this group of components to their associations. Consequently, the organizations decide to implement Information Systems in order to improve the effectiveness and efficiency of the organization. Information systems have become a major function area of business administration. The systems, nowadays, play a vital role in the e-business and e-commerce operations, enterprise collaboration and management, and strategic success of the business.

3. Research Methodology

The data for this study was drawn from two main sources; primary and secondary data sources. The primary data and evidence were gathered by the researcher mainly from surveys. This was mainly obtained from the self-completion questionnaires.

The target population of this study covers the manufacturing SMEs in the Western Province of Sri Lanka and the main reason for selecting the manufacturing sector SMEs is that they account for 96 per cent of the manufacturing sector in Sri Lanka (Institute of Policy Studies, 2002). The enterprise survey database (2013) maintained by the Department of Census and statistics of Sri Lanka was used as the sample frame of the study due to its wide coverage and reliability of data. Colombo, Gampaha and Kalutara are the main three districts belonging to the Western Province. As per the Department of Census and Statistics, 2013/14, 42 per cent of SMEs are located in the Western Province. According to the definitions of the Department of Census and Statistics SMEs was determined as firms with 5-24 employees in small sized enterprises and firms with 25-199 employees in medium sized enterprises.

Considering the added values to the Gross Domestic Product four leading industries are selected from the SME sector namely; manufacturing of food products and beverages, manufacturing of textiles, manufacturing of wearing apparel, dressing and dying, and manufacturing of rubber and plastic products (Department of Census and Statistics, 2013). Thus, the population under study was 183 manufacturing SMEs in the Western Province, out of which 91 were taken as a sample using a list obtained from the Department of Census and Statistics by using stratified sampling technique. For selecting respondents to the sample, proportional stratified sampling technique was used.

Owner-managers of the SMEs were asked to specify their responses on communication systems using four options (Yes, No, Do not know and No reply).

The data that was obtained from the completed questionnaires was taken onto diskettes using Microsoft Excel Spreadsheets. The data was processed using frequency distribution.

4. Results/ Analysis and Discussion

To explore the first objective, respondents were asked to respond regarding the use of information technology/information systems used by their company. The types of communication systems were explained to the owner managers. The results are depicted in table 4.

Table 4: Type of information technology/information system used

Technology	Yes	No	Don't know	No reply	Total
Mail (post)	72(79.1)	13(14.3)	-	6(6.6)	91
Fax	74(81.3)	11(12.1)	1(1.1)	5(5.4	91
EDI (Electronic Data Interchange)	32(35.1)	15(16.4)	1(1.1)	43(47.2)	91
Web services	56(61.5)	13(14.2)	-	22(24.1)	91
E-mail	75(82.4)	11(12.0)	-	5(5.4)	91
Other information	-	-	-	-	91

Source: Calculated with the researcher's survey data

Table 4 represents the frequency distribution of the responses of the SMEs. From the above table it is clear that all five technologies/systems are in use in SMEs of Sri Lanka. Maximum percentage of usage was of email (82.4%) followed by fax (81.3%), mail (post) (79.1%), web services (61.5%) and EDI (35.1%).

To examine the second objective respondents were asked questions relating to the advantages of using integrated software for conducting business. Before asking the question, the present study conducted a survey to determine

whether SMEs use integrated information systems. The response rate was 75 per cent. Also, the meaning of integrated software such as MS Office, Suite, ERP, in-house developed software with multiple functions etc. were explained to the respondents.

The data findings are as presented in table 5 above to the questions relating to advantages of using one integrated software for conducting business. From the results it can be inferred that 82.4% of respondents feel that saving time will be a major advantage, followed by receiving payment more quickly (81.3%), and attracting more customers (80.2%). The other two benefits are also having very positive high responses: increasing volume of business (79.1%) and saving money on administration (76.9%).

Table 5: Benefits of using integrated information systems

Technology	Yes	No	Don't know	No reply	Total
Saving money on administration	71(78.0)	14(15.4)	4(4.3)	2(2.1)	91
Receiving payment more quickly	74(81.3)	11(12.1)	4(4.4)	2(2.2)	91
Saving time	75(82.4)	11(12.1)	2(2.2)	2(3.3)	91
Attracting more customers	73(80.2)	12(13.2)	3(3.3)	3(3.3)	91
Increasing volume of business	72(79.1)	13(14.3)	2(2.2)	4(4.4)	91

Source: Calculated with the researcher's survey data

To investigate the third objective, respondents were asked to report benefits of information systems to the SMEs in Sri Lanka.

Table 6: Loss, gain and e-business effectiveness through information systems

Impact on the business	Yes	No	Don't know	No reply	Total
Gain to the business by having information systems	52(57.1)	15(16.5)	4(4.4)	20(22.0)	91
Losses of not having information systems	12(13.2)	55(60.4)	3(3.3)	21(23.1)	91

| Is improving e-business the main objective of the company? | 26(28.6) | 62(68.1) | 2(2.2) | 1(1.1) | 91 |

From the above table it is evident that certainly there are benefits of information systems to the business as indicated by 57.1% of the respondents. However, losses to business are reported by 13.2% of the respondents.

This research also sets out to identify any problems encountered by SMEs in exercising information systems. The findings reveal that there was a variety of problems reported. The results are presented in table 7.

Table 7: Problems connected with usage of information systems

Problems	Yes	No	Don't know	No reply	Total
The cost of e-trading is too high to be returned	33(36.3)	39(42.9)	9(9.9)	10(11.0)	91
Technical support is a problem	54(59.3)	33(36.3)	-	4(4.4)	91
No enough of our customers trade electronically	57(62.6)	28(30.8)	1(1.1)	5(5.5)	91
We do not have the relevant skills in-house	56(61.5)	32(35.2)	-	3(3.3)	91
It does not work for our products	26(28.6)	56(61.5)	6(6.6)	3(3.3)	91
We do not know enough about electronic trade	49(53.8)	35(38.5)	2(2.2)	5(5.5)	91

It can be seen from the above table that the major problems identified by SMEs are that their customers are not using information systems (62.6%), not having relevant skills (61.5%) and lack of availability of technical support (59.3%). In addition, some of the SMEs pointed out that the cost of e-trading is high, that it does not work for their products and services, and that they do not know much about e-trading.

5. Conclusion and Implications

SMEs play a significant role in the overall economy in Sri Lanka through their contribution to the GDP. The information systems are becoming popular among the SMEs in Sri Lanka, which is evident from the fact that more than 90% of the sampled SMEs have internet connectivity and more than 77% have web sites. It

is essential for SMEs in today's competitive environment to take a strategic approach to their information needs if they wish to develop and remain competitive. In the race to win the competition among businesses, firms need to be connected with markets in order to react quickly. The ability of a national economy to adapt with the changing demands has been associated and achieved by the flexibility and responsiveness of SMEs (Hunter & Long, 2003). Information systems/information technology can play a major role to help SMEs to achieve the connectivity with markets and make SMEs more responsive.

The government of Sri Lanka recognizes SMEs as the backbone of the economy. The SME sector has been identified as an important strategic sector in the overall policy objectives of the government of Sri Lanka. It is important to have a single coordinating body responsible to coordinate and facilitate the implementation of the technical support and establish a technology institution so that, it can strengthen, facilitate and coordinate technology development among SMEs.

SMEs under review may enter into an institutional support system under four major types: (a) public sector, (b) financial sector, (c) non-government organizations (NGOs), and (d) multilateral and bilateral associations. It is also cost effective to have the employees trained specifically for using and implementing information technology/information systems through business schools in the country. The choice of the training institute depends on the nature of skill and the level of competency required to be imparted.

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