

The Need for Entrepreneurial Development: A Review of the Indian IT Industry

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Abstract

This research explores the gap between the technical and entrepreneurship skills of Indian IT professionals arising from the recent growth of the IT industry in India. The aim of this research is to develop an entrepreneur educational framework that is designed to bridge the gap between the technical and entrepreneurship skills of "would-be entrepreneurs" in environments that lack an appropriate entrepreneur support structure. Such environments can be found in developing countries where the funding priority is on providing humanitarian relief rather than on supporting entrepreneurial activity. The educational framework is generalisable to those industries where a gap exists between the development and acquisition of technical knowledge and the commercialisation of that technical knowledge.

Introduction

Entrepreneurial activity is important in creating wealth and generating employment. It is not enough to be a "knowledge nation"; that knowledge needs to be commercialised and transformed into profit making enterprises. Entrepreneurs act as catalysts for this transformation process. Metaphorically, they fuel the growth of economies. They contribute toward economic development by carrying out new combinations discontinuously (Schumpeter, 1934). This is done through one or more of the following activities: introducing new goods into the market; embracing new methods of production or delivery; opening new markets; and/or embracing new sources of supplies.

This research examines the prevalence of entrepreneurship in the Indian economy as it relates to the commercialisation of Indian information technology (IT). India has been experiencing an increasing demand for its technical skills in the IT sector in recent times. This, however, has not necessarily spawned a generation of high potential, value added, Indian owned, entrepreneurial IT ventures.

The research makes a contribution at two levels. At the theoretical level, the research provides the basis for a framework that can be used to assess the extensiveness of entrepreneurship in developing countries. At the applied level, the research has implications for government policy makers. It provides insights into the inadequacies of entrepreneurial development programs in India that could facilitate the transformation of locally developed technical knowledge into economic wealth and job creation.

Underpinning the training perspective is the view that entrepreneurship can be taught. Courses in entrepreneurship would include, for example, what it means to be enterprising; understanding the entrepreneurial process; how to recognise business opportunities; putting

together the entrepreneurial team; how to do more with less; the development of entrepreneurial strategies; and how to commercialise technology. Some would disagree that entrepreneurship can be taught (see, for example, Jagadeesh, 2000). However, there are many entrepreneurship programs in existence; supporting the notion that entrepreneurs are born but can be made "better" through training, education, and undertaking entrepreneurial apprenticeships (Timmons, 1999).

Entrepreneurship Development Programs in India

Following independence in 1947, India opted for a socialistic society. State-owned enterprises were seen as major tools to achieve the socialist objective. As such, a significant number of industries were placed under the "State-reserved" category (Khera, 1963). This restricted the development of private enterprise in those industries (Jalan, 1996). Restrictions were imposed on foreign investment, expansion, and the initiation of new ventures (Dandekar, 1992). These policies hindered the growth of entrepreneurship. It was not until post 1991 that the Indian economy more widely embraced private enterprise (Manikutty, 2000).⁶

Social, political, and cultural contexts influence the infrastructure supporting entrepreneurship (Carsrud and Sapienza, 1990). The major source of training, education, and research outside industrialised nations is quasi-governmental or governmental agencies (Brockhaus, 1991). In developing, and over-populated countries, such as India, funding for entrepreneurship education and research receives low priority due to the emphasis on humanitarian assistance programs that focus on nutrition and housing for the populace.

In spite of the priority given to humanitarian assistance programs by the Indian Government, there have been attempts to develop a culture of entrepreneurship in India over the past two decades. This has occurred through the introduction of various entrepreneurship related initiatives: both at the training and education levels (Stanford online, 1999). While some of these initiatives have achieved their stated objectives, many have failed. A common feature of the failed initiatives is that they were government sponsored. The Indian Government has been criticised for getting in the way of entrepreneurial development and for not providing appropriate incentives (Stanford online, 1999).

One government sponsored entrepreneurship-training program that has achieved limited success is the Entrepreneurship Development Program (EDP) (Patel, 1987). The EDP provides entrepreneurship training and counselling to "would be entrepreneurs" (Gupta, 1989). It was initially launched in the Indian state of Gujarat and the concept then spread to several other states including Tamil Nadu (www.ced-tamilnadu.org, 2001). The basic premise underlying the EDP is that the requisite confidence and ability for translating ideas into action can be developed in individuals.

