

The Impact of firm-based characteristics on Adoption of E-commerce in SME in Sri Lanka

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Abstract; The growth of information technology in the business world is spreading at a phenomenal rate. The success of a business organization stands at the usage of IT in their business. Growth of E-Commerce is the new born business method, which has originated through an extensive usage of IT in their business. SMEs under the BOI in Sri Lanka are far behind the fast moving world of IT. Though E-Commerce is accelerating at a high pace, most of the SMEs are still at the lower level compared to their competitors in business. This study will focus on the level of adoption of E-Commerce in a population of 30 SMEs under the BOI, the relationship between firm-based characteristics and the adoption of E-Commerce and also more importantly find out the critical success factors and discover potential benefits of adoption of E-Commerce in SMEs. The results on the Adoption of E-Commerce showed a significant relationship with the two firm based characteristics. That is Management Involvement and Adoption of IT. The study also identified E-Marketing and Supplier service as the critical success factors in adoption of E-Commerce. Therefore, this research is conducted to assess the readiness for E-Commerce among the SME in Sri Lanka, and hopefully the research will help to convey the awareness among the SME towards ecommerce and help them to speed up their involvement in e-business.

Key Words: Board of Investment (BOI) Small and Medium Enterprise (SME), IT Information Technology.

1. INTRODUCTION

The start of the 21st century has seen the information technology revolution intensifying at phenomenal rates from its humble beginnings in the later part of the 20th century. The creation of the Internet has dissolved physical borders and has made the world a smaller place where people are able to keep in touch with one another at any part of the world and any time.

The rate of development of the

information era is getting faster with the introduction of the Internet. The amount of information available over the Internet is also astounding. It is changing the whole world by putting it under one roof through the World Wide Web (WWW). We can see youngsters obtaining more information than what their former generations could ever come across during their lifetime, that shows how much and how fast information reaches those in the world with the use of electronic media, including Internet. At the beginning, the Internet was only used for

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the purpose of scientific, military and academic research; where now information is communicated through a closed network, which goes beyond geographical boundaries. However, as the computer network expanded and opened to the public and the world, it is fast becoming commercialized, where farsighted entrepreneurs are able to see the unlimited potential in doing business in a borderless environment. The style of doing business using the electronic media especially the Internet is popularly known as E-Commerce or e-business, the most used term in the media today.

As more and more people are getting connected up to the Internet each and every day, the value for electronic market places increases. Looking at the tremendous needs and wants in the electronic market, more and more individuals and corporations invested in the R & D of Information Technology hardware (e.g.: Intel) and software (e.g.:- Microsoft) related to the Internet.

Today telecommunications is the keystone of the current technological revolution. The Sri Lankan government is currently on the process of upgrading the Internet infrastructure and developing it in the form of installation of super fast telecommunication network using fiber optic cables and other necessary hardware. This is mainly due to the fact that Sri Lanka is unable to meet the changing requirements in the World Wide Web due to its weak and poor infrastructure. The rapid advancement in both Internet software and hardware has also lead to more and more organizations allocating resources to meet the changing requirements in E-Commerce. Large corporations, small and medium companies (SMEs) and individuals are all investing more and more in the Internet

business. However, since Internet business is monopolised by the big corporations such as Yahoo! Microsoft, Amazon.com, Intel etc., but today many SMEs who are the main competitors of the large corporations are left far behind in the race in adoption of the E-Commerce. The main challenge for these SME s in adoption of E-Commerce is the lack of facility and resources in according to changing needs of the customers. The large corporations are finding no difficulties in their concurrence in E-Commerce world mainly because they have large resources and facilities compared with the SMEs. The lack of resources has been the major cause that has restricted SMEs in competing with their competitors. It is necessary to provide sufficient information and resources for SMEs by the BOI, since SMEs play a very vital role in the development of our country.

The main problem statement of this research would seek to understand, Why and what are the reasons for SMEs to be reluctant to adopt E-Commerce to develop and grow their businesses in Sri Lanka. To provide information for the SMEs on the current status of the usage of E-Commerce activities among the SME in Sri Lanka. It is hoped that with this information, more SMEs would be better prepared before venturing into E-Commerce activities. This information could also be useful for the larger corporations in Sri Lanka and those from abroad who wish to invest in E-Commerce in Sri Lanka. Through this research the SME will understand E-Commerce and its benefits. In the same time in the social benefit point of view this research will help make consumers more Internet friendly by making organizations push for E-Commerce adoption. Online purchasing will be the national shopping mall of the world. E-

Commerce will increase consumer convenience and variety in choices; which will lead to the development of the economy of Sri-Lanka. This study will also help contribute to the little literature that exists on the Sri Lankan E-Commerce situation. It will help readers understand the E-Commerce landscape in Sri Lanka and build on the studies conducted so far including this research.

