

## 26. TECHNOLOGICAL ENTREPRENEURSHIP AND DYNAMIC ENTREPRENEURIAL CAPABILITIES IN INDIAN IT INDUSTRY

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### ABSTRACT

Entrepreneurship acts as a pillar for the economic prosperity of a nation as it leads to generation of employment contribution in national income, rural development, industrialization, technological development, export promotion etc. Technological Entrepreneurship (TE) is an important way to commercialize technological innovations and offers unique development opportunities for societies to educate and grow. Technology development and entrepreneurial capabilities spirit fuels growth of the nation.

Dynamic entrepreneurial capability is to examine how a small entrepreneurial firm can achieve successful product innovation and technology change by substituting the traditional drivers for innovation, such as patenting capabilities, in-house research and development and expert human capital with a new type of higher order capabilities, peculiar to entrepreneurial and small and medium-sized enterprises settings, which we state as dynamic entrepreneurial capabilities. The dynamic entrepreneurial capabilities of Indian IT industry has built valuable brand equity for itself in the global markets. The IT industry achieved a major breakthrough in the 1990s and is now one of the important industries of India. Its vast reservoir of

dynamic technological entrepreneurial capabilities transformed India into a super power. The main purpose of this paper is to study about Technological Entrepreneurship in India and dynamic entrepreneurial capabilities in Indian IT industry.

### KEYWORDS

Entrepreneurship, Innovation, Dynamic, Technological, IT Industry, Entrepreneurial Capabilities, India.

### INTRODUCTION

Technology, has given individuals the tools to directly shape their environment in dramatic ways. Technology and product life cycles are getting progressively shorter due to acceleration in technological improvements. The significance of implementing modern and practical technologies in organizations is critical given the complex and dynamic conditions of today's environment. In other words, it is not only the scientific breakthroughs, inventions and technological development that are essential for value creation and competitiveness, but it is the discovery of technological opportunities and their commercial exploitation that makes the difference. The process of technology commercialization encloses all activities from generating an idea, designing, testing the prototype,

and manufacturing to marketing the technology-derived products to capitalize market opportunities.

"Dorf and Byres (2005) defines " Technological Entrepreneurship as a business leadership style, which includes identifying technological opportunities with high growth potential, gathering resources such as capital and experts, and finally managing the rapid growth and its significant risk by exploiting special decision-making abilities". Thus, Technological Entrepreneurship concept is made of an entrepreneurial component and a management component. In the current study Technological Entrepreneurship is defined as the setting up of new enterprises by individuals or corporations to exploit technological innovation. The new expanding and innovative firms are responsible for a significant growth of the country. A vast body of research exists on the importance and contributions of Technological Entrepreneurship which commonly found in Information Technology towards job creation, economic and social development and growth.

The Information Technology (IT) and Information Technology Enabled Services (ITeS) sector is a field which is undergoing rapid evolution and is changing the shape of Indian business standards. This sector includes software development, consultancies, software management online services and business process outsourcing (BPO). The industry plays a key role in transforming India's image from a government controlled economy to global player in providing world class technology solution and business services.

### **OBJECTIVE OF THE STUDY**

In this paper the researcher is enlightening the scenario of technological entrepreneurship and

dynamic entrepreneurial capabilities in Indian IT industry by discussing following:

- Factors affecting Technological Entrepreneurship
- Overview of Technological Entrepreneurship in India
- Need for Dynamic Entrepreneurial Capabilities
- Indian IT Industry Technology and Entrepreneur Development
- Growth of IT Industry in India
- Government Initiatives

### **RESEARCH METHODOLOGY**

The main source of data used for the study is secondary data. The present study is conceptual survey with exploratory cum descriptive in nature. This research follows the analytical research methodology which is based on the quantitative data. The information related with study has been collected from websites, journals magazines, newspapers and books.