There is a view that the EDP can lead to self-employment for those enrolled in the Program (Nelson and Neck, 1988); however, there is no conclusive evidence to suggest that the EDP leads to significant employment creation for others (Gupta, 1989). Thus, the Program may be likened to a small business startup program rather than a program that is the catalyst for developing growth oriented, wealth creating, entrepreneurial ventures. The EDP has been

⁶ In contrast, China opened up its economy to outside investment in the 1970s (Biers and Dhume, 2000). This helped China to emerge as an economic super power.

criticised because it suffers from a lack of vision. It also has been criticised because it has failed to promote the potential that exists in the Indian IT sector.

At the tertiary education level, entrepreneurship is taught at some Indian institutions. The Indian Institute of Technology (IIT) is one of India's most respectable tertiary educational institutions. In 2000, the six campuses of IIT admitted approximately 3,000 students of the 200,000 applicants looking for places (Ghosh, 2001).⁷ These institutes predominantly offer degrees in engineering and technology. However, in the past decade the IITs have incorporated management education into their curriculum and offer Masters level degrees in business administration. Even in these degrees entrepreneurship is not offered as a specialisation or as an area of research focus. The government spends approximately Rs 115,000 per IIT student per year. Approximately 35% of all IIT graduates settle abroad. Of the remaining 65% that remain in India, 25% enter the corporate world as managers, 30% opt for software jobs, and 10% join the civil service (Times of India, November 1999). Those starting up or planning to start up their own business ventures did not rate in the survey. The survey demonstrates that the premier technical education institutions in India have not been successful in encouraging entrepreneurial activity.⁸ On the other hand, the Indian Institutes of Management (IIM) have successfully incorporated entrepreneurship into their curriculum and have instituted grants and funds to assist budding entrepreneurs.

Entrepreneurship Training in the Indian IT sector

Education and training play a paramount role in the socio-economic development of nations and industries (Bhatt, 1997). This is particularly relevant in the case of entrepreneurship training in the developing Indian IT industry.

Recently, the Indian National Task Force on Information Technology set an aggressive target of US\$50 billion in software exports by the year 2008 (Mitra, 1999). This target represents approximately 10% of the US\$550 billion world software market (Shah, 2000). It is estimated that, to achieve the \$50 billion IT sector target, India needs at least another 8,000 new IT businesses to be established (Stanford online, 1999).

This ambitious target would seem to offer wealth and job creation possibilities for the Indian economy as Indian entrepreneurs capitalise on the possible IT opportunities (Gupta, 2001). The Indian IT industry, however, is not Indian controlled. It is controlled by foreign corporations that operate on the principle of cost effectiveness and cheap labour where Indians are sought for their IT skills (Harper, 1991). The abundance of cheap labour and raw materials, however, is no longer sufficient for global competition (Hanna, 1994). A strong base for developing and nurturing entrepreneurial skills is needed because the advantage of cheap labour can be lost very quickly. The Indian IT industry, however, lacks an appropriate training infrastructure that will transform it from technical to entrepreneurial. This is needed to ensure sustainability of the Indian IT industry.

⁷ This is less than 2% of applicants. As a comparison, Harvard University admits 11% of applicants (Ghosh, 2001).

⁸ To fuel the growth of entrepreneurship possibilities in India, Khan (1999) suggests there needs to be at least 100 IITs, not six.

Exacerbating the IT industry's sustainability problem, the Indian venture capital industry is in its infancy. It contains venture capitalists (VCs) who lack experience, some of which have a "herd mentality" (www.rediff.com, 2000). This phrase was coined because some Indian VCs have been perceived to adopt a "blind approach" to investing in so-called entrepreneurial companies. Because of their inexperience, they follow the investment patterns of other investors without studying or analysing potential investee ventures indepth.

Due to the IT industry boom, there is approximately US\$200 million of venture capital available for Indian technology start-ups (James, 2000). This has led to a mushrooming of VC investments in IT startups. Many of the people behind these startup companies run them for a short period (in some instances, six or so months) and then sell them. They are not there to create long-term value in these businesses or to create employment; rather, they are there to make quick money. Though a good idea can serve as a catalyst for launching a business, it cannot sustain the business in the long term. Substantial, high potential, high growth companies are built around but not limited to exceptional technologies that provide exceptional value for customers and exceptional teams that have deep rooted value systems that implement exceptional entrepreneurial strategies (see, for example, Timmons, 1999).