2. OBJECTIVES OF THE PAPER

The general purpose of the research is to study the important of firm-based characteristics on the adoption of E-Commerce in the Small and Medium Enterprises in Sri Lanka. The study will also try to answer questions on the level of adoption of E-Commerce activities between the SMEs in Sri Lanka. With this, it also evaluates the benefits from E-Commerce adoption in SMEs. Finally, it identifies the critical issues to concentrate more on adopting E-Commerce in SMEs,

3. LITERATURE REVIEW

This Paper provides literature to justify the selection of variables. First phase provides literature on adoption of E-Commerce, where as second phase provides on the factors affecting E-Commerce, which are adoption of IT, management involvement and legal requirements. Further this paper discusses benefits through E-Commerce and its strategy in business involvement, From the last decade onwards, SMEs are using various electronic communication tools to carry out different types of business transaction. For e.g.:- In order to place orders and send invoices, SMEs use EDI (Electronic Data Interchange) where as retailers use television to advertise and for communication purpose. The companies who

do not use E-Commerce will be unable to retain its stake in the business in long-term. With the use of E-Commerce functions SMEs can search and or purchase products, services or information, advertise and sell products and services. According to Cashman, et al (2004) the companies who have succeeded in the recent past have definitely used E-Commerce functions as a tool to support their business activities. It is stated in Cashman, et al (2004) that E-Commerce facilitates SMEs to compete with large organization and operate globally. Globalization is a driver for E-Commerce adoption (Wong, 2004, p.41). Adoption of E-Commerce tools enables members to more easily communicate to others involved with the buying centre (Osmonbekov, 2002, p.160). As stated by Cloete, et al in 2002 E-Commerce can deliver the tools to provide cost effective ways for SMEs to market them, launch new products, improve communications, gather information, and identify potential business partners. Research findings of Lawrence (1997) conclude that E-Commerce adoption leads to tremendous improvement in marketing and the ability to reach new customers. He further stated that trading partners such as suppliers who have adopted E-Commerce force SMEs to adopt E-Commerce as it provides cost saving in huge margins in long term. These cost savings are not only through external communication processes but also through internal communication processes. For e.g. external communication is enhanced through EDI, online sales, where as internal communication is enhanced through the use of internet rather than traditional telecommunication. According to Calvin B. Lee (2002) higher customer service levels lead to greater revenue and net income. The above stated research

finding elaborates the extent to which customer service can lead to the company development. In every business, the customer service is very important. Without the help of customer service profit-oriented businesses cannot acquire leading positions as the ultimate objective of any business would be to satisfy user requirements in order to earn profits. For an internal Research & Development department to operate successfully, customer service is an important element as it provides the necessary feedback required from the customer to generate a useful product or service. When the customer service is in electronic form the difference is that the feedback provided is faster. According to Estep and Castleberry (1999, p.13) One primary benefit of E-Commerce is the potential for an improved relationship with customers .

Cashman, et al (2004) states that the usage of e-mails has resulted in efficiency gains and new ways of performing tasks, for e.g.: sharing documents and working remotely. In his study he found that the use of e-mail most of the respondents use E-Commerce application as a means of customer service. Thereby it is evident that E-Commerce is an opportunity to improve the SMEs performance. As a result of the above research findings it can be concluded that customer service also can be included in the conceptual frame work of this research as it plays a major role in E-Commerce.

Collins.J.S and Karush.G.E, (2002), states To carry out business development, use internet as marketing channel . Standing and Stockdale (2003) state in their research findings as E-Marketing is Cost effective . As per Drennan, Kennedy, (2000) for SMEs, internet brings important marketing advantages. E-Commerce is an

opportunity to SMEs as they provide avenues to compete with larger firms by making marketing, communication and information resources available for comparatively low financial cost. Further, In addition to its effectiveness for marketing communications, it can enable efficient direct-line selling, research, and collaboration for large, medium and small businesses (Drennan, Kennedy, 2000, p.272). With regard to e-marketing, Cashman, et al (2004) specifies that Internet technologies can help organizations to target on niche/small market. E-Commerce provides a way to market with minimal cost unlike in traditional business. Marketing product and service through Internet is easier than other methods such as direct marketing, and mailing. The literature survey carried out generated results to specify with confidence that adoption of E-Commerce by most of the organizations are for few main purposes, of which to market the company themselves by providing company information and to market the products and services offered by the companies. Further with regard to E-Marketing, Cloete, et al, (2002) notes that adoption of E-Commerce leads to organizations to launch new products and to market them selves. Due to the above literature research results it is evident that E-Marketing will affect the adoption of E-Commerce and therefore it is proven reasonable to consider it in the conceptual framework.

3.1 Hypothesis Development

3.1.1 Adoption of IT on Adoption of E -Commerce

Paynter and Lim (2001) in their research finding states that E-Commerce technology which plays a major role in selling of their products through internet is

significantly increasing the growth of the company. They also predict that growing number of Internet users, who are mainly buyers provide the opportunity for the organization to expand the marketplace by deploying a cost effective and efficient solution. With relevance to above arguments the following hypothesis would be developed.

H1:- Relationship between adoption of IT and adoption of E -Commerce

3.1.2 Management Involvement on Adoption of E-Commerce

Based on an analysis carried on a number of researches, it can be generally stated that successful E-Commerce adoption by SMEs involves the active participation of the CEO or the owner of the company in their investment in IT. According to Cloete, Courtney, and Fintz,(2002) it is stated that even though the CEO or owner identifies the potential of E-Commerce usage in their company, but due to their lack of understanding in technology they will be reluctant to adopt E-Commerce. With relevance to above arguments the following hypothesis would be developed.

