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Open Innovation Strategy and Performance of SME in Sri Lanka

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ABSTRACT: *Smesplay Asignificant Role In Any Developing Economy And Most Of Those Enterprisesdo Not Succeed In Any Discipline Domain. In The Research Of Innovation, Their Two Types Basically Known Onopen Innovation (Oi) And Close Innovation (Ci).This Study Mainly Brings Into Focuson Investigatingwhether There Is A Strong Relationship Between Open Innovation Strategies And Organisational Performance Of The Sme Sector In Sri Lanka.The Target Population Of This Study In Comprise The Smes Which Are Operating In The Colombo District And A Sample Of 50 Smes Is Selected Simplyat Random To Effect Achievement Of The Study Objective. Data Was Collected Using Structured Questionnaire Based Onfive-Pointlikert Scale And Data Analysis Techniques Which Aremainly Used Comprise Descriptive Analysis, Correlation Analysis And The Linear Regression Analysis. The Main Findings Of This Study Indicate That All The Independent Variables Are Significantly Correlated With Performance Of The Organisation. Furthermore, Those Variables With The Dependent Variables Of Organizational Performance Representsignificant Regression Model With All The Variables. In Order To Fill The Identified Gaps Can Be Endorsed To The Effect That Customer Involvement For Marketing And Innovation, Outsourcing Research And Development (R&D) And Technology Transfers, Investment From Local And Foreign External Sources, Organising A Venture Business, Joint Venturing And Franchising Be Deemed As Solutions For Open Innovation.*

KEY WORDS: *Performance of SMEs, Open Innovation, Close Innovation*

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I. INTRODUCTION

It is aglobally recognised fact that Small and Medium scale enterprises (SMEs) play pivotal roles in addressing the uses of unemployment predicaments in the respective comities. In the context of Sri Lanka as a developing country, Small and Medium Scale Enterprises (SMEs) contribute in large measure to hear economy too, accounting for 80 per cent of all businesses(Department of Census and Statistics, 2014). These are discernible in all sectors of the economy, primary, secondary and tertiary and provide employment for persons withdiverse skills, skilled, semi-skilled or unskilled personal.SMEs are an essential source of employment opportunities and are estimated to contribute to about 35 percent of employment(Department of Census and Statistics, 2014). The SMEs play an important role in promoting inclusive growth. But due to reasons of, lack of new inventions, and innovations as well as the knowledge for the innovations it also imposes erects a major barrier for the Sri Lankan SME's to circumvent or avoid these barriers.

1.1 Problem Statement

Small and medium enterprises play pivotal roles in the economic growth and development of most economies in the country. However, their survival is usually threatened by their inherent resource limitation which has necessitated the adoption of open innovation strategy so as to enjoy some other complementary with external knowledge. Engaging in collaborations with external firms will, no doubt, enhance the innovative performance of SMEs but collaborating with too many firms will have to be continuously observed as to howto control theimpact on the focal firms. This study is to be investigated whether there is a strong relation between open innovation strategy and performance of the SME sector in Sri Lanka. How different knowledge management strategies and capabilities may have effects on the implementation of open innovation and whether the adoption of open innovation may affect organisational performance. According to that, the research topic is *'**Relation between Open Innovation strategy and performance of the SMEs in Sri Lanka'.***

1.2 Research Objective

The main research objective of this study is as follows:
To identify the relationship between open innovation strategy and performance of SME sector in Colombo District Sri Lanka.
To achieve themain objective, the following specific objectives are also considered.

1. To identify the relationship between customer involvement and organisational performance
2. To identify the relationship between collaboration with other firms and organisational performance.
3. To identify the relationship between outsourcing and organisational performance.
4. To identify the relationship between venturing and organisational performance

II. BRIEF LITERATURE REVIEW ON CONCEPTS

The guidelines on measurement of innovation, the Oslo Manual (OECD, 2005), define innovation as the implementation of a new or significantly improved product (good or service) or process, a new marketing method, or a new organisational method in business practices, workplace organisation or external relations. As well as, Oxford Dictionary (2017), defines that innovation as the action or process of innovating, and furthermore, it explains innovation that crucial to the continuing success of any organisation. As well, in a social context, innovation helps create new methods for alliance creation, joint venturing, flexible work hours, and thecreation of buyers' purchasing power.

2.1 Open Vs. Close Innovations

According to Innoget (2011), Open Innovation was defined as the use of purposive inflows and outflows of knowledge to accelerate internal innovation, and expand the markets for external use of innovation, respectively(Chesbrough, 2003). Once anopen innovation is adopted, the organisation's boundaries become permeable, and that allows combining the company resources with the external cooperators. As well as OECD (2008), explains that not all firms and sectors are heavily involved in open innovation, and some activities remain in-house, but as a general trend there is increasing collaboration among external actors in the innovation process, as demonstrated for example by growing numbers of joint patent applications (OECD, 2008). The collaborations involved range from joint ventures and joint development contracts to contract R&D, licensing and venturing, including small firms as well as large ones. The difference between open and closed innovation is that in the case of closed innovation the ideas, inventions, investigations and developments required to place a product on the market, are generated within the company. However, when applying the open innovation system, the company can use external resources such as technology and at the same time make available their own innovations to other organisations(Innoget, 2011). The final result is that some products reach the market by using exclusively internal resources from the initial idea up to the commercialization of the final product. Other products are the result of incorporating external knowledge at different stages of their development (Chesbrough, 2003).

Whenever innovation is concerned, organisations mostly pay with closed innovations, as to prevent and to make more secure the data used, Table 2.1 below, shows the summarised information gathered to compare the two types of innovations.

Table 0.1: Closed innovation approach vs. open innovation approach

Closed Innovation	Open Innovation
The smart people in our field work for us.	Not all the smart people work for usAnd there are smart people inside and outside the company.
To profit from R&D, we must discover it, develop it, and ship it ourselves.	External R&D can create significant value; internal R&D is needed to claim some portion of that value.
The company that gets an innovation to market first will win.	Building a better business model is better than getting to market first.
If we create the most and best ideas in the industry, we will win.	If we make the best use of internal and external ideas, we will win.
We should control our intellectual properties so that our competitors don't profit from our ideas.	We should profit from others‟ use of our IP, and we should leverage others‟ IP whenever it advances our own business model.

Source: (Chesbrough, 2003)

Accordingly, a variety of empirical studies has indicated that the character of a firm's internal search strategy within a technological trajectory can significantly influence its innovative performance (Katila, 2002; Katila and Ahuja, 2002). We need to identify and recommend to the SMEs' policy-makers how open innovation strategy influences in order to foster the achievement of their organisational goals.

The literature has not fully shed light on how OI affects SMEs' performance. Along with other researchers in the OI domain, would be glad to understand whether a broad or deep (intensive) OI adoption may enhance firm performance, but being unsatisfied with the approaches taken to date relying on a limited number of proxies, we propose aconcurrent method by interpreting OI adoption as a process involving changes and byexpanding Laursen and Salter's (2006) breadth and depth concept to OI modes.

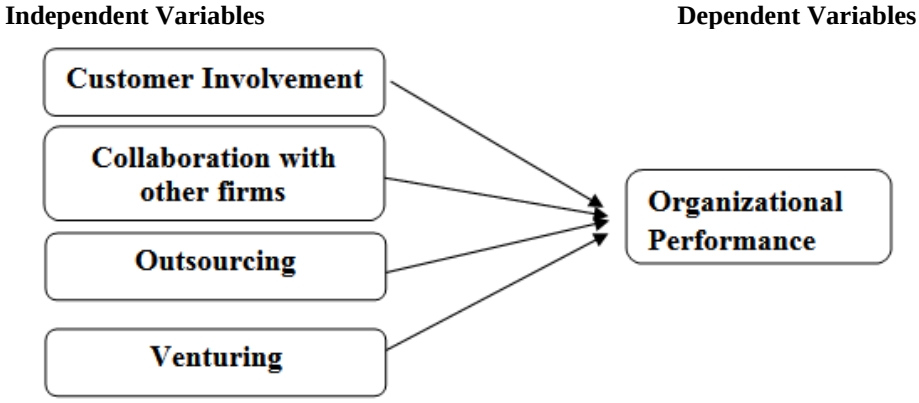
III. RESEARCH METHODOLOGY

The third chapter discusses the methodology which is used to achieve the objectives of the study. Mainly it focuses on the conceptual framework which is constructed using previous literature and hypotheses are propounded with respect to the conceptual framework. Operationalization structure is made espousing the cause and supporting the drafted questionnaire. Then the research strategy, population and sample, data collection, instrumentation and finally data analysis techniques are discussed.

3.1 Conceptual framework of the study

A conceptual framework is created using the independent and the dependent variables which are identified in the causeof literature review.

Figure III.1: Conceptual framework



Source: The author's compilation using literature

3.2 Hypotheses

To achieve the research objective, four hypotheses are tested. Hypotheses are formulated based on the conceptual framework, and they are, namely;

01. $\mathbf{H_0}$ = There is no relationship between customer involvement and organizational performance
$\mathbf{H_1}$ = There is a relationship between customer involvement and organizational performance

02. $\mathbf{H_0}$ = There isno relationship between collaboration with other firms and organizational performance
$\mathbf{H_1}$ = There is a relationship between collaboration with other firms and organizational performance

03. $\mathbf{H_0}$ = There isno relationship between outsourcing and organizational performance
$\mathbf{H_1}$= There is a relationship between outsourcing and organizational performance

04. $\mathbf{H_0}$= There is no relationship between venturing and organizational performance
$\mathbf{H_1}$= There is a relationship between venturing and organizational performance

Using hypotheses mainly,testsare carried out to determine whether there exists a relationship between the independent and the dependent variables.

3.3Sample and Data Collection

The population of the study is the SMEs which are currently operating, and it was more narrowed down for this study as SMEs which are currently operating in Colombo district. Both the primary and to secondary data are usedin this study. Primary data is collected via the structured questionnaire and/or interview. This questionnaire is a close-ended questionnaire including categorical variables. Mainly, the data is collected on the Likert scale.

IV. DATA ANALYSIS AND PRESENTATION

The validity of the assessment is the degree to which it measures what it is supposed to measure. Checking validity is important to measure before testing the hypotheses.Kaiser-Meyer-Olkin (KMO) Test is a measure of how suited data is for Factor Analysis.KMO returns values between 0 and 1. According to Table 4.1, all the KMO values are greater than 0.6, and also P-values are less than 0.05 of Bartlett's Test. Which means all the variables are valid.

Table III.1: KMO and Bartlett's Test

Variable	KMO	Bartlett's Test	P-Value

Price	0.781	207.881	0.000
Brand Name	0.798	184.104	0.000
Quality	0.622	60.722	0.000
Advertising	0.699	170.250	0.000

Source: Field Survey, 2017

Reliability in statistics and psychometrics is the overall consistency of a measure. A measure is said to have a high reliability, if it produces similar results under consistent conditions.Cronbach's alpha is a measure of internal consistency, that is, how closely related in a set of items as a group. It is considered to be a measure of scale reliability. A 'high' value for alpha does not imply that the measure is unidimensional. If it is higher than 0.7, it is called reliable. According to Table 4.2, all the values of Cronbach alpha are greater than 0.7. Therefore, all the four variables are highly reliable.

Table III.2: Cronbach Alpha

Variable	**Cronbach Alpha**
Price	0.916
Brand Name	0.912
Quality	0.737
Advertising	0.877

Source: Field Survey, 2017

4.1 Hypotheses Testing

- **Hypotheses 01**

According to the respondents' responses, most of therespondents think that they take customer feedback continually and identify the customer requirementsare most significant factors on customer involvement.

Table III.3: Customer Involvement and Organisational Performance

		Value	Asymptotic Standardized Error[a]	Approximate T[b]	Approximate Significance
Interval by Interval	Pearson's R	.728	.064	7.363	.000[c]
Ordinal by Ordinal	Spearman Correlation	.712	.077	7.028	.000[c]
N of Valid Cases		50			

a. Not assuming the null hypothesis.
b. Using the asymptotic standard error assuming the null hypothesis.
c. Based on normal approximation.

Source: Field Survey, 2017

According to the t-test, P-Value < α (0.000), does not reject H_0. Therefore, there is a relationship between customer involvement and organisational performance. Moreover, Pearson coefficient is 0.728 and Spearman coefficient is 0.712. This means that there is ahigh correlation between Customer Involvement and Organisational Performance.

- **Hypotheses 02**

Table III.4: Collaboration with other firms and organisational performance

		Value	Asymptotic Standardized Error[a]	Approximate T[b]	Approximate Significance
Interval by Interval	Pearson's R	.681	.066	6.449	.000[c]
Ordinal by Ordinal	Spearman Correlation	.640	.089	5.769	.000[c]
N of Valid Cases		50			

a. Not assuming the null hypothesis.
b. Using the asymptotic standard error assuming the null hypothesis.
c. Based on normal approximation.

Source: Field Survey, 2017

According to the t-test, P-Value < α (0.000), does not reject H_0. Therefore, there is a relationship between collaboration with other firmsand organisational performance. Moreover, Pearson coefficient is 0.681 and Spearman coefficient is 0.640. This means that there is ahigh correlation between collaboration with other firms and Organisational Performance.

- **Hypotheses 03**

Table III.5: Symmetric Measures of Outsourcing and organisational Performance

		Value	Asymptotic Standardized Error[a]	Approximate T[b]	Approximate Significance
Interval by Interval	Pearson's R	.733	.066	7.475	.000[c]
Ordinal by Ordinal	Spearman Correlation	.632	.102	5.657	.000[c]
N of Valid Cases		50			

a. Not assuming the null hypothesis.
b. Using the asymptotic standard error assuming the null hypothesis.
c. Based on normal approximation.

Source: Field Survey, 2017

According to the t-test, P-Value < α (0.000), does not reject H_0. Therefore, there is a relationship between outsourcing and organisational performance. Moreover, Pearson coefficient is 0.733 and Spearman coefficient is 0.632. This means that there is ahigh correlation between outsourcing and Organisational Performance.

- **Hypotheses 04**

Table III.6: Symmetric Measures of Venturing and Organizational Performance

		Value	Asymptotic Standardized Error[a]	Approximate T[b]	Approximate Significance
Interval by Interval	Pearson's R	.308	.129	2.240	.030[c]
Ordinal by Ordinal	Spearman Correlation	.318	.137	2.326	.024[c]
N of Valid Cases		50			

a. Not assuming the null hypothesis.
b. Using the asymptotic standard error assuming the null hypothesis.
c. Based on normal approximation.

Source: Field Survey, 2017

According to the t-test, P-Value < α (0.000), does not reject H_0. Therefore, there is a relationship between venturing and organisational performance. Moreover, Pearson coefficient is 0.308 and Spearman coefficient is 0.318. Which means that there is ahigh correlation between venturing and Organisational Performance.

4.2 Regression Analysis

Table III.7: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.869[a]	.755	.733	.26615

a. Predictors: (Constant), Venturing, Outsourcing, Collaboration with other firms, Customer Involvement
b. Dependent Variable: Organizational Performance

Source: Field Survey, 2017

According to the Table 4.7, R Squared is 75.5 percent and R Squared adjusted is 73.3 percent. It means that 75.5 percent of the variability of organisational performance is explained by regression fit, and it is agood fit.

Table III.8: ANOVA

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	9.800	4	2.450	34.587	.000[b]
	Residual	3.188	45	.071		
	Total	12.988	49			

a. Dependent Variable: Organizational Performance
b. Predictors: (Constant), Venturing, Outsourcing, Collaboration with other firms, Customer Involvement

Source: Field Survey, 2017

As shown in Table 4.8, the P-Value represent by F-test from ANOVA Table 4.8 and it is 0.000 also it is less than thelevel of significance 0.05. Therefore, we can conclude that regression model is adequate.

Table III.9: Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.838	.289		2.896	.006
	Customer Involvement	.303	.080	.468	3.790	.000
	Collaboration with other firms	.141	.058	.279	2.437	.019
	Outsourcing	.409	.086	.439	4.739	.000
	Venturing	-.174	.052	-.322	-3.325	.002

a. Dependent Variable: Organizational Performance

Source: Field Survey, 2017

According to the coefficient Table 4.9, all the coefficients on independent variables are significant because thefullmodel is accepted. Therefore, adequate regression model is; **Organizational Performance** = 0.838 + 0.303*Customer Involvement + 0.141* Collaboration with other firms + 0.409*Outsourcing - 0.174*Venturing

4.3 Test of Normality

Table III.10: Tests of Normality

	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Unstandardized Residual	.168	50	.001	.927	50	.004

a. Lilliefors Significance Correction

Source: Field Survey, 2017

According to the Kolmogorov-Smirnova test and Shapiro-Wilk test, the normality assumption on standard residuals is violated. It is also clearly represented by following figures; histogram and normal probability plot

V. CONCLUSIONS AND RECOMMENDATIONS

In this study, themajority of respondents who gave their responses to the study ismale, and it is 80 percent of the total population. Majority respondents' age category is age category of 26 to 35, and the second, thehighest number of respondents are representedin age category, over 55 years. The highest education qualification is adegree, and it is 40 percent.Most of thebusinesses which involvedin the study are runningthe businesses for a period more than 10 year.The second highest operating period is 5 to 7 years, and it is 20 percent from the sample. Representation of new businesses is limited to this study. Entrepreneurs who participated in the study are giving more attention to R&D and Innovations. It is a good trend for the future development. Exactly 36 percent of respondents have said that they have more than 10 separate staff for marketing. Which means they give their high attention to marketing. More than 90 percent of respondents have done at least one innovation within that period. It is a good trend of the future development their business. Customer suggestions, as well as employee suggestion, are very important for the product development. Customers can give their suggestions to improve the product to obtain more benefits from theproduct. Employees suggestions are very important to make production process, innovation and the marketing process more sustainable. Most of therespondentshad not obtained memberships in any technological firm or business club.Most of therespondentshave not taken patent or get at least an industry awards. All the independent variables are valid and reliable. As well as, all the hypotheses are significantly accepted. A full model which included all independent and dependent variables are adequate, but normality assumption of standard residuals is violated.

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