Entrepreneurial Inclination among Male Engineering Students towards Becoming Successful Techno-Entrepreneur- An Empirical Study from Tamilnadu

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Abstract

The study aims to know the entrepreneurial propensity among the male engineering students towards charming successful startupreneur in India. This research articles also discovers the stimuluses that encourage them to become successful startupreneur and the momentousdifficulties that might prevent them from the intention of becoming successful startupreneur. This study was achieved using a questionnaire designed based on a review of relevant literatures and expert opinions. This articlespurpose to present the results of an exploratory study conducted on 500 male students sampled from 30 engineering colleges located in Tamil Nadu on basis of area-cum-purposive sampling technique. The consequence of this research study revealed that there was a high degree of entrepreneurial propensity among male engineering students to kick-start the new ventures in India. The findings of this study also confirmed that the driving forces which motivate male engineering students to become successful entrepreneurs are in the positive side and the resisting forces that might prevent them from the intention of becoming successful entrepreneurs are in the negative side.

Keywords: Entrepreneurial Inclination, Startupreneur, Intention, Engineering Students.

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1 INTRODUCTION

The main part of the prior studies on students' entrepreneurial tendencies would tend to focus on the phenomenon in developed countries. There is limited research on the entrepreneurial intention of male college students from developing nations. This article intends to close this gap by providing some insights into male students' entrepreneurial propensity in a developing country like India. In India, the development of entrepreneurship became a national agenda and priority in both UPA and NDA Governments. The issue of graduate unemployment and the attitude of current graduates who were seen to be too pampered and dependent on the government and private organizations for employment were therefore considered a major concern in developing countries.

2 THEORETICAL FRAMEWORK

Entrepreneurship is the process of identifying and developing economic, business and social opportunities (Shane & Venkatraman, 2000) through the efforts of individuals and organizations (Thornton & Yang, 2012), and it can be analyzed by generating a multidimensional perspective (Bula, 2012). Entrepreneurship is the act of innovation involving

endowing existing resources with new wealth-producing capacity (Drucker, 1985), as the nature of the decision-making context with entrepreneurs' decisions (Alvarez & Barney, 2005). As a result, and applying a fundamentally personal perspective (Baum et al, 2007), «the entrepreneur is someone who is specialized in taking responsibility for and making judgmental decisions that affect the location, form, and the use of goods, resources or institutions» (Hébert & Link, 1989, p. 213).
Successful entrepreneurs must identify business opportunities (Stevenson & Jarillo, 1990; Barringer & Ireland, 2006; Timmons, 1999; Mariotti & Glackin, 2010) to create wealth, be able of choosing and managing entrepreneurial careers (Haynie & Shepherd, 2011), and be capable of acting entrepreneurially (McMullen & Shepherd, 2006; Shepherd & Patzelt, 2011) by being adapted to the market given their expertise (Velilla, Molina, & Ortega, 2018) and their capacity of resilience to failure. As a result, entrepreneurs are the business core of a company, especially in newly-born firms, where they act as inventors, investors, accountants, facilitators, organizational change specialists, leaders, technologists, and marketing specialists (Frese & Gielnik, 2014). Given the above definitions, entrepreneurship is defined as the type of business strategy focused on the creation of jobs, social wealth, and profit by optimizing the use of productive and commercial resources for economic growth (Saiz-Alvarez & García-Vaquero, 2017).
Entrepreneurship is associated with the «pursuit of the generation of value, through the creation or expansion of economic activity, by identifying and exploiting new products, processes or markets» (Ahmad & Seymour, 2008, p. 9). In this sense, Lumpkin and Dess (1996) assure that the essential act of entrepreneurship is launching startups and corporate venturing accomplished by entering into new or mature markets with new or existing goods and services. Entrepreneurial activities are guided by some theories of entrepreneurship that will be analyzed in the next section.

Theories on Entrepreneurship

This theory was proposed by Richard Cantillon who considered the economy as one of the fields affected by entrepreneurship. According to Cantillon, an entrepreneur acts as both a 'producer' and an 'exchanger'. An entrepreneur's action greatly affects the supply chain of raw products being collected, to become an end product for consumers. Cantillon included everyone as an entrepreneur from their little actions starting from a beggar to restaurant owners as they also have their source of unfixed income; this counts as a unique factor and made his theory stand out from other entrepreneurship theories.

Yes, you are right! This theory talks about the social aspects of entrepreneurship. If an entrepreneur considers all the social aspects such as social taboos, customs, culture, and other religious beliefs, they might have a well-established business that is up to mark with every consumer's expectation. Max Weber propounded the sociological entrepreneurship theory and stated that entrepreneurs should accept the system of a society for the development of themselves as well as their startup.

Psychological theories are of three sections. They are based on the personal characteristics of a typical entrepreneur.

1. Locus of control: Any entrepreneur's success can be an outcome of the internal locus of control as well as the outer locus of control i.e., his or her Inside abilities and support from outside.
2. Theory of personality traits: The inborn qualities of an individual are the one that naturally makes them an entrepreneur.
3. Theory of need for achievement: Entrepreneurs are driven by a need for achievement and it eventually makes them succeed.