H2:- Relationship between management involvement and adoption of E-Commerce

3.1.3 Legal Requirement on Adoption of E-Commerce

According to Mukti (2000) has pointed out that one of the main barriers in adopting E-Commerce is the Legal issues which surround them. When E-Commerce mode of communication is used, legal issues are of special importance; even though the communication originates through a computer there are no physically documents to make a business deal legally binding. It is therefore necessary to take a close look at all possibilities of responses and when they will occur (Sonntag, Reisinger, 20 01,

p.3). With relevance to above arguments the following hypothesis would be developed

H3:- Relationship between legal requirement and adoption of E-Commerce

3.1.4 Adoption of IT on Customer Service

Adoption of IT will enhance the internal efficiency of the organization by utilizing the Internet for IOS (Inter-Organizational Systems). The Korean Ministry of Commerce pointed out that the adoption of E-Commerce will help the organization; thereby it will build efficient and effective relationships between the customers and suppliers within the company.

Customer service is an important element as it provides the necessary feedback required from the customer to generate a useful product or service. When the customer service is in electronic form the difference is that the feedback provided is faster. With relevance to above arguments the following hypothesis would be developed.

H4:- Relationship between adoption of IT and customer service

3.1.5 Management Involvement on Customer Service

The customer satisfaction is one of the main priorities of the management; Estep and Castleberry (1999, p.13) states that On e primary benefit of E-Commerce is the potential for an improved relationship with customers . Today most of the customers are involved in the E-Shopping or E- business. The management involvement in providing the best service according to the customer s expectations is one of the top priorities of the management team. This involves effective adoption of E-Commerce in their SMEs.

H5:- Relationship between management involvement and customer service

3.1.6 Legal requirement on customer service

With relevance to findings of Estep and Castleberry (1999) a primary benefit of E-Commerce is potential for improved customer relationship. Since Spletter (2003) express in his findings that country to country E-Commerce legal conditions are different. The E-Commerce law in Sri Lanka is currently weak and its effectiveness in the business has not reached to the companies and consumers. Basically there are no awareness about it, which has led to less trust among the parties involved in the E-Commerce transaction. Therefore, legal requirement would be important over customer service. With relevance to above arguments the following hypothesis would be developed.

H6:- Relationship between legal requirement and customer service

3.1.7 Adoption of IT on E-Marketing

According to Chan and Al-Hawamdeh (2002), E-Commerce totally depends on the digital communication and IT. When considering E-Marketing this is a very important feature of E-Commerce. Standing and Stockdale (2003) stated that one also could conclude that marketing a product or service through internet is easier than any other way. E-marketing is the vast cost effective way. This above arguments on adoption of IT and E-Marketing would facilitate the below developed hypothesis.

H7:- Relationship between adoption of IT and e-marketing

3.1.8 Management Involvement on E-Marketing

Findings on Windrum and Berranger,

(2003) stated CEO or Manager are taking key role to adoption of IT in SMEs. Standing and Stockdale (2003) points out the at E-Marketing is the cost effective marketing strategy and it provides an opportunity to SMEs by providing avenues to compete with larger firms by making marketing, communication and information resources available for comparatively low financial cost. Establishing an effective E-Marketing practice involves a greater management involvement by providing the best IT for their SMEs. This arguments would facilitate the below developed hypothesis.

H8:- Relationship between management involvement and e-marketing

3.1.9 Legal Requirement on E-marketing

Adoption of E-Commerce is mainly for few main purposes, of which to market the company them selves by providing company information and to mark et the products and services offered by the companies. Since the company is advertising in the internet and selling its product without any physical documents, the legal requirements plays a major part during the adoption. This arguments would facilitate the below developed hypothesis.

H9:- Relationship between legal requirement and e-marketing

3.1.10 Adoption of IT on Supplier Service

The relationship with the supplier is also extended by adoption of E-Commerce. Another research finding of Stricker (2003) states that cost of delivery may be saved due to E-Commerce adoption The communication and access of business deals between the two parties through the most cost effective E-Commerce operations turns the relationship with the supplier well-

organized. This arguments would facilitate the below developed hypothesis.

H10:- Relationship between adoption of IT and supplier service

3.1.11 Management Involvement on Supplier Service

According to Estep and Castleberry (1999) they point out that one of the primary benefits of E-Commerce is that it improves the potential for an improved relationship with suppliers and the management. The adoption of E-Commerce will facilitate both the parties by giving up-to-date detail of every transaction, where the business deals with both the parties will be more cost- effective. This arguments would facilitate the below developed hypothesis.

H11:- Relationship between management involvement and supplier service

3.1.12 Legal Requirement on Supplier Service

Estep and Castleberry (1999) in their study states that one of the primary benefits of the E-Commerce is that it improves the relationship with suppliers and the management stronger, The legal requirements play a major role between these two parties since there are no physical documents as evidence of the transactions held between the two parties. This arguments would facilitate the below developed hypothesis.

H12:- Relationship between legal requirement and supplier service

3.1.13 Adoption of IT on E-Payment

The increase of E-Commerce today has also built a greater demand for e-currency. It has opened up an opportunity to SMEs global network by allowing payments worldwide. E-payment methods are essential in E-Commerce to attain the speed of processing

payments and for accuracy of transaction information (Singh.M., 2002, p.443). Also The electronic payment system provides opportunities for new global and national trading relationships (Paynter, Lim, 2001, p.3). This creates a high importance of E-Payment in E-Commerce. This arguments would facilitate the below dev eloped hypothesis.