Business owners who are there for the fast money will not assist in India's industrial progress. They do themselves a disservice and the Indian economy a disservice because they do not create value and, consequently, do not achieve the wealth creation levels that may be possible. To overcome this problem, a comprehensive entrepreneurial development infrastructure is needed in the Indian IT industry.

Research Propositions

India's dominant IT model is changing rapidly from one focused on Unix computer platform services to one focused on a growing number of Internet related services (James, 2000). Indian software developers are finding that their engineering strengths are opening up a wide array of opportunities in the development of web and Internet based activities. These include business-to-business e-commerce, data centres, application hosting, and medical transcription. Despite the huge obstacles facing IT development in India, Indian software companies are experiencing a boom. IT entrepreneurial activities are picking up and foreign investment is pouring in (www.nasscom.org, 2001), a trend expected to continue into the foreseeable future as Indian IT professionals move from programming to design (www.draperintl.com, 2001).

The demand for Indian programming and system design skills, however, does not necessarily result in Indian entrepreneurial success. The domination of the Indian IT industry by foreign corporations to date has not provided a fertile environment for educating Indian IT entrepreneurs; the environment has rewarded Indian technical skills development. This does not help Indian IT professionals move "up the value chain" to become the entrepreneurs. It seems, therefore, that entrepreneur training may be needed to fill the gap. If entrepreneurship training is provided for IT professionals, there is a question of whether they will recognise the relevance and importance of this training. Will IT professionals believe that these programs can make a difference? Will they believe that they can be more successful if they participate in entrepreneurial development programs? Thus,

Proposition 1: There will be a perception by Indian IT professionals that undertaking an entrepreneur development program will improve the success of the Indian IT Industry.

The challenges facing the IT professional in India are to develop a world-class mindset, to become more customer and service oriented, to compete fairly, to collaborate while competing, and to have a long term orientation (Upside Today, February 2000). The next set of challenges are to enhance investment in R&D, compete on quality and productivity rather than on cost alone, and attract and retain the best and brightest professionals. Being an IT professional does not prepare you for dealing with these challenges. These are business related issues not technical product issues. Entrepreneurship training can help IT professionals' deal with these challenges and provide a framework for them to move up the value chain. Indians with IT expertise and entrepreneurial skills are needed in India. Becoming an entrepreneur has become a more prevalent, acceptable, and even desirable alternative to being an employee. Role models such as Khosla (the founder of Sun), Sindhu (the founder of Juniper), and Deshpande (the founder of Sycamore) have helped to promote this view (Forbes, April 2001). As such, it is expected that:

Proposition 2: Indian IT professionals will be interested in undertaking entrepreneurship training.

The combination of social structure and cultural values has constrained entrepreneurship in India. In recent years, however there have been a number of efforts by the government to shift the national mindset regarding entrepreneurship. This is particularly the case among India's youth, in whom it is hoped an entrepreneurial spirit can be developed (Dana, 2000). As Hoselitz (1960) stated "entrepreneurship can develop only in a society in which cultural norms permit variability in the choice paths of life". At this point in India, cultural norms act as hurdles and barriers for free enterprise. This is changing, India's leaders are recognising the need to reduce barriers to the development of entrepreneurship, and a number of programs have emerged as a result.

Proposition 3: There will be no difference between India and other Asian countries in terms of the level of entrepreneurship education and training.

The Indian Government places emphasis on social welfare, poverty alleviation, birth control and employment (Murthy et al. 1990). This draws attention to the important, but often neglected, fact that economic growth and macro-economic policies are among the most important factors that determine the financing for training and enterprise development (Watkins, 1999). In countries like India, enterprise-training programs take a back seat because of economic problems such as debt and structural adjustment, flawed domestic budgeting, insufficient resource mobilisation and misplaced budget priorities.

