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Research paper



An Empirical Analysis of Significant Factors influencing Entrepreneurial Behavior in the Information Technology Industry

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Abstract

The purpose of the current empirical research paper is to study and comprehend the significant factors that influence the entrepreneurial behavior through a detailed survey among the key employees of the information technology (IT) industry. The data thus collected from the survey was examined through the method of Partial Least Squares (PLS) for evaluating the relationship among the constructs of the conceptual research model. The results of the current empirical research study reveal that entrepreneurship-institutional linkage has the strongest effect on entrepreneurial behavior, followed by role of outsourcing and nature of the industry. The hypothesized path relationships between significant factors and entrepreneurial behavior have been found to be statistically significant. The top management of the companies in the IT industry have to focus and provide more importance to the entrepreneurship-institutional linkages which plays a key role in developing entrepreneurial behavior among the employees and in due course lead to innovative products and services and the over-all development of the organization.

Keywords: *entrepreneurial behavior; empirical research; entrepreneurship; information technology industry; outsourcing*

1. Introduction

The entrepreneurship and its behavioral characteristics among employees plays a key role in the growth and development of an economy and the living standards of a country. The Indian information technology (IT) industry is expected to grow at 10 to 11% in the domestic market and possess an export revenue growth of 7 to 8% in 2018 (NASSCOM, 2018). In the light of the above growth statistics, the IT companies in India should emphasize and give due importance to the significant factors that influence the entrepreneurial behavior, which in-turn will lead to the growth and development of an enterprise holistically.

2. Definitions

2.1. Entrepreneurial Behavior

Entrepreneurial Behavior is defined as " opportunistic, value-driven, value-adding, creative activity where ideas take the form of organizational birth, growth, or transformation" (Bird, B. J. 1989).

2.2. Information Technology

Information technology (IT) is the application of computers to store, study, retrieve, transmit, and manipulate data or information, often in the context of a business or other enterprise (Wikipedia, 2018).

3. Review of Literature

In India, research studies in the field of entrepreneurship have emphasized more on the manufacturing sector in comparison to the services industry i.e., IT industry in particular (Manimala et al., 2002). India has surpassed and outlined its neighbor countries in Asia such as Taiwan, and China, in the field of information technology industry (Contractor and Kundu, 2004).

The entrepreneurship has to undergo through innovative landscape for creating novel strategies related to competitive advantage and sustainability of the firms (Foss and Ishikawa, 2007). The growth and development of Computer Maintenance Corporation (CMC) in the service and maintenance business related IBM Computers has evolved a new phase of IT in India (Saraswati, 2008).

The increased telecom bandwidth and the deregulation of the key telecom sector has led to a fast and rapid growth of the information technology industry in India (Dossani and Kenney, 2009). In 1968, around 98% of the India's computer equipment requirements were imported, as a result there was no competition between transnational corporations and the Indian manufacturing companies ((Sarma and Krishna, 2010).

In 1990's, the Indian Government liberalized the economy, which paved the way for the participation of more and more private organizations and increased foreign direct investment (FDI) (Verma and Brennan, 2011). The entrepreneurs with positive entrepreneurial behavior possess high risk bearing capability in times of contingency (Brown and Thornton, 2013).

As a result of the cost considerations, the customized software development was outsourced to the Indian information technology industry (Mani, 2014).

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The field of entrepreneurship is a continuous and prolonged process and it is not an activity which takes place for once only (Chlosta, 2016). The dynamic phenomena of entrepreneurship can be captured through interpretative activity, historical research analysis and critical analytical activity (Wadhwani, 2016). Afsar et al., (2017) through their research study identified that transformational leadership in the organization has positive relationship with entrepreneurial behavior among its employees.
The present empirical research paper and its purpose is to study and understand the significant factors that influence the Entrepreneurial Behavior. The relevant literature and related research studies in the field of entrepreneurial behavior and related significant factors, which include entrepreneurship-institutional linkages, nature of the industry, and role of outsourcing is as below:

3.1. Entrepreneurship-Institutional Linkages

The software professionals of Indian origin have stressed the importance of starting software operations by multi-national companies in India (Taube, 2004). The Indian entrepreneurs received a large amount of outsourced project works related to Y2K problem, which in-turn created huge demand for the information technology services provided by the Indian Software professionals (Athreye, 2005b). The companies in the information technology industry have to be updated with the novel hierarchical structures, and business-related practices to meet the ever-changing environment of the institutions, which in-turn will lead to the growth and development of activities related to entrepreneurship (Kedia et al., 2006). The increased entrepreneurship related activities through the development of opportunities and skills is directly related to changes in the institutions (Acs et al., 2008). The development of intrapreneurship in a company provides long-term competitive advantage to organizations (Ng, 2012). The institutions have to give more importance to intrapreneurship as part of their business strategy, which will enable firm profitability, performance, innovativeness, and competitiveness (Baruah & Ward, 2015). The autonomy, proactiveness, and risk-taking factors among the employees creates entrepreneurship with-in the organization and also leads to innovation of sustainable nature (Widya-Hastuti et al., 2016). The employees of an institution have to possess the intrapreneurial skills and capabilities for the over-all growth and development of the company (Rivera, 2017).