H13:- Relationship between adoption of IT and e-payment

3.1.14 Management Involvement on E-Payment

According to Singh (2002), E-payment system has induced customers to purchase online at their convenience. The management involvement is necessary since today E-payment is considered to be the fastest mode of transaction. Paynter & Lim (2001) states e-payment system provides opportunities for new national & international trading relationships, these sorts of opportunities are out for grab when SMEs aren t adopting the E-Commerce.

H14:- Relationship between management involvement and e-payment

3.1.15 Legal Requirement on E-Payment

According to the research carried out by Silveira, 2003 it is stated that currently in Sri Lank a, there is culture of cash payments. The different modes of carrying out E-Payment are for e.g.: credit cards, E-money, etc. According to Singh (2002) generally it is accepted norm that credit cards are the most preferred method of making payments in the current business environment. However, it is stated that it has to be reliable and secure payment systems (Brendan & Hussain, 2001). According to Singh (2002, p.443) Payment information

via e-mails or automated responses are greatly appreciated by Customers the legal requirements should be clearly defined as when the customer or the supplier involves in the transaction process, since it is still considered as an insecure method of payments. This arguments would facilitate the below developed hypothesis.

H15:- Relationship between legal requirement and e-payment

3.2 Methodology

The section provides information on collection of data, data gathering procedure, dimensions of variables, research instrument, data analysis and guide to adoption of E-Commerce activity level. Data were collected from twenty one companies through interviews. SPSS software was used for analysis purpose.

3.3 Sampling

The population of the research will be all small and medium enterprises registered with BOI (Board of Investment) in Sri Lanka. However, due to budget and time constraints, the sample of the research was obtained only in the Colombo Metropolitan area. The total population of the BOI registered SME s are 30. (Source: - BOI, 2005)

In this research non-probability sampling technique was carried out. In that, particularly convenience sampling method is used because of time and budget constraints. A survey questionnaire was developed and data was gathered through personal interviews. The table 3.1 shows the total sample size, enterprise on the operation, response received from the enterprise and response rate.

	Total sample size	Enterprise on Operation	Response received	Response rate
SME Survey	36	30	21	70%

For the research purpose after collecting the 10 data set questionnaire from companies, the reliability test carried out . The Conbachs Alpha is 0.8955. Therefore, questionnaire is reliable.

In this questionnaire, perceived benefits questions were adopted with modification from the following researcher s paper by Joyce Georgina Asing Cashman, Joe Henry Obit, Jetol Bolongkikit and Geoffrey Harvey Tanakinjal. The questionnaire was the main element for this research. It has divided into three sections. Section I is divided into subsection on the basis of variables. This is to make it easy to fill the questionnaire. Subsections are the variables to collect information related to the E-Commerce adoption. There are 50 statements, which are categorized into Customer Service, Supplier Service, Management Involvement, Adoption of IT, E-Marketing, Legal Requirement, and E-Payment. Every item required the respondents to choose one answer out of five alternatives. The scale used is called the Likert scale, where the five alternatives are strongly disagree, disagree, moderate, agree, strongly agree respectively. Section II is designed to collect information related to the benefits received from using E-Commerce applications. There are 14 items where the respondents choose one answer from each item which is of likert scale type. Section III is designed to collect information related to the company profile. There are 16 questions where the respondents are required to tick one answer or fill in the blank.

Table 3.1:- Survey response rate

4. DATA ANALYSIS

All data from the respondents are coded and entered into the data sheet of the SPSS program for statistical analysis. The SPSS version 11.5 was used. To evaluate the entire variable, each variable has set of likert scale questions. On that, got the mean of each set of variables and convert that to ratio type data. The following analysis and tests are carried out:

- i) The first part of the analysis consist various tabulation of data, where frequency and percentage will be displayed.
- ii) In the second part of the analysis, Simple Linear Regression analysis will be carried out to identify the relationship between the adoption of E-Commerce and the firm based characteristics.

4.1 Sector

From Table 4.1, it can be seen that among the respondents, those from the manufacturing sector constitute the highest percentage at 57.1%. That is more than half of population in the SME industry. Continue with this followed by the IT sector. This is current growing sector in Sri Lanka. The figures reflect the current trend that IT is becoming a major sector in the economy. One of the reasons could be that many companies now venture into IT related business because the government is providing all kinds of incentives to promote IT to transform the economy into knowledge economy. Another obvious reason is the global trend of Information revolution where Internet is becoming a part of everybody live and IT is becoming the basic enabler of every business, the demand for IT related products is increasing, naturally more and more companies are investing in the IT sector.

Table 4.1 Sector

Industry	Frequency	Percentage
Finance	1	4.8%

Information Technology	4	19.0
Manufacturing	12	57.1
Education	1	4.8
others	3	14.3
Total	21	100.0

From Table 4.2, it can be seen that among the respondents, most of them are relatively new companies where 47.6% of the companies were formed between since 1990 to 2000. With continuation, since year 2000 to 2004, 23.8 % companies have newly formed within 5 years of time. This will be triple, within another 5 years, due to technology improvement. There were only 14.3% of the companies have been established for more than 15 years. The figures reflect that many companies did not last very long.

Table 4.2 age of companies

Year	Frequency	Percent
1980-1989	3	14.3%
1990-1999	10	47.6%
2000-2004	5	23.8%
Total	18	

4.2 Company Ownership

From Table 4.3, Private Limited Company is the highest form of company ownership among the respondents, which constitute 76.2%. The second highest respondents rated the Partnership. The lowest are public Limited Company and Others, which constitute only 4.8% each category among the respondents.

