Identification of Relationships between Firm Traits and Innovation Potential With Reference to Software Industry in Sri Lanka

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Introduction

According to Joseph Schumpeter (1950) the concept of "Creative Destruction" emphasizes that the introduction of new and better ways, products and services makes the previous ways, products and services obsolete. Consequently, the role of innovation appreciated as a key driver of the economic growth.

In the organizational context, innovations may be associated with performance and growth through improvements in efficiency, productivity, competitive positioning, etc. All the organizations have to be capable of introducing innovations regardless of being technological firms or not.

The term innovation refers to a new way of doing something. It may refer to incremental, radical, and innovative changes in thinking, products, processes, or organizations. Innovations are typically adding value to the existing operation of the business and create a positive impact towards the organization. The work environment of the firm, motivation towards innovation, experience of the business, number of and skills of employees of the business and all other financial and non financial factors affect the ability of generating innovations.

Researchers have argued on the relevance of various firm traits to innovative efforts and associated performance. Frequently considered firm traits include degree of diversification (Pascoe,1987), and Research and Development (R&D) (Dujowich, 2007), Age of the firm, extent of local ownership, firm size, share of export in sales, type of ownership (Lee, 2004), firm turnover (Elj, 2009), firm size, ownership, R&D activities, patent (Hanel, 2002). According to Schumpeter (1942), large firms had become the drivers of the innovation in the US economy. In addition, capacity of a firm to be profitable from innovation might depend on its size and he claimed that large firms are more likely to innovate than small firms.

This research supplemented the limited pool of current literature on firm traits and innovation potential in Sri Lankan context. Accordingly, the objectives of this study were to identify relationship between firm traits and innovation potential and to identify most critical factor which determines the innovation potential in Software industry in Sri Lanka.

Methodology

The sample of the study was extracted from a sampling frame obtained on the basis of registration at the Sri Lanka Association of Software Industry (SLASI). Out of 60 companies which had registered at SLASI, 37 companies were included in the sample based on the simple random sampling technique. A structured questionnaire was used as the data collection instrument. Thus, this research made use of frequently tested firm traits namely firm size, firm age, R&D intensity and type of ownership. Data analysis was mainly based on Chi-square test of association and Spearman`s rank correlation.

Results and discussion

Table 1 summarizes the findings in relation to number of innovations introduced by the companies included in the sample in terms of firm traits.

Table 1: Number of innovations in terms of firm traits

Firm traits	Sub categories	Number of innovations	
		less than five	more than five
Firm age	Young	17	4
	Old	5	11
Firm size	Small	5	12
	Medium and large	17	3
R& D intensity	Less than Rs.1,000,000	16	3
	Greater than Rs.1,000,000	6	12
Ownership	Sole proprietorship	4	3
	Private limited companies	18	12

Source: Field survey 2010

Majority of software companies in Sri Lanka tends to launch both new to the company and new to the market innovation, but it is less than five within last five years. Accordingly, 22 companies had introduced less than five innovations while 15 companies had introduced more than five innovations during the last five years. As far as firm size is concerned, it is difficult to see a huge difference between the two types. Average innovation potential is slightly differ from each other. There are 51.35% of the sample had spend less than 1,000,000 as R&D expenditure while 48.65% companies spend more than Rs.1,000,000 R&D expenditure per annum. However, the number of innovations introduced in terms of R& D potential is not highly differing from the amount of investment. There was a clear difference in the ownership category as most of the innovations have been introduced by private limited companies and that accounts for 81% of the total introduction.

The following four hypotheses were tested in this study.

H_1: There is a relationship between firm age and innovation potential

H_2: There is a relationship between firm size and innovation potential

H_3: There is a relationship between R & D intensity and innovation potential

H_4: There is a relationship between Type of ownership and innovation potential

Thus, as shown in the Table 2, it is clear that there is a statistically significant relationship between firm size, firm age and R & D intensity and the innovation potential. Hence, the first three hypotheses are accepted at the 5% level of significant. Subsequently, Spearman rank correlation coefficients were used to identify the most critical factor which determines the innovation potential in Software Industry in Sri Lanka and the findings have been summarized as follows in the Table 3. Accordingly, what makes clear is that there is a moderately negative correlation between firm size and innovation potential while there is a moderately positive correlation between firm age and R and D intensity and innovation potential.

Table 2: Summary of Chi-Square Tests of Firm Traits and Innovation Potential

Firm trait	Particulars	Value	df	Asymp. Sig. (2-sided)
Firm Age	Pearson Chi-Square	9.306	1	.002
	Continuity Correction	7.359	1	.007
	Linear-by-Linear Association	9.055	1	.003
Firm Size	Pearson Chi-Square	11.780	1	.001
	Continuity Correction	9.586	1	.002
	Linear-by-Linear Association	11.461	1	.001
R & D Intensity	Pearson Chi-Square	9.926	1	.002
	Continuity Correction	7.927	1	.005
	Linear-by-Linear Association	9.657	1	.002
Type of Ownership	Pearson Chi-Square	.019	1	.890
	Continuity Correction	.000	1	1.000
	Linear-by-Linear Association	.019	1	.891

Source: SPSS output based on data of field survey, 2010

Table 3. Correlation Coefficients of firm traits and innovation potential

Firm Traits	Spearman Correlation Coefficients	P value	Type of Relationship with Innovation Potential
Firm age	0.502	0.002	Positive
Firm size	-0.564	0.000	Negative
R and D intensity	0.518	0.001	Positive
Type of Ownership	-0.023	0.893	No relationship

Source: SPSS output based on data of field survey, 2010

Conclusions

Statistical evidences indicate that firms with more experience are more innovative than less experienced firms since there is a positive correlation between firm age and innovation potential. Though the findings of some previous scholars emphasized that there is a positive relationship between firm size and innovation potential, finding of this research implies that the smaller firms introduce more innovations than large firms in software industry in Sri Lanka.

It is evident that there is a positive relationship between R&D intensity and innovation potential. It implied that higher R&D intensity will result in higher level of innovation potential.

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