

**Relationship between the antecedents of ICT Adoption and  
the Business Performance of SMEs in the Colombo District,  
Sri Lanka**

**M. H. D. N. Perera**

Department of Entrepreneurship,  
Faculty of Management Studies and Commerce,  
University of Sri Jayewardenepura, Sri Lanka  
*dhanukaprr1@gmail.com*

**M. P. S. R. Perera**

Department of Entrepreneurship,  
Faculty of Management Studies and Commerce,  
University of Sri Jayewardenepura, Sri Lanka  
*shanika@sjp.ac.lk*

**Received:15.07.2020**

**Accepted:01.09.2020**

**Published:07.09.2020**

**ABSTRACT**

ICT has influenced greatly in changing the business structures and communication processes along with aiding rapid globalization and spread of knowledge. The effect of ICT on the economy, social structures and even personal development has become an important topic on empirical studies in recent decades. Therefore, the purpose of this study is to gain a deeper understanding of how the antecedents of ICT Adoption influences the Business Performance of SMEs in the Colombo District of Sri Lanka. The study observes the association between the Business Performance and the three antecedents of ICT Adoption observed throughout the literature and used in various models such as the Technology, Organization and Environment (TOE) model, the Diffusion of Innovation model and the TAM Model. The three factors being

Technological Factors (Relative Advantage and Complexity of ICT), Organizational Factors (Owner's Knowledge of ICT) and Environmental Factors (Institutional Intervention and Competitive Pressures).

The author surveyed 385 SME owners in the Colombo district using a structured questionnaire developed through the constructs of different adoption models. The findings showed a positive relationship between the three factors; Technological, Organizational and Environmental and the Business Performance of SMEs. Out of the three factors, Environmental factors show to have the highest level of relationship with Business Performance. This seems to indicate that Institutional Intervention and Competitive pressures have a higher influence on BP. The implications of these findings are presented in the study.

### ***Keywords***

*Small and Medium Scale Enterprises, Information and Communication Technology, Business Performance, Technology Organization and Environment Model, Diffusion of Innovation model, Colombo District, Sri Lanka.*

### **1. Introduction**

The contribution of Small and Medium Scale Enterprises (SMEs) to the development of the economy widely recognized to the extent that SMEs are considered to be the backbone of any economy (Ng & Kee, 2017). Being the primary employment provider in the Private Sector, SMEs account for more than one third the total exports in the Asia region alone. (Channel News Asia, 2016).

Considered as the backbone of the Sri Lankan economy, SMEs accounts for

more than 75% of the total businesses which contributes to 45% of employment creation in Sri Lanka as well as being responsible for as much as 52% to the Gross Domestic Production. (Central bank, 2018). Despite its importance, it has been identified that the survival rate of SMEs is only 20% and a staggering 80% of the SMEs fail within the first five years of operations and the failure of such SMEs can be attributed to a variety of factors including the inefficient management and handling

of the business processes, lack of standardization and inflexibility of the structure. (Priyadharsan and Lakshika, 2012)

ICT has influenced greatly in changing the business structures and communication processes along with aiding rapid globalization and spread of knowledge (Tarutè and Gatautis, 2014). Technology and its various commercial applications have a strong influence on how businesses operate in the modern world. Information and Communication Technology (ICT) in particular has proven to be a mean of increasing competencies and competitiveness of SMEs enabling them to compete even with larger organizations at a similar level (Miraz and Habib, 2016)

Therefore, the objective of the study is to identify the relationship between Technological Factors, Organizational Factors and Environmental Factors and the Business Performance of SMEs in Colombo District, Sri Lanka

## 2. Literature Review

This paper aims to explore the relationship between the antecedents

of ICT Adoption and the Performance of SMEs. The literature reviews the available literature to develop an understanding of the concepts used in the study. Namely; Small and Medium Scale Enterprises (SMEs), Information and Communication Technology (ICT) and its adoption and the Business Performance.

### 2.1. *Small and Medium Scale Enterprises*

There is no universally accepted definition for SMEs. However, this study will adhere to the definition according to the Department of Census and Statistics (2015) which states that an SME is an enterprise with 5-50 employees and capital of less than 50Mn for Retail, 5-100 employees and capital of less than 100Mn for service and wholesale, and 20-300 employees and capital of less than 300Mn for Manufacturing organizations.

*“The category of Small and Medium-sized Enterprises (MSMEs) is made up of enterprises which employ less than 300 employees and which have an*

*annual turnover not exceeding Rs.750 Mn”*

- National Policy Framework (2013)

## 2.2. *Information and Communication Technology*

ICT is used most of the time synonymously with general technology. However, while attempting to provide a more specific definition, Porter and Millar in 1985 defined ICT as “a Collection of software, hardware, techniques of telecommunication and information management, applications and devices that are used to create, store, retrieve and disseminate information.”

## 2.3. *Business Performance*

Business performance is an indication of how well the business is managed and to what degree of success, it manages to deliver value to the customers and other stakeholders (Wu & Zhao 2009). The variety of information that is necessary to accurately measure business performance can be categorised into

financial and non-financial performance measures (Sidik, 2012). Financial Measurements involves measures of profitability such as Return on Assets, ROE, Net Income/Revenue, ROI, EPS, Stock Price and others that can be quantified in monetary terms (Santos & Brito, 2012). Non-financial measures of performance have been identified by Lumpkin and Dess (2001) as company reputation, goodwill and public image, the satisfaction of employees and customers etc.