3 REVIEW OF LITERATURE

In recent years, there has been considerable and growing interest in entrepreneurs and entrepreneurship (Kirby, 2003) at both national and international levels because it symbolizes innovation and a dynamic economy. Research on entrepreneurship has been growing over the past few decades (Alstete, 2002; Klapper, 2004; Frank, Korunka, Leuger & Mugler, 2005; Gurol &Atsan, 2006). This has been mainly due to the importance of entrepreneurship in driving economic development and employment (Gorman, Hanlan, & King, 1997; Brockhaus, 1991).

The Global Entrepreneurship Monitor (GEM) report 2007 indicated strong variations across developed and developing countries in terms of participation in entrepreneurial activities (Bosma, Jones, Autio & Levie, 2007). Most developed countries such as Italy, Greece, and Spain showed higher entrepreneurial participation rates. Developing countries, however, were still behind

except for countries such as China, Romania, and Thailand, where participation rates had picked up (Bosma et al., 2007). This research gap makes this study relevant and timely.

Bird's Eye View on Entrepreneurship

There are numerous definitions of entrepreneurship. However, as Mueller and Thomas (2001, p. 53) point out the relationship between entrepreneurship and new-venture formation is well covered in the literature, suggesting that ''many authoritative definitions of an entrepreneur include some reference to venture or enterprise creation''. Examples of this can be seen in Vesper (1983, p. 1), who defines entrepreneurship as ''the creation of new independent businesses'' and in Learned (1992, p. 39), who says that ''the term entrepreneur refers to the individual or individuals who may attempt or who are attempting to found a business...'' Similarly, Low & MacMillan (1988)define entrepreneurship as the ''creation of new enterprise'', accordingly Pillis & Reardon (2007) define entrepreneurial intention as ''the intention to start a new business''.

Entrepreneurship is increasingly recognized as an important driver of productivity, innovation, job creation and both economic and social development (Audretsch, 2012; Shane & Venkataraman, 2000; Parker, 2009). Given these positive effects of entrepreneurship, many developing countries have examined entrepreneurship as a fundamental solution for such problems as lack of economic improvement, increasing unemployment rates, an excessive number of college graduates and an inability of both the public and private sectors to provide sufficient work for graduating students (Karimi, Biemans, Lans, Chizari & Mulder, 2014).

Models of Entrepreneurship Intention

A review of entrepreneurship intentional models reveals two important theories: The Theory of Planned Behavior (TPB) and Shapero's Entrepreneur Event Model (1982). TPB focuses on how people's intentions may influence entrepreneurial behaviour (Ajzen, 1987; 1991). Shapero's Entrepreneur Event Model (1982) is another intentional model but based on the perception of desirability and feasibility to act upon opportunities. Previous empirical research conducted found that both these models are useful to predict entrepreneurial intention (Krueger, Reilly, & Carsrud, 2000).

The intention is found to be the best predictor of planned behaviour since behaviour itself is difficult to observe and predict (Bagozzi, Baumgartner, & Yi 1989).This clearly shows that research on entrepreneurial intention or inclination is very vital and should be conducted regularly to predict the planned behaviour of people venturing into entrepreneurship. In the case of university students, these are future potential entrepreneurs who can be nurtured to become successful entrepreneurs and lead the way forward.

Entrepreneurship Image

Entrepreneurs play an important role in bringing economic changes and advancements to a country's economy. The contributions of entrepreneurs towards economic development have been discussed by Baron & Shane (2008), who have named the entrepreneurs as "engines of economic growth". Researchers have also agreed that entrepreneurs are made and not born (Boulton & Turner, 2005; Mellor et al., 2009), in that entrepreneurs can be trained. Thus, it is important to look at the factors that transform students into an entrepreneur and the issues related to the development of entrepreneurs (Kadir et al., 2011). As proven, entrepreneurship activities are intentional based (Krueger et al., 2000), in which entrepreneurs started with some extent of entrepreneurial intention before they turned out to become ones. In other words, people will not become an entrepreneur suddenly without certain triggers and most importantly, intention.

No doubt, entrepreneurs have contributed significantly to the economy, society as well as humankind. Specifically, job creation has been regarded as one of the major contributions of entrepreneurs. As the issue of graduates' employability has received much attention from the Malaysian government lately; embarkation on entrepreneurship is believed to be a workable strategy for handling the issue. It is because entrepreneurship, self-employed and start-a-business can be regarded as synonymous (Schwarz et al., 2009; Van Gelderen et al., 2008). Self-employment, or simply entrepreneurship, is becoming popular as a career choice (Van Gelderen et al., 2008). Recently, entrepreneurship has been promoted as an attractive career alternative among students all over the world (Schwarz et al., 2009). The same phenomenon takes place in India as well. Various efforts have been put forward by the Indian government to encourage

entrepreneurial activities, especially among the youth.