Governments play a crucial role in helping their entrepreneurs blaze a trail of prosperity, by implementing appropriate policies and support programs. Countries such as Japan and South Korea, which today boast of thriving private sectors, did not achieve success until after the appropriate structures were in place (Zemko, Monblatt, 1993).

Proposition 4: There will be no difference between the levels of government funding for enterprise development programs and other government programs in India.

Method

For Proposition 1 and Proposition 2, data was collected using a random, convenience sample of IT professionals from 100 IT companies in South India. There were 76 responses returned yielding a response rate of 76%. Secondary data was relied on to test Proposition 3 and Proposition 4. Data was obtained from government databases, academic and industry journals. A majority of the IT companies surveyed were in the software sector (80%). All respondents were IT professionals but their work experiences varied. Their background work experiences included sales and/or marketing (30%), technical (20%), other (10%), and no previous work experience (40%).

Instrument:

The instrument used was a modification of the questionnaire developed by Chrisman, Chua, and Sharma (1998) with questions on entrepreneurship training being added. The questionnaire was first pilot tested on 10 Indian IT companies. The questionnaire included three parts: information about the organisation; information about the respondent; and information about entrepreneurship training. In the entrepreneurship training section, respondents were asked to rate the importance of 10 attributes of entrepreneurship training on a 5 point Likert scale that ranged from “1” being “very low” to “5” being “very high”.

Analysis

A descriptive analysis was performed on the data. Half (50%) of the respondents exhibited an interest in starting their own businesses. Few of these respondents had any previous entrepreneurship training or work experience. In response to Question 7, “In your opinion, are there benefits to IT firms from undertaking entrepreneurship training?” the mean was 3.74. With regard to Question 8, “In your opinion, what are the chances of IT firms succeeding due to entrepreneurial training?”, the mean was 3.79. These results provide support for proposition 1.

There was also general support for proposition 2. Respondents expressed interest in undertaking entrepreneurship training. In response to Question 3, “What is the level of your formal entrepreneurship training?”, the mean was 2.85. With regard to Question 5, “What level of interest do you possess to undertake entrepreneurship training?” the mean was 3.65.

Along with the recognition of the importance of the small and medium enterprise sector, there has been the advent of entrepreneurship development programs in many developing Asian countries (Khan 1998). A summary of individual countries can be found in Table 1. From the survey of secondary data, it can be concluded that the level of entrepreneurship education and training in India is on par with many Asian countries. Though India is behind Japan, it is ahead of entrepreneur development programs in China and Indonesia. In comparison with Japan, however, the existing programs in India are not high-tech oriented. As such proposition 3 is supported.

Table 1: Summary of individual countries' entrepreneurship development programs

Country	Comment
Thailand	Trains people in the fields of welding, mechanical and electrical skills, radio/television repairs, drafting and surveying (www.dlpw.go.th)
Vietnam	Entrepreneurship development programs
Malaysia	Specific entrepreneurship development programs are organised to select, train and assist entrepreneurs in initiating and operating small enterprises
China	There is a distinct lack of focus on the entrepreneurship development educational programs. Chinese education and research has emphasised science, engineering and technology. Yet at the same time, 'softer' but still key contributors to economic growth such as management education have suffered (APMF 2000). In other words the conservative social values of China, often promoted through the educational and training system could act as a brake on its economic progress (Clarke, 1999).
Korea	Korea invests more in education, information, infrastructure and R &D as a percentage of GDP than most OECD countries. Yet, the benefits that it reaps in economic terms are low due to inadequate protection of intellectual property rights, lack of flexibility and miss-allocation of investments (OECD 2000). There is a strong chorus of support for deregulating the educational system in Korea because this will increase the autonomy of the government institutions and also encourage free enterprise and entrepreneurship training.
Japan	It is a widely acknowledged fact that Japan is facing a serious economic recession, however, the spirit of entrepreneurship in Japan is very strong. Japanese entrepreneurs today are satisfied to be one of the many successful small businesses rather than a single dominant firm (Kazumi et al, 1996). Due to the excellent training for entrepreneurial and technical personnel, Japan still boasts of being one of the richest countries in the world with more than 10% of the total world trade surplus and more than 70% of the total Asian market capitalisation (Suga, 2000). The entrepreneurship development programs in Japan have been very successful for the past four decades and many analysts attribute the success of Japan to the success of these programs.
India	In India, in the early 1980s the first entrepreneurship development program was initiated. The first institute to offer an MBA level program in family firms and entrepreneurship was the SP Jain Institute of Management and Research in Mumbai, India (Sharma, Rao, 2000). Several management institutes in Mumbai, Ahmedabad, Bangalore and Delhi quickly followed this. These institutes have tackled the entrepreneurship development in a conventional manner and they have been generally slow to adapt to emerging sectors like software. Added to this, they have been undertaking these programs in the broader framework of an MBA or within the existing management curriculum, hence, they have been restricted in their flexibility. Nevertheless, there are several institutes today offering entrepreneurship development courses. They have failed, however, to keep in tune with the changes. Only a select few students are admitted into these programs, thus shutting out avenues for many aspiring entrepreneurs.

