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SOCIOLOGICAL EVALUATION OF THE SUCCESS OF INVENTIVE COMMUNITY OF SRI LANKA

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INTRODUCTION

Technological development is becoming a decisive factor in the rapid growth among Asian economies (UNDP, 2001; World bank, 1999; WIPO, 2007). However, not all the Asian countries have achieved the identical level of technological development (Wickramasinghe & Ahmad, 2009). Following the traditional comparative advantage assumption, some of the countries are seriously dependant on the technological development of their neighboring countries. However, in a modern Knowledge driven economy, technological development is not only about the high level technology utilization. Creation of new technological knowledge through the inventions and innovations is much superior than the mere utilization of technologies developed elsewhere (Jaffe, Trajtenberg, & Romer, 2002). Even though, Sri Lankan policy makers are discussing about the growth in technological development through the increases of ICT infrastructure and penetration rates, so far technological knowledge creation in Sri Lanka is at a negligible level (WIPO, 2007). There are no large scale innovative companies, institutes or even universities, which are involved in technological innovations. The number of average patent application per year in Sri Lanka for last decade is approximately 150 and more than 80 percent of them are forwarded by the independent inventors (National Intellectual Property Office, 2008). Therefore, these independent inventors are integral part of the innovation system in Sri Lanka that should not be ignored.

RESEARCH PROBLEM

Modern theories on technological development in developing countries emphasize, the development of innovation systems based on the inherent nature of the local and traditional knowledge of a specific country (Commission on Intellectual Property Rights, 2002). Therefore, the local innovation system and its functionality play an important role for the advancement of technological development in less developed countries (Weick & Eakin, 2005). Owing to the fact that innovation system in Sri Lanka is dominated by the grassroots level independent inventors, it is important to understand the inherent characteristics of this inventive community. Even though, the disciplines of science and engineering are at the focal point in the discussions of technology development, the inherent nature of the innovation system of Sri Lanka demands sociological and psychological studies upfront to understand the independent inventors from inside out. Technologically developed countries including USA, Canada, Italy and Australia consistently explore the demographic and technological factors of independent inventors (Amesse & Desranleau, 1991; Astebro, 2003; Sirilli, 1987; Weick & Eakin, 2005). However, so far there is hardly any published study in Sri Lanka or even Asia that explain the characteristics of independent inventors. This study aims to fill the said knowledge gap of independent inventors by explaining the basic demographic and technical profiles of the Sri Lankan independent inventors. The specific objectives to be achieved in this study are,

1. to explain the demographic and technical profiles of the independent inventors in Sri Lanka
2. to explore the impact of demographic and technical factors on the success of independent inventors in Sri Lanka and
3. to introduce strategies to motivate young people to involve in technical inventions.

METHODOLOGY

During the years 2000 to 2008, 640 Sri Lankan independent inventors applied for patents from Sri Lanka National Intellectual Property Office. The representative sample was selected from the population considering their geographical distribution using the stratified random sampling technique. Two-hundred independent inventors were selected covering 31% of the population. Data were collected using self administered questionnaires given to the inventors during the Sri Lankan Inventors Survey 2010 (SLIS 2010) panel discussions conducted during the months of February-July 2010.

FINDINGS AND DISCUSSION

According to the descriptive analysis of data presented in Table 01, grassroots level inventors in Sri Lanka are largely a middle-aged group with the average age being 42 years. Only 26 percent of the inventors were aged less than 30 years. Hence, the youth involvement in inventive activities is relatively less than the middle and old age groups.

The Grassroots level inventors are predominantly male, where only 5 percent of the respondents were female. Therefore, the opportunities for females in Sri Lankan grassroots level inventive community are less. Further, the grassroots level inventors in Sri Lanka are married group, where two-third of the inventors were married.

Grassroots level inventors in Sri Lanka largely represent the middle-income group of the country. Further, majority of grassroots level inventors in Sri Lanka are part time inventors. Majority of the grassroots level inventors live in rural areas.

	Frequency	%		Frequency	%
Age			**Education**		
12-18	10	5.0	School	80	40
19-30	43	21.5	vocational	34	17
31-40	45	22.5	Lower Tertiary	65	32.5
41-55	60	30.0	Post graduate	21	10.5
56-65	36	18.0	**Employment Sector**		
65+	6	3.0	Government	34	17
Gender			Private	77	38.5
Male	190	95	Non Government	01	0.5
Female	10	5	Freelance	88	44
Marital status			**Location**		
Married	135	67	Rural	128	64
Unmarried	65	33	Urban	72	36
Income (SLR 000')					
Low (less than 30)	79	39.5%	**Type of inventions**		
Medium (31-60)	95	47.5%			
High (higher than 61)	26	13%	New Products	89	44.5
			New process	37	18.5
			Product Development	37	18.5
			Process Development	37	18.5

Table 1: Demographic Profile of the Respondents

Achievement of Objective Success by the Respondents

According to the Figure 01, grassroots level inventors are moderately successful. However, almost 80 percent of them only achieved front end successes such as patent grants. Even though 59 percent of the inventors started to commercialize their inventions, only 37 percent of them successfully commercialized their inventions.