### **FACTORS AFFECTING TECHNOLOGICAL ENTREPRENEURSHIP**

Technological Entrepreneurship focuses on understanding the conditions and drivers that lead to the identification and exploitation of opportunity for value creation. It is a complex and multifaceted phenomenon and occurs at many levels of analyses. At the individual level, the focus is on entrepreneurs, venture capitalists, and other individuals that initiate and drive technological innovation. At the organizational level, it is on the technological teams, structures, processes, and inter-organizational linkages that impact value creation. At the systems level, it is about the resources exchanged among different players in the ecology of value creation, which includes the governing factors such as government, technology and competition policy, industry standards, and the economics of geographical locations. The success

of entrepreneurs is influenced by the support (formal and informal) from others. Formal support comes in the form of financial, technology, and strategic partnerships. Informal support may come from personal and community-based networks. Factors like limited access to financial resources; financial management; lack of skilled talents; limitation of local market; and bureaucratic procedures as the barriers to the success of animation technopreneurship. In addition the diversification of products; entrepreneurial skills; and business location as the success factors. Thereby the factors influencing entrepreneurial success can be divided into two categories – Environmental factors and Individual factors.

#### **a. Environmental factors**

Environmental factors can be defined as those factors that lie beyond the control of the entrepreneur and strongly influence the success of the firm. Lack of financial resources has been the principle failure for the cause of high-tech firm. Access to capital via venture capital has played a major role in the developed countries in supporting new business creation and growth. Accumulation and diversity of human capital in top management was found to positively influence innovation and business venturing among high-technology entrepreneurship. The high percentage of high-technology entrepreneurs in developed economies has a college education and education has a positive impact on firm performance. Culture was found to influence an entrepreneur's behavior, attitudes, and overall effectiveness. Family background affects children's entrepreneurial development through parents' entrepreneurial occupation. Size of the kinship network of an entrepreneur is positively and monotonically related to the amount of risk-taking possibility, amount

of business information available and entrepreneur's ease of capital accumulation. Lack of an entrepreneurial culture among people is to be one of the reasons of slow economic growth in the country in spite of technology focus.

#### **b. Individual factors**

Individual factors are those which represent the personality attributes or traits of an individual. The networking with customers provokes commercial ideas and make financial resources accessible to firms especially in their initial phases of establishment, when there is on-going research and development activities. Not only technical skill but also entrepreneurial and business skills are required to achieve the goals of Technological Entrepreneurship. Need for Achievement is another factor influencing the entrepreneurial activity. The entrepreneurs are more achievement-oriented than the general population. In addition, literature also suggests that entrepreneurs had a higher need for independence. Entrepreneurs in technology based firms were motivated by the challenging task, status motive, self-development motive, super ordinate motive, and deontic motive, freedom to explore new ideas and autonomy.

### **OVERVIEW OF TECHNOLOGICAL ENTREPRENEURSHIP IN INDIA**

Technological entrepreneurship (TE) is an important way to commercialize technological innovations and offers unique development opportunities for societies to educate and grow. Much of the interest and early research in technology-based entrepreneurship has its roots in the developed countries. However, Technological entrepreneurship is still a relatively less explored topic in developing country like India. Countries like US, China have created conducive environment to support Technological

entrepreneurship. However, Technological entrepreneurship in India has been a challenging task. Growth of Technological entrepreneurship is hampered due to traditional perception of people, inadequate infrastructure, limited venture capitalist, angel investors, and financial institutions which appreciate the specific nature of entrepreneur's needs. Recently, Indian Government has taken initiatives, like incubation centers and various funding mechanisms to create a Technological entrepreneurship ecosystem. Despite a combination of social structures and cultural values within India that historically constrained entrepreneurship, the efforts in recent years, along with the economic growth and political changes have significantly shifted the national mindset regarding entrepreneurship, particularly among India's youth.