According to a report by the International Food Policy Research Institute (1999), India spends more money on agriculture each year than any other developing Asian country. This high spending has aided in the reduction of poverty in many parts of India. This, however, has been the main drawback of Indian economic and financial planners. They tend to emphasise too much on one sector to the detriment of other sectors. In the 1970s and 1980s, when the Indian Government was spending vast amounts of money on agriculture, other sectors such as defence, education and infrastructure were severely neglected (Hanna 1994).

In the late 1980s and 1990s, India shifted its focus to sectors such as defence and welfare. Again education suffered (Parikh, 1997). This has been repeating for the past five decades of Indian independence. In the 1996-97 year, the Indian government spent nearly \$3.7 billion (Arnett, 1998) on its defence. This amounts to nearly 4% of the GDP, which is an astronomical figure when compared to other sectoral allocations.

For a developing country like India, the emphasis of spending is obviously on welfare and development. This however, has been going on for many years with marginal results and at the risk of other sectors. One sector where the Indian Government has fared poorly is the education sector, at the primary, secondary and technical/professional levels. Meagre resources restricted government allocations and this distorted the educational scenario in India. Extensive research conducted by Fan et al. (1998) points out to the clear discrepancy in the government spending in India. The annual growth rate of government expenditure from the 1970s to the 1990s was 10% growth rate on welfare, 13% growth rate on rural development, and an 8.7% growth rate on transportation. The education growth rate was 6.86%, this is even lower than the social service (7.71%). Another interesting feature here is that the Indian Government's spending on education includes culture and sport. This means that the figures are much lower for education. In the period 1980-89, the education expenditure had a 10% growth rate. This has been drastically scaled down in the following 10 years. This shows that the focus of the government has shifted remarkably towards rural development and welfare. There is no clear allocation for enterprise development programs.

Discussion

It would seem that IT professionals believe that entrepreneurship training would help them to be more successful as entrepreneurs and they would be interested in participating in such development programs. To date, however, there has been only limited success with government initiated entrepreneurship development programs. The government's initiatives, however, have been seen as a contributing factor for Indian economic development (Fan et. al, 1999); yet, much more could and needs to be done in the way of entrepreneurship education and training for the economy generally and for the IT industry specifically.

The importance of entrepreneurial businesses to an economy is widely recognised (Brockhaus, 1991). India needs more value added entrepreneurial businesses that will create wealth and employment for the Indian economy. The emerging Indian IT industry provides a basis for achieving this.

Many previous studies on India have focused on establishing a link between (1) government initiatives and their impact on rural India, and (2) government spending patterns and their influence on development. To date, there has been little research undertaken that looks at the entrepreneurship aspects of the Indian IT industry from an Indian IT entrepreneurial

perspective. Previous Indian IT related studies have concentrated on issues such as the potential of the industry (Mitra 1999, Shah 2000), the contributions of Silicon Valley entrepreneurs (Saxenian 1999, Khan 1999, Ghosh 2001), and the role that software could play in India's economic development (Hanna 1994). This study adds to the body of the previous research. It focuses on the importance of entrepreneurship training in the IT sector and recognises the gap that exists.

Before the boom of the software industry, the Indian economy remained largely insulated from the world economy. Due to the software revolution, the Indian economy has developed newfound technical respect in the global market. In order to maximise the benefits of this attention and the technical knowledge base that has developed, the importance of supplementing this technical base with entrepreneurial skills is highlighted. This research acts as a catalyst in creating a change in thinking from a "take a job" orientation to a "make a job" orientation.