Table 4.3 Ownership

company	Frequency	Percent
partnership	3	14.2%
Private limited company	16	76.2%
Public limited company	1	4.8%
others	1	4.8

4.3 Number of Employees

From Table 4.4, it can be seen that among the respondents, most of them have 50 - 250 employees, while only 23.8% have more than 10 - 50 employees. It shows that most small and medium Enterprise has more employees as the extent of operation.

No of employees	Frequency	Percent
Less than 10	2	9.6%
10-50	5	23.8%
50-250	7	33.3%
250 and more	4	19.0
Data unavailable	3	14.3

4.4 Initial Investment

From Table 4.5, it can be seen that among the respondents, 42.9% of them has between Rs.1 Million to Rs. 20 Million Investment (considered as Small Enterprise). It is followed by the companies with investment between Rs. 20 Million to R s. 50 Million. Only 14.3% have above Rs. 50 Million Investment. The figures are representative of the situation in Sri Lanka as most of Small and Medium Enterprise have high initial investment when they start organization.

Table 4.5 Initial Investment

Amount Invested	Frequency	Percent
Less than Rs 1 million	2	9.5%
1- million-20m	9	42.9
20m-50m	7	33.3
Above 50 m	3	14.3

4.5 Annual sales turnover

From Table 4.6, it can be seen that about 81% of the respondents have sales turnover of more than Rs.10, 000,000 while only 9.4% of them have turnover below than Rs. 1,000,000. The figures reflect the situation in Sri Lanka, as the scale of operation among the SME is

comparatively high.

Table 4.6 Sales turnover

Sales Turnover	Frequency	Percent
Less than Rs 500,000	0	0
500000-999999	2	9.4%
1000000-1999999	0	0
2000000-4999999	1	4.8%
5000000-9999999	1	4.8%
Above 10 million	17	81.0%

4.6 Information Technology Investment in Last Three Years

From Table 4.7, it can be seen that 23.8% of the respondents invested more than Rs.1,000,000 in information technology in the last three years. With that including of 2 groups between Rs.50,000 to Rs.500,000 there are altogether 47.6% of respondents are invested in Information Technology in last three years. Below Rs.50,000 there 4.8% of the respondents have invested in IT. Overall if we looked at the SME industry, every individual company is giving priority to up grade or develop their business through IT. The figures reflect that most SME in Sri Lanka are operating in the common manner where IT investment is the top priority. The reasons could be due to IT growth and benefit of IT. (The figures reflect that most SME in Sri Lanka still operate in the conventional manner where IT investment is not the top priority. The reasons could be due to lack of expertise and capital constraint.)

Table 4.7 IT Investment

Amount Invested	Frequency	Percent
Less than Rs 50,000	0	0
50000-249999	2	9.4%
250,000-499,999	0	0
2000000-4999999	1	4.8%
5000000-9999999	1	4.8%
Above 10 million	17	81.0%

4.7 Connection of Internet Service

From Table 4.8, it can be seen the above 52.4% respondents have using Dial up Connection for the internet usage in

companies. With that 33.3% respondents are using Data Service (Leased Line) and 28.6% respondents are using ADSL. The lowest connection usages are IP-VPN and ISDN. If we consider all these facts, all these SMEs are well known the Internet advantages and its benefits. That is why at least in the companies has minimum dial-up connection

Table 4.8 Connection types

Connection	Usage	Non Usage	Usage %	Non Usage %
Data Service (Leased Line)	7	14	33.3%	66.7%
IP-VPN	1	20	4.8%	95.2%
ADSL	6	15	28.6%	71.4%
IDC	0	21	0.0%	100.0%
ISDN	1	20	4.8%	95.2%
Dial-Up	11	10	52.4%	47.6%

4.8 E-Commerce Activities Usage by SME s

As per Table 4.9, it can be concluded that most frequently used E-Commerce activities in SMEs are E-mail, Internet and Web site activities. The percentages are respectively 95.2%, 90.5% and 71.4%. It can be generalized that the usage of E-Commerce in relation to these three activities are above 70%. These are the most commonly used activities in SMEs. The leased used E-Commerce activities in SMEs are the following: EDI (Electronic Data Interchange) 28.6%, making purchase online 23.8%, online payment 14.3%, CRM (Customer Relationship Management) 14.3%, E-Customer Service 14.3% and video conferencing 9.5%.

Table 4.9 E-commerce activity usage

Activity	Usage	Non usage	Usage in %	Non-usage in %
E-mail	20	1	95.2%	4.8%

Internet	19	2	90.5%	9.5%
Web site	15	6	71.4%	28.6%
On line payment	3	18	14.3%	85.7%
Making purchase online	5	16	23.8%	76.2%
E-customer service	3	18	14.3%	85.7%
Video Conferencing	2	19	9.5%	90.5%
CRM	3	18	14.3%	85.7%
EDI	6	15	28.6%	71.4%
others	1	20	4.8%	95.2%

4.9 Hypotheses testing

4.9.1 Importance of firm based factors in the adoption of E-Commerce

H1:-Relationship between adoption of IT and adoption of E-Commerce

Regression test between adoption of IT and adoption of E-Commerce was performed to test H1. The results were displayed in the below table 4.10.