## 2.4. *Technological, Organizational and Environmental (TOE) Model*

The Technology, Organizational and Environmental (TOE) Model, developed by Tornatzky and Fleischer in 1990 showed the importance of information technology adoption in firms while providing a mean of evaluating such adoption of technology. Since then, the TOE model has widespread adoption and provides a more comprehensive framework on the adoption of Information and Communication

Technology among organizations. (Zhu *et al.*, 2004). The TOE model which has a solid theoretical and empirical support (Oliveira, Martins and Lisboa, 2011) put forward Technological Context, Organizational Context, and the Environmental Context as the main aspects that influence such adoption as described below. This inclusivity has made the TOE Framework superior to other similar frameworks to measure the adoption and the implementation of Technology within organizations. (Zhu and Kraemer, 2005; Ramdani, Kawalek and Lorenzo, 2009; Oliveira and Martins, 2010; Hossain and Quaddus, 2011)

### 3. Methodology

Based on the thorough review of the literature, the Conceptual Model has been developed by the authors to analyse the relationship between the antecedents of ICT Adoption and the dependent variable: Business Performance (BP) of SMEs. The independent variables were taken as Technological Context/Factors (TF), Organizational Context/Factors (OF)

and Environmental Context/Factors (EF) to represent the dimensions of Antecedents of ICT Adoption.

TF consists of the sub-dimensions Relative Advantage and Complexity. OF consists of Owner ICT Knowledge and EF consists of the sub-dimensions of Competitive Pressures and Institutional Intervention.

The formulated Hypotheses are as follows;

*H1 – There is a significant relationship between Technological Factors and SME Performance*

*H2 – There is a significant relationship between Organizational Factors and SME Performance*

*H3 – There is a significant relationship between Environmental Factors and SME Performance*

#### 3.1. Research Method

The population selected for this study is the collection of all SMEs registered in the Colombo District of Sri Lanka as per the records of the Department of Census and Statistics. This population consists of 135,998 units.

The unit of analysis is an individual Small and Medium Scale Enterprise in the Colombo District, Sri Lanka.

Convenient sampling method for the quantitative analysis of the study was used as per the limitations imposed with the timeframe and accessibility granted to the researcher.

#### 4. Results and Discussions

##### 4.1. Data analysis

A KMO-Bartlett's test and Cronbach Alpha test was carried to ensure the validity and the reliability of the dataset

respectively. Construct validity was ensured through factor loadings and as a result, indicators were removed as those were not exceeded 0.7. Convergent validity was also satisfied with KMO values which exceeded 0.5. Reliability of the questionnaire was ensured through the Cronbach's Alpha value which exceeded 0.7 for all factors.

##### 4.2. Bivariate Analysis

###### 4.2.1. Correlation Analysis

The Pearson Correlation between BP and TF is 0.321 signalling a weak positive relationship between

Table 1 Correlation Analysis

		Correlations			
		TF	OF	EF	BP
TF	Pearson Correlation	1	.448**	.358**	.321**
	Sig. (2-tailed)		.000	.000	.000
	N	314	314	314	314
OF	Pearson Correlation	.448**	1	.389**	.383**
	Sig. (2-tailed)	.000		.000	.000
	N	314	314	314	314
EF	Pearson Correlation	.358**	.389**	1	.490**
	Sig. (2-tailed)	.000	.000		.000

	N	314	314	314	314
BP	Pearson	.321**	.383**	.490**	1
	Correlation				
	Sig. (2-tailed)	.000	.000	.000	
	N	314	314	314	314

\*\* . Correlation is significant at the 0.01 level (2-tailed).

**Source:** Compiled by the authors based on survey data

the variables. Since the Sig. value is 0.000 which is less than 0.001, it can be concluded that the relationship is significant.

The Pearson Correlation between BP and OF is 0.383 signalling a weak positive relationship between the variables. Since the Sig. value is 0.000 which is less than 0.001, it

can be concluded that the relationship is significant

The Pearson Correlation between BP and EF is 0.490 signalling a moderate positive relationship between the variables. Since the Sig. value is 0.000 which is less than 0.001, it can be concluded that the relationship is significant.

### Table 2 Hypothesis Testing

No	Hypothesis	Supported or Not
H1	There is a significant relationship between Technological Factors and SME Performance	<b>Supported</b>
H2	There is a significant relationship between Organizational Factors and SME Performance	<b>Supported</b>
H3	There is a significant relationship between Environmental Factors and SME Performance	<b>Supported</b>

**Source:** Compiled by the authors

## 5. Discussion and Conclusion

The study sets out to identify the relationship between the antecedents of ICT Adoption and the Business Performance of SMEs in the Colombo district, Sri Lanka. Based on the data gathered, it was clear that there was a positive relationship between the independent variables; TF, OF and EF and the dependent variable BP.

This finding is conforming to that of the findings found through the literature in that it shows a positive relationship between ICT Adoption and Business Performance. However, several noticeable findings were the strength of the relationships which albeit positive, was still not strong.

It was similarly interesting to find that Environmental Factors had the strongest relationship with Business Performance when compared with TF and OF. In this instance, this study contradicts the findings of (Setiowati *et al.*, 2015) which highlights a negative relationship between

Institutional Intervention and Business Performance. There, the SMEs developed skeptical attitudes regarding government support. However, the relationship between EF and BP is in line with most empirical studies which finds government support fosters the adoption of ICT and growth of SMEs.

In conclusion, the data suggest and reaffirms the findings in the literature which assures a positive relationship between the Antecedents of ICT Adoption and SME Performance thereby signalling a positive relationship between ICT Adoption and Performance. Entrepreneurs could use this information to increase their adoption of ICT in their businesses to strive for better performance while the Government and relevant regulatory bodies could use these findings to structure their policies and initiatives around the promotion of ICT Adoption among SMEs.



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