3.2. Nature of the Industry

The Indian information technology industry is a high labour rich industry with huge human capital which acts as an advantage and very less infrastructure which acts as a disadvantage (Arora et al., 2001). As the entry barriers in the Indian IT industry were less, many senior software associates have taken up entrepreneurship (Coward, 2002). In the 1990's, as a result of huge foreign direct investments and reverse migration, the Indian IT industry benefitted to a great extent (Heeks,2006). Lawler & Joseph, (2010) through their research identified that education in the field of technology entrepreneurship will enable students to become business entrepreneurs. Kim et al., (2012) through their research study revealed that knowledge integration has positive relationship with entrepreneurship in the firms with high IT skills. The key variables such as attitude and business idea act as driving factors for entrepreneurship among the computer science and information systems students in the IT industry (Kaltenecker et al, 2015). Ge et al., (2016) identified various types of entrepreneurial opportunities such as creation type, identification type, and discovery type, which will enable the employees to take up entrepreneurship in the IT industry. Robert et al (2017) performed a research investigation and examination into various types of entrepreneurs in the information technology (IT) industry.

3.3. Role of Outsourcing

The Indian IT industry received many outsourced projects as a result of huge competitive IT services, which it has provided (Athreye, 2005b). The entrepreneurship in the Indian IT industry increased as a result of the decreased prices of computer hardware equipment worldwide (Khanna and Palepu, 2004). The provision of IT services via offshore increased with the initiation of software technology parks in India (Vaidyanathan, 2008; Parthasarathy, 2010). The development of innovation in the Indian IT industry has made it the preferred outsourcing destination (Man, 2014). Aubert et al., (2016) through their research disclosed the important factors that lead to IT outsourcing contract completeness, which include time horizon, predictability of demand, idiosyncrasy, and uncertainty. The key variables of information technology outsourcing (ITO) includes relationship characteristics, client characteristics, environmental variables, influence sources and outsourcing motivations (Van Grembergen & De Haes, 2017).

3.4. Entrepreneurial Behavior

Allinson et al., (2000) through their research revealed that cognitive aspects play a vital role in the entrepreneurial behavior of employees. The activities and the intentions of entrepreneurs in Malaysia have been driven toward technology-based entrepreneurship by the implementation of effective and relevant policies by the Malaysian Government (Abdullah, S, 2009). Kautonen et al., (2013) through their research study revealed that some of the key factors, which signify whether a person possess entrepreneurial behavior are the perceived behavioral control and intentions. The openness towards innovation in the organization leads to entrepreneurial behavior among the information technology employees (Hanelt, & Krup, 2015). The key values that influence entrepreneurial behavior include daring, creativity, ambition and independence (Kirkley, 2016). Afsar et al., (2017) through their research study identified that transformational leadership in the organization has positive relationship with entrepreneurial behavior among its employees.

4. Research Gap

A complete picture of entrepreneurial behavior is not fully studied, captured and critically examined. The academic research discipline should focus on the significant variables such as entrepreneurial characteristics, enablers and barriers of entrepreneurial behavior, and factors influencing entrepreneurial behavior, and challenges related to entrepreneurial intentions.

5. The Scope of the Research Study

The scope of the current empirical research paper is to study and understand the impact of important factors such as entrepreneurship – institutional linkages, nature of the industry, and role of outsourcing on entrepreneurial behavior. The hypotheses required for testing the relationship between the important factors and entrepreneurial behavior are as below:

5.1. Hypothesis

H1: There is a significant relationship between entrepreneurship – institutional linkages and entrepreneurial behavior
H2: There is a significant relationship between nature of the industry and entrepreneurial behavior
H3: There is a significant relationship between role of outsourcing and entrepreneurial behavior