Table 4.10:- Adoption of IT on adoption of E-Commerce

Variables	R ²	Sig F
SME Demographic Factors	0.494	0.253
Adoption of IT on adoption of E-Commerce	0.255	0.010

From the regression test, adoption of E-Commerce is significantly ($R^2 = 0.255$, $P = 0.05$) determined by adoption of IT. Ideally there is 25.5% impact of adoption of IT on E-Commerce adoption. As a result, hypothesis H1 is accepted, e.g., there is relationship between the adoption of IT and adoption of E-Commerce. H2:-Relationship between management involvement and adoption of E-Commerce Regression test between management involvement and adoption of E-Commerce was performed to test H2. The results were

displayed in the below table 4.11.

Table 4.11:- Management involvement on adoption of E-Commerce

Variables	R ²	Sig F
SME Demographic Factors	0.494	0.253
Management involvement on adoption of e-commerce	0.212	0.023

From the regression test, adoption of E-Commerce is significantly ($R^2 = 0.212$, $P = 0.05$) determined by management involvement. Ideally there is 21.2% impact of management involvement on adoption of E-Commerce. As a result, hypothesis H2 is accepted, e.g., there is relationship between management involvement and adoption of E-Commerce.

H3:- Relationship between legal requirement and adoption of E-Commerce

Regression test between legal requirement and adoption of E-Commerce was performed to test H3. The results were displayed in the below table 4.12.

Table 4.12:- Legal requirement on adoption of E-Commerce

Variables	R ²	Sig F
SME Demographic Factors	0.494	0.253
Legal requirement on adoption of E-Commerce	0,0000	0.955

From the regression test, adoption of E-Commerce is not significantly ($R^2 = 0.000$, $P = 0.05$) determined by legal requirement. Ideally there is no any impact of legal requirement on adoption of E-Commerce. As a result, hypothesis H3 is rejected, e.g., there is no any relationship between legal requirement and adoption of E-Commerce.

4.9.2 Critical success factors of adoption of E-Commerce

H4:- Relationship between adoption of IT and customer service

Regression test between adoption of IT and customer service was performed to test H4. The results were displayed in the below table 4.13.

Variables	R ²	Sig F
SME Demographic Factors	0.268	0.763
Adoption of IT on customer service	0,128	0.175

From the regression test, customer service is not significantly ($R^2 = 0.128$, $P = 0.05$) determined by adoption of IT. Ideally there is no any impact of adoption of IT on customer service. As a result, hypothesis H4 is rejected, e.g., there is no any relationship between adoption of IT and customer service.

H5:- Relationship between management involvement and customer service

Regression test between management involvement and customer service was performed to test H5. The results were displayed in the below table 4.14.

Table 4.14:- Management involvement on customer service

Variables	R ²	Sig F
SME Demographic Factors	0.268	0.763
Management involvement on customer service	0,242	0.051

From the regression test, customer service is not significantly ($R^2 = 0.242$, $P = 0.05$) determined by management involvement. Ideally there is no any impact of management involvement on

customer service. As a result, hypothesis H5 is rejected, e.g., there is no any relationship between management involvement and customer service.

H6:- Relationship between legal requirement and customer service

Regression test between legal requirement and customer service was performed to test H6. The results were displayed in the below table 4.15.

Variables	R ²	Sig F
SME Demographic Factors	0.268	0.763
Legal requirement on customer service	0,105	0.225

From the regression test, customer service is not significantly ($R^2 = 0.105$, $P = 0.05$) determined by legal requirement. Ideally there is no any impact of legal requirement on customer service. As a result, hypothesis H6 is rejected, e.g., there is no any relationship between legal requirement and customer service.

H7:- Relationship between adoption of IT and E-Marketing

Regression test between adoption of IT and E-Marketing was performed to test H7. The results were displayed in the below table 4.16.

Table 4.16:- Adoption of IT on E-Mark eting

Variables	R ²	Sig F
SME Demographic Factors	0.224	0.848
Adoption of IT on E-Marketing	0,221	0.074

From the regression test, E-Marketing is not significantly ($R^2 = 0.221$, $P = 0.05$) determined by adoption of IT. Ideally there is no any impact of adoption of IT on E-Marketing. As a result, hypothesis H7 is rejected, e.g., there is no any

relationship between adoption of IT and E-Marketing.

H8:- Relationship between management involvement and E-Marketing

Regression test between management involvement and E-Marketing was performed to test H8. The results were displayed in the below table 4.17.

Variables	R ²	Sig F
SME Demographic Factors	0.224	0.848
Management involvement on E-Marketing	0,295	0.033

From the regression test, E-Marketing is significantly ($R^2 = 0.295$, $P = 0.05$) determined by management involvement. Ideally there is 29.5% of impact of management involvement on E-Marketing. As a result, hypothesis H8 is accepted, e.g., there is relationship between management involvement and E-Marketing.

H9:- Relationship between legal requirement and E-Marketing

Regression test between legal requirement and E-Marketing was performed to test H9. The results were displayed in the below table 4.18.

Variables	R ²	Sig F
SME Demographic Factors	0.224	0.848
Legal requirement on E-marketing	0,002	0.868

From the regression test, E-Marketing is not significantly ($R^2 = 0.002$, $P = 0.05$) determined by legal requirement. Ideally there is no any impact of legal requirement on E-Marketing. As a result, hypothesis H9 is rejected, e.g., there is no any relationship between legal requirement and E-Marketing.