Technological Entrepreneurship in India has developed through several pathways, shaped by Government policy, the education system, and through interaction with multinationals. In India, to promote Technological Entrepreneurship, many Government and non-Government agencies are putting efforts to enhance the Technological Entrepreneurship activity. Particularly Department of Science and Technology (DST), Government of India has played a key role. Technology Innovation Management and Entrepreneurship Information Service (TIME IS), a joint project of National Science and Entrepreneurship Development Board (NSTEDB), DST and Federation of Indian Chambers and Commerce and Industry (FICCI) is now one of the credible ladder towards the enhancement of India's entrepreneurial economy. The project has taken initiatives to provide guidance and assistance to the entrepreneurs especially the technopreneurs to find technologies, projects, funding options and information about policy environment, incentive schemes and industrial infrastructure available in the country covering both the central and state government and have become proficient at tapping the local talent

pool. Forteen Science and Technology Entrepreneurship Park (STEP) and around 24 Technology Business Incubators (TBI) have been established which are acting as a real booster to convert Technology Innovations in to Techno- Entrepreneurship colleges and universities in India have established education and training programmes to foster entrepreneurship, Centre's for entrepreneurial studies and business incubators, like Society for Innovation & Entrepreneurship (SINE) at the Indian Institute of Technology Bombay, in Mumbai. Ministry of Science & Technology, Government of India launched a novel programme known as Technopreneur Promotion Programme (TePP) to support individual innovators to become technology-based entrepreneurs (technopreneurs). The Home Grown Technology Programme (HGTP), was started in 1993 to support commercialization of technologies developed by indigenous research and development and provides soft loan (generally not exceeding 50% of the project cost) for technology development which is repayable in user friendly instalments after the completion of the project. The various measures shows the technological entrepreneurship in India

### **NEED FOR DYNAMIC ENTREPRENEURIAL CAPABILITIES**

In a constantly changing business environment, the ability to modify and implement new strategies quickly is important. Economic pressures, industry changes, regulatory pressures and changes in consumer preference can all impact a business' ability to sell its products or services. Dynamic business strategies help to ensure that a business can respond appropriately to changes that may represent both potential opportunities and new threats to its operations. substantive entrepreneurial capability as the ability to express a given



characteristic of entrepreneurial orientation deployed at a collective firm –based level. They have their enactment, their development, their refinement, their execution, and their routinization through those abilities of the entrepreneurial team that we define dynamic entrepreneurial capabilities and consider as organizational higher order resources.

An opportunity for growth among smaller innovative technology entrepreneurial firms, who are interested in product development, either for the Indian economy or for global markets. The need for dynamic entrepreneurial capabilities is to have spurring growth in the Indian IT industry. Most often it includes the role of state policy, the role of region, the role of multinational companies and addresses the type of activities carried out at Indian IT sites and India's position on global value chains or in global production networks. However, inextricably linked to the terms of available infrastructure, available talent, and the strategies of multinationals. It is these dimensions and their interaction that frame this analysis of the development of technology entrepreneurship in IT India. India differs from these widely noted Asian cases in that the Indian IT sector grew without large state investment and, arguably, outside of the purview of state policy. Has the lack of state-directed investments (also in infrastructure) led to constraints on Indian innovation that hindered the development of technological entrepreneurship, or did the presence of other factors lead to an alternative path of development for technological entrepreneurship in India, particularly in IT and in smaller niche markets?

### **INDIAN IT INDUSTRY AND TECHNOLOGY ENTREPRENEUR DEVELOPMENT**

The Indian IT industry and technology entrepreneur development follows a different path.

1. There were state enterprise zones that provided favored tax status to exports, but these followed initial IT sector development and did not represent significant state investments in infrastructure or human capital in the early stages. However, it is clear that the foundational work by the Indian government in electronics and computers to support defense, atomic energy, and state enterprises was important.

2. In software firms exercise independent action and the extent to which organizational and external constraints may limit that action, leading to an iterative process in which external constraints are transformed. That firm-level analysis provides the theoretical model for this research, of the opportunities of firms within broader social and market constraints to, interactively and iteratively, transform their environment and development opportunities, what we're referring to as the "entrepreneurial space" that is dynamic and evolves.

3. Entrepreneurship in which market opportunities are identified and/or a technology is first developed and then pursued in a domestic and/or international market. Instead, the technology entrepreneurship sector in IT, beyond the few large and notable cases of IT services [e.g., Infosys, Wipro, Tata Consultancy Services (TCS)], can be seen as serendipitous, in which "social networks combined with firm competencies and motivations that drive the discovery of international market opportunities".