6. Conceptual Research Model

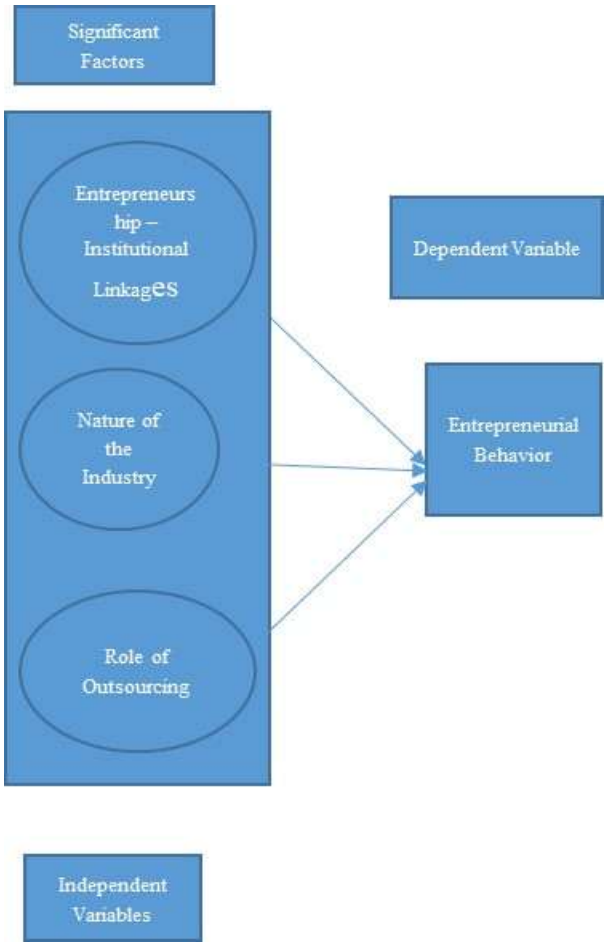


Fig.1: Conceptual Research Model

The entrepreneurship – institutional linkages, nature of the industry, and role of outsourcing form the independent variables of the conceptual research model. The entrepreneurial behavior is considered as the dependent variable. This research study's population includes the employees of the information technology industry in Tamil Nadu.

After an in-depth review of the literature, a pilot study was conducted with the questionnaire framed through the relevant scale items related to entrepreneurship – institutional linkages adapted from ACS et al., (2008), Athreye, (2005 b), Kedia et al., (2006) and Taube, (2004); nature of the industry adapted from Arora et al., (2001), Coward, (2002), and Heeks, (2006); role of outsourcing adapted from Bhattacharjee & Chakrabarti, (2017); and entrepreneurial behavior adapted from Kautonen et al., (2013).

The key Project Leaders, Senior Managers, General Managers, and Managers were considered as the respondents of the survey. The first part of the questionnaire included seven characteristics of the respondents. The second part included 11 questions about the explanatory or independent variables and the last part included four questions about the dependent variable.

After distributing around 230 questionnaires through e-mail to the respondents and a follow-up, 192 questionnaires were received from the respondents of the survey. Around 12 questionnaires were considered invalid as they were with incomplete responses. And around 78% was the valid questionnaires return rate.

7. Data Analysis and Successive Findings

The analysis of the conceptual research model and its related data is carried out through the method of Partial Least Squares (PLS). The PLS includes the assessment of Measurement Model and Structural Model. The estimation of the Measurement model is done through the Confirmatory Factor Analysis for assessing the reliability and validity of constructs. The validity of constructs was examined through the convergent validity and discriminant validity, and the reliability through the Composite Reliability and Cronbach Alpha. The below table, shows that the factor loadings of all constructs exceeded 0.70 (threshold value 0.70), the composite reliability for all the constructs exceeded 0.80 (threshold value – 0.70), and the average variance extracted (AVE) for each construct exceeded 0.50 (threshold value – 0.50). The Cronbach's Alpha for all the constructs exceeded 0.75 (threshold value – 0.70).

Table1: Reliability and Validity

Construct	Factor Loadings Range	AVE	Composite Reliability	Cronbach's Alpha
Entrepreneurship – Institutional Linkages	0.73-0.85	0.633	0.8375	0.7675
Nature of the Industry	0.73-0.83	0.5964	0.8549	0.7808
Role of Outsourcing	0.77 -0.87	0.6774	0.8934	0.84
Entrepreneurial Behavior	0.77-0.90	0.7393	0.9187	0.8811

The table below discloses that the square root of average variance extracted of each latent variable is greater than the latent variable correlations (LVC). Thus, the current research study's discriminant validity is attained.

Table 2: Discriminant Validity

Construct	1	2	3	4
Entrepreneurship – Institutional Linkages (1)	**0.7956**	0	0	0
Nature of the Industry (2)	0.7123	**0.7722**	0	0
Role of Outsourcing (3)	0.7223	0.7358	**0.823**	0
Entrepreneurial Behavior (4)	0.6271	0.7246	0.7501	**0.8598**

The Structural Model and its analysis were carried out to evaluate the hypothesized relationships of the conceptual research framework.