H10:- Relationship between adoption of IT and supplier service

Regression test between adoption of IT and supplier service was performed to test H10. The results were displayed in the below table 4.19.

Table 5.19:- Adoption of IT on supplier service

Variables	R ²	Sig F
SME Demographic Factors	0.671	0.041
Adoption of IT on Supplier service	0,137	0.023

From the regression test, supplier service is significantly ($R^2 = 0.137$, $P = 0.05$) determined by adoption of IT. Ideally there is 13.7% of adoption of IT on supplier service. As a result, hypothesis H10 is accepted, e.g., there is relationship between adoption of IT and supplier service. But still, supplier service is affecting the SME demographic factors. Therefore, supplier service is significantly ($R^2 = 0.671$, $P = 0.05$) determined by SME demographic Factors. Ideally, there are 67.1% impacts of SME demographic factors on supplier service.

H11:- Relationship between management involvement and supplier service

Regression test between management involvement and supplier service was performed to test H11. The results were displayed in the below table Table 4.20.

Variables	R ²	Sig F
SME Demographic Factors	0.671	0.041
Management involvement on supplier service	0,233	0.001

From the regression test, supplier service is significantly ($R^2 = 0.233$, $P = 0.05$) determined by management involvement. The relationship between the two variables is very highly significant, comparing to other variables. Ideally there is 23.3% of impact of

management involvement on supplier service. As a result, hypothesis H11 is accepted, e.g., there is relationship between management involvement and supplier service. But still, supplier service is affecting the SME demographic factors. Therefore, supplier service is significantly ($R^2 = 0.671$, $P < 0.05$) determined by SME demographic factors. Ideally, there are 67.1% impacts of SME demographic factors on supplier service.

H12:- Relationship between legal requirement and supplier service

Regression test between legal requirement and supplier service was performed to test H12. The results were displayed in the below table 4.21.

Table 4.21:- Legal requirement on supplier service

Variables	R ²	Sig F
SME Demographic Factors	0.671	0.041
Legal requirement on supplier service	0,021	0.423

From the regression test, supplier service is not significantly ($R^2 = 0.021$, $P = 0.05$) determined by legal requirement. Ideally there is no any impact of legal requirement on supplier service. As a result, hypothesis H12 is rejected, e.g., there is no any relationship between legal requirement and supplier service. But still, supplier service is affecting the SME demographic factors. Therefore, supplier service is significantly ($R^2 = 0.671$, $P = 0.05$) determined by SME demographic factors. Ideally, there are 67.1% impacts of SME demographic factors on supplier service.

H13:- Relationship between adoption of IT and e-payment

Regression test between adoption of IT

and e-payment was performed to test H13. The results were displayed in the below table 4.22.

Table 4.22:- Adoption of IT on e-payment

Variables	R ²	Sig F
SME Demographic Factors	0.275	0.748
Adoption of IT on e-payment	0,003	0.836

From the regression test, e-payment is not significantly ($R^2 = 0.003$, $P = 0.05$) determined by adoption of IT. Ideally there is no any impact of adoption of IT on e-payment. As a result, hypothesis H13 is rejected, e.g., there is no any relationship between adoption of IT and e-payment.

H14:- Relationship between management involvement and e-payment

Regression test between management involvement and e-payment was performed to test H14. The results were displayed in the below table 4.23.

Table 4.23:- Management involvement on e-payment

Variables	R ²	Sig F
SME Demographic Factors	0.275	0.748
Management involvement on e-payment	0,001	0.901

From the regression test, e-payment is not significantly ($R^2 = 0.001$, $P = 0.05$) determined by management involvement. Ideally there is no any imp act of management involvement on e-payment. As a result, hypothesis H14 is rejected, e.g., there is no any relationship between management involvement and e-payment.

H15:- Relationship between legal requirement and e-payment

Regression test between legal requirement and

e-payment was performed to test H15. The results were displayed in the below table 4.24.

Table 4.24:- Legal requirement on e-payment

Variables	R ²	Sig F
SME Demographic Factors	0.275	0.748
Legal requirement on e-payment	0,001	0.935

From the regression test, e-payment is not significantly ($R^2 = 0.001$, $P = 0.935$) determined by legal requirement. Ideally there is no any impact of legal requirement on e-payment. As a result, hypothesis H15 is rejected, e.g., there is no any relationship between legal requirement and e-payment.

5.0 CONCLUSION AND IMPLICATION

The main issue addressed in this study was why SMEs are reluctant or are not prompted to adopt E-Commerce to develop day to day business. The main objective was to identify the level of adoption of E-Commerce activities between the Small and Medium Enterprises in Sri Lanka, to identify the factors associated with adoption of E-Commerce, to pin point critical success factors associated with the adoption of E-Commerce and further to identify potential benefits by adopting E-Commerce activities. Findings of the level of adoption of E-Commerce activities in Small and Medium Enterprises in Sri Lanka is not totally interested research because the level of usage is so poor. The most frequently used E-Commerce activities are the internet, email and websites. The least used activities are EDI, making purchases online, online payment, CRM, e-customer service and video conferencing. Overall, what was found that the SMEs use only the basic or low level E-Commerce activities to carry out day to day

operations.