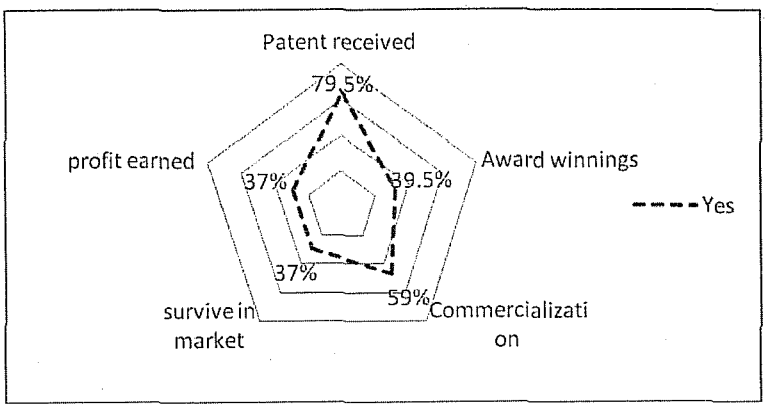

Figure 01: Achievement of objective success by the respondents

According to the analysis, age (F=2.562, p=.029), marital status (F=4.086, p=.045) and income level (F=3.852, p=.000) were identified as significant factors for determining the success of inventors. However, factors like education level (F=.549, p=.650), employment (F=2.183, p=.091), living area (F=2.083, p=.151) and type of invention (F=1.061, p=.304) have not significant. In-depth comparison of age, marital status, income and success of inventors is depicted in Table 02.

		Overall Success	Patent success	Award winning success	Taking to market	Market survival	Profit Earning
Age F=2.562, P=.029	Adolescent	1.80	.60	1.00	.20	.00	.00
	Young	2.21	.77	.56	.47	.23	.19
	Late Young	2.24	.84	.22	.58	.29	.31
	Middle	2.97	.82	.37	.68	.55	.55
	Late Middle	2.75	.86	.33	.69	.42	.44
	Old	2.17	.33	.17	.67	.50	.50
Marital Status F=4.086, p=.045	Unmarried	2.22	.80	.57	.49	.17	.18
	Married	2.67	.79	.31	.64	.47	.46
Income Level F=3.852, P=.000	Low	1.96	.75	.49	.38	.19	.15
	Medium	2.95	.86	.34	.76	.48	.51
	High	*2.65*	*.69*	.31	*.62*	.50	.54

Table 02: Inventors' age, marital status, income level and success

According to the results depicted in Table 02, compared to late young and middle age groups (31-65 years), young inventors (12-30 years) have shown lower overall success. This pattern is evitable at every stage of the inventive process, except for award winning success. Young inventors have achieved higher award and reward wining success than other inventors. However, they are not very successful in back-end inventive process activities. Further, married inventors have higher overall success than the unmarried inventors. Even though, unmarried inventors had marginally higher patent and award winning success, married inventors were more successful in back-end commercialization, survival and profit making stages. According to the results of the study, inventors with high income level achieved higher success than the inventors with low income, especially in back-end inventive activities, influence of income seems to be much higher. Income is the major financial source for majority of grassroots level inventors (Whalley, 1992). Hence, higher income gives opportunities for inventors to spend more money on their inventive activities.

The findings of the study indicate the socio-demographic spatial pattern of the grassroots level inventors in Sri Lanka. The socio-demographic profile of the grassroots level inventors are largely similar to the socio-demographic profile of the independent inventors in USA (Weick & Eakin, 2005), Canada (Amesse & Desranleau, 1991), Italy (Sirilli, 1987) and India (Bhaduri & Kumar, 2010). Hence, the socio-demographic profile of grassroots level inventors is look-alike where ever they reside. Owing to their similar socio-demographic profiles, their impact and level of success in technological innovation largely depend on the external environment and social support they received. Even though the innovation development is macro level national issue, Sri Lanka needs to consider this micro level spatial pattern when deciding policies and practices to develop the inventive activities in the country.

Along with the rest of the world, Sri Lanka is going to face aging problem (Kinsella & Velkoff, 2001; De Silva, 1994). Even though, the impact of aging population on socio-economic activities has been discussed (Goh, 2005; Vodopivec & Arunatilake, 2008), there is little discussion on impact of aging inventive community. Owing to the fact that majority of the successful inventors in Sri Lanka are middle and old aged inventors, the innovation industry is not attractive for young people. Hence, sooner rather than later, grassroots level inventive community will become old. It will be further blow for the immature innovation system in Sri Lanka. Therefore, policy makers need to give their attention to encourage young people to involving in inventive activities by providing required support for them. Attention should be given beyond selecting best young inventors in annual inventor competitions.

CONCLUSION

Findings of the study indicates that, even though the technological knowledge creation is a scientific and engineering activity, innovation system has both sociological causes and consequences need to consider as important aspects of the development of localized technological knowledge creation system in Sri Lanka. Owing to the significant proportion of baby boomers' representation in inventive community, in near future they will be retiring from the inventive activities. Hence, in order to establish sustainable technological development, sooner rather later Sri Lanka needs to find the way to increase the youth engagement in inventive activities. Hence, the technology and sociology should go hand in hand in hand to, a successful knowledge creating society.

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