Implications

There are four implications that emerge from this research. These focus on assisting the Indian IT industry to become more sustainable.

First, "appropriate" skills need to be made available to IT professionals wanting to startup their own businesses: A survey conducted by McKinsey and Company (www.mckinsey.com, 2000) revealed that most Indian start up businesses face two skill gaps. The first gap is an entrepreneurial skills gap (for example, how to manage business risks, build a team, identify and obtain funding, etc.). The second skill gap is a functional skills gap (for example, product development know-how, marketing skills, accounting skills, etc.). Functional education and training skills programs are available from a variety of tertiary, technical, and professional institutions. Entrepreneurial education and training skills programs are less readily available in India. Though the Indian Government is short of resources and needs to direct substantial funds toward humanitarian demands, increased entrepreneurial activity in the country will provide long-term solutions to many of the humanitarian problems. As such, funding for entrepreneurship programs need to achieve higher priority in government budget allocations. A relatively cost-effective approach would be for the government to require Indian business management schools (of which there are more than 200) to incorporate centres of entrepreneurial excellence that would focus, amongst other things, on providing entrepreneurship subjects, training programs, consulting, and research in emerging industry sectors. Accreditation could be made dependent on achieving this objective.

Second, a supportive environment needs to be created for existing and "would be" Indian IT entrepreneurs. Being able to obtain the necessary startup and development finance is part of the ingredients that make up a supportive environment for entrepreneurs. Traditionally, Indians borrow money from family or the banks to start their businesses. Due to the involvement of Indian banks in structural and social development programs, their funds are limited. As such, bank funds are not readily available for those wanting to start or develop their businesses.

In addition, many Indian entrepreneurs do not understand how banks (and for that matter, other financiers such as venture capitalists) evaluate funding applications. This results in many failed funding applications as the applicants are not "investor ready" - they have not alleviated the risk concerns of lenders and/or investors. Therefore, training programs in the

formalities of raising capital - both debt and equity - should be introduced for existing and prospective Indian entrepreneurs. In addition, to reduce the number of failed loans and investments, training programs should be made available for less experienced financiers that will strengthen their existing frameworks for recognising and evaluating business opportunities submitted to them for funding consideration.

Third, there are government hurdles and restrictions on Indian entrepreneurs accessing capital from outside India. These controls need to be removed or eased to facilitate the entrepreneurial process. A gap exists in obtaining startup and development funds from local Indian financial institutions. Being able to access overseas capital can help bridge this gap.

Fourth, networking and mentoring needs to be encouraged. Indian family businesses play a significant role in this respect (Garg and Parikh, 1986). In some areas, however, they have restricted themselves to certain pockets of influence. Formalised networking associations that focus on the exchange of ideas among entrepreneurs, capital providers, inventors, professionals, consultants, etc. need to be encouraged. Government funding needs to be directed to support these networks.

These four implications can act as a framework for any developing country that needs to foster entrepreneurship. Though they are India specific in this study, they can be broadly generalised to bridge the gap in encouraging entrepreneurial activity.

Limitations

This study has several limitations. These include the following. The sample was a convenience sample. It was skewed toward the software sector of the IT industry. In addition, the sample was drawn from the same geographic region. These issues affect the external validity of the study. Future research should address these limitations. This research, however, identifies a need to continue to examine the relevance and importance of entrepreneurship in emerging industries, the gaps that exist, as well as how these gaps can be bridged.

Conclusion

As the Indian economy makes the transition from an insular to a globally integrated economy, there is an increasing realisation of the need to embrace entrepreneurship more readily. The Indian IT industry still is in the process of developing a core competency. To date, its core competency has been to provide technical skills to the highest overseas bidder but with a cost advantage. This advantage is being eroded. The emphasis needs to shift to entrepreneurial skills development for Indian IT professionals so the Indian IT industry can be more sustainable. This will create substantial Indian economic wealth and job creation. Existing mechanisms need to be supplemented with entrepreneurial development programs to achieve these goals. This has implications for formulating Indian economic policy in the area of funding entrepreneurship development. It also has implications for developing countries that want, or need, to encourage and develop entrepreneurial activity.

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