The next finding is to identify the relationship between firm-based characteristics and adoption of E-Commerce in SME. Under this first one is Adoption of IT has a relationship with the adoption of E-Commerce. There is evidence that the level of adoption of E-Commerce is influenced by the adoption of IT. It was found that there is a 25.5% impact of adoption of IT on the adoption of E-Commerce. It is also clear that the adoption of IT is vital for successful implementation of E-Commerce activities. Companies who have less access to advance Information Telecommunication infrastructure and lack of technological expertise are likely to have low level of adoption of E-Commerce and low level of E-Commerce activities. This is supported by the fact that there is an impact of 25.5% of adoption of IT on adoption of E-Commerce in Sri Lanka. On the contrary, companies who have better access to Information Telecommunication infrastructure that support E-Commerce and have better knowledge in technology are likely to have higher percentage of E-Commerce adoption and higher E-Commerce activities. This is not seen in the Sri Lankan context where adoption of IT is mostly confined to day to day business activities that do not involve high usage of E-Commerce. This is further supported by the earlier finding that E-Commerce activities are mainly concentrated on e-mail, internet and websites in Sri Lanka.

The second one is Management Involvement has a relationship with the adoption of E-Commerce. There is evidence that the level of adoption of E-Commerce is influenced by management involvement. The finding was that there is 21.2% impact of management involvement influencing the adoption of E-

Commerce. This could be explained from the management aspect. The lack of IT knowledge amongst top management was seen as an obstacle to adopt E-Commerce and denotes the commitment shown towards the adoption of E-Commerce. The majority of the respondents also believe that top management commitment is important for the adoption of E-Commerce (Refer appendix D, table D.2). However, the lack of IT knowledge at the top management level in using the technology or literacy of IT has hampered the adoption of E-Commerce activities. The third one is to find out the critical success factors of adoption of E-Commerce, for SMEs in Sri Lanka. The significance of critical success factors of E-Commerce and firm-based characteristics are studied. The factors which had significance impact on adoption E-Commerce are given below:

1) E-Marketing and Management Involvement

There is evidence that management involvement has an effect on E-Marketing. The analysis shows that management involvement has 29.95% impact on E-Marketing which is a critical success factor of E-Commerce. The current business environment is such that in order to be competitive, fast communication and global connectivity is an important factor. E-Marketing enables managers to identify niche markets. This has been proved; since data collected shows that most companies agree that E-Marketing immensely assists them in identifying niche markets. Like wise, companies have agreed that advantages derived through E-Marketing such as cost minimization, self marketing and launching products; encourage managers to increase their involvement with E-Marketing. These are the reason as to why there is

significance between management involvement and E-Marketing.

2) Supplier service and Adoption of IT

There is evidence that supplier service determines the adoption of IT. The analysis shows that supplier service has 13.7% impacts on adoption of IT. It is always best for a company to find the best fit supplier, since output and timely customer delivery depends on the quality and reliability of the supplier. By adopting IT, the company introduces new methods of running a business. The use of computers and the internet opens up the opportunities of finding relevant, reliable and quality suppliers. In order to be able to find key suppliers and be in touch with them, most companies agreed on the fact that IT needs to be adopted.

3) Supplier service and Management Involvement

There is evidence that supplier service determines management involvement. The analysis shows that supplier relation service has 23.3% impact on management involvement. Here again the management emphasizes on the need to have reliable, relevant and quality suppliers (Refer Appendix D, D.8). Therefore the benefits derived through supplier service, which relies on IT, will definitely increase the management involvement in this regard.

4) Last one is to discover potential benefits of adoption of E-Commerce by the SME in Sri Lanka. Through this research several potential benefits were identified. The Top executives and the top management in the target SME companies pointed out that the adoption reduces the cost and at the same time it also increases the efficiency in dealing with suppliers. These were seen as the two primary benefits in adopting E-Commerce in

their companies. They also identified that it also increases their service to the customer and also increases the relationship with the customer, and it goes to the level of making the customer loyal towards the company. The other main benefits should also be noted since the respondents showed a very favorable response to them. The benefits shown in the moderate level should also be noticed and SME companies should take the advantage in gaining by adopting E-Commerce in the best strategic way.

5.1 Recommendations for Future Research

It is recommended that the future research be extended to cover all districts of Sri Lanka in order to obtain results that are more representative. In addition, future research could do a more in-depth study on the impact of legal issues such as intellectual property and Internet crimes on E-Commerce usage. Besides, a longer time period, more funds and personnel could be used to conduct the research in order to obtain a bigger sample and hence the results could be more representative. The consideration of demographic factors in the adoption of E-Commerce is also an area that needs consideration. The dip-stick research uncovered the existence of a relationship but this needs to be supported by an in-depth study.

5.2 Implication for Management and suggestion for BOI

During the process of adoption of e-commerce the management has to play important role. Benefits gain by E-Commerce is requires long term investment The top management has to concentrate on the current employees to give them IT knowledge by various suitable training.

Knowledge and skills in IT should be placed as top requirement during process of recruitment. Bring down foreign resources (employee, technology) into the SME for more development. Investment in IT is also a pre-requisite for E-Commerce adoption. It is necessary to provide sufficient information and resources to SME by the BOI. It is necessary that Sri Lankan government upgrade and develop the Internet Infrastructure in the form of installation of super fast telecommunication network using fiber optic cables and other necessary hardware and software to compete in Global market.

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