4. The typical entrepreneur pathway, failed product development, brings a set of characteristics (skills, motivation) different from that in the large IT service companies and, we find, leads them ultimately to a different path of "value chain creep" innovation. To the extent that these firms expand, or the number of such firms grows, they may develop one of the important sectors of

indigenous growth in high technology and become a sector that is undergoing transformation from a low-cost services industry to an emerging innovation industry in both services and, perhaps, products.

5. The IT industry, a common focus of Indian technology development, is an extremely diverse sector. Software activities can, for example, be divided into different categories—design and development, analysis and design for clients, and applications for firms using IT for their businesses—all of which involve a wide range of task complexity.

6. The shift from back-office services and commodity work to this type of development work is a key transition point in a nation's industrial development (in this case, India) and in changing the nature of offshoring for the MNE home country. This shift in the emerging economies has been discussed as a developing "innovation shift" with profound implications for both the MNE home and host countries. It appears that India is beginning to move up the value chain in terms of task complexity and activities such as product development, that were formerly limited to MNE home-country sites.

### **GROWTH OF IT INDUSTRY IN INDIA**

**Growing demand:** Expanding economy to propel growth in local demand. Strong growth in demand for export from new verticals. Artificial intelligence and machine learning will contribute US\$ 1 trillion to Indian economy by 2035.

**Global Print:** Indian IT firms has delivery centres across the world and are well diversified across verticals such as BFSI, telecom and retail.

**Launch:** The Ministry of Electronics and Information Technology (MeitY) launched the MeitY Start-up Hub (MSH) portal in May 2019.

**Competitive Advantage:** India has a low-cost advantage by being 5-6 times inexpensive than the US

**Policy support:** Tax exemption of three years in a block of seven years to start-ups under 'Start-up India' Government of India released the National Policy on Software Products 2019 to develop India as a software product nation.

### **IT INDUSTRY AND GOVERNMENT INITIATIVES**

Thus government policies, both in the form of public sector initiatives as well as education, contributed to the birth and growth of the IT industry in India. It is the particular path that developed through the government's policy evolution that led to growing technology entrepreneurship.

India is the leading sourcing destination across the world, accounting for approximately 55 per cent market share of the US\$185-190 billion global services sourcing business in 2017-2018. Indian IT and ITeS companies have set up over 1000 global delivery centres in about 80 countries across the world. India has become the digital capabilities hub of the world with around 75 per cent of global digital talent present in the country.

India IT's core competencies and strengths have attracted significant investments from major countries. The computer software and hardware sector in India attracted cumulative Foreign Direct Investment (FDI) inflows worth US\$ 43.58 billion between April 2000 and December 2019 and ranks second in inflow of FDI, as per data released by the Department for Promotion of Industry and Internal Trade (DPIIT). Some of the major initiatives taken by the government to promote IT and ITeS sector in India are as follows:

- On May 2019, the Ministry of Electronics and Information Technology (MeitY) launched the MeitY Startup Hub (MSH) portal.
- In February 2019 the Government of India released the National Policy on Software Products 2019 to develop

India as a software product nation

- The government has identified information Technology as one of 12 champion service sectors for which an action plan is being developed. Also the government has set up a Rs. 5000 crore fund for realising the potential of these champion service sectors.

- As a part of Union Budget 2018-2019, NITI Aayog is going to set up a national level programme that will enable efforts in AI technology for development works in the country.

- In the Interim Budget 2019-20, the Government of India announced plans to launch a national programme portal.

National Policy on Software Products 2019 was passed by the Union Cabinet to develop India as a software product nation.

## CONCLUSION

In India, the past few decades have seen a major rise in the area of Technological Entrepreneurship. There is huge scope for incubators using technological entrepreneurship by providing services such as market data, helping in preparing business models, recruiting skilled employee etc. India is the topmost off shoring destination for IT companies across the world. Having proven its capabilities in delivering both on-shore and off-shore services to global clients, emerging technologies now offer an entire new gamut of opportunities for top IT firms in India. If India is able to use its potential of becoming leader in technological entrepreneurial activities, then the resultant financial gain are always of benefit to the country.

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