Table 3: Measurement Model

Path From	Entrepreneurial Behavior
Entrepreneurship – Institutional Linkages	0.389
Nature of the Industry	0.219
Role of Outsourcing	0.254
R^2	**0.6765**

The coefficient of determination, R^2 is 0.6765 for the Entrepreneurial Behavior dependent latent Variable. This means that the three latent variables (entrepreneurship – institutional linkages, nature of the industry, and role of outsourcing) substantially explain 67.65% of the variance in Entrepreneurial Behavior.

The inner model discloses that entrepreneurship – institutional linkages (0.389) has the strongest effect on Entrepreneurial Behavior followed by role of outsourcing (0.254), and nature of the industry (0.219). If the standardized path coefficient is greater than 0.1, then it is Statistically Significant. (Ken Kwong-2013)

The hypothesized path relationship between entrepreneurship – institutional linkages and Entrepreneurial Behavior is statistically significant. The hypothesized path relationship between nature of the Industry and Entrepreneurial Behavior is statistically significant. The hypothesized path relationship between role of outsourcing and Entrepreneurial Behavior is statistically significant.

Table 4: Structural Analysis (Bootstrap Process)

Construct	O	M	STDEV	STERR	O/STERR
Entrepreneurship – Institutional Linkages -> Entrepreneurial Behavior	0.3893	0.3883	0.1038	0.1038	3.7505
Nature of the Industry -> Entrepreneurial Behavior	0.2188	0.2176	0.0784	0.0784	2.7912
Role of Outsourcing -> Entrepreneurial Behavior	0.2536	0.258	0.1119	0.1119	2.266

The path significances and its estimation were carried out through the bootstrapping resampling technique of 500 subsamples.
The Path Coefficients (Original Sample - O), Sample Mean (M), Standard Deviation (STDEV), Standard Error (STERR) and T-Statistic Values (O/STERR) represent the significance of the conceptual research framework. The T-Statistics value should be larger than 1.96 when using a two-tailed t-test with a significance level of 5%, then the path coefficient will be significant. In this empirical research study, all the relationships are found to be significant.

8. Discussion

Subsequent to a thorough literature review it is found that entrepreneurship – institutional linkages (0.389) has the strongest effect on Entrepreneurial Behavior followed by role of outsourcing (0.254), and nature of the industry (0.219). As a result, the companies in the IT industry have to give due importance to the entrepreneurship-institutional linkages which plays a prominent role in developing entrepreneurial behavior among the employees. The role of outsourcing in the IT industry is to provide increased profitability and production capabilities in terms of IT enabled products and services. It also leads to innovation, the establishment of large scale offshore operations and setting up of many entrepreneurial firms by considering the advantage of the availability of competitive human capital. The nature of the IT industry in India is highly dynamic and competitive, which acts as an advantage in terms of sourcing software projects and associated information technology services related assignments globally. It further paves the way for the establishment of novel entrepreneurial technological firms and influences the entrepreneurial behavior among the employees of the IT industry.

9. Conclusion

The Indian IT industry is growing at a rapid pace both in the domestic market and in terms of the generation of export revenue through the provision of IT enabled products and services. The empirical results drawn from the present research study and analysis reveal that entrepreneurship – institutional linkage has the strongest effect on Entrepreneurial Behavior followed by role of outsourcing, and nature of the industry. Apart from adding to the existing body of literature and knowledge, the current empirical research on the factors influencing entrepreneurial behavior in the IT industry will provide valuable and critical information to the policy and law makers of the Indian Government for framing and constituting new rules, regulations, schemes, subsidies and providing more importance to entrepreneurship – institutional linkages, a critical variable of entrepreneurial behavior.

10. Limitations and Future Scope

The present empirical research study has geographical limitations. This research study is carried out on the key employees of the information technology (IT) industry particularly in Tamil Nadu. But the statistically drawn results of the present research study would be of better applicability if the sample comprises of significant employees of the IT industry from all the states of the country in India.
The entrepreneurial behavior has large scope for further research in a range of segments, sectors, fields, and dimensions. The future research can emphasize on the key variables such as entrepreneurial characteristics, enablers and barriers of entrepreneurial behavior, and challenges related to entrepreneurial intentions. A comparative study can also be performed between various countries for inferring new business practices, policies, strategies, and various novel variables, which influence the entrepreneurial behavior among the employees of the IT industry for an efficient and organic growth of the industry and the nation as a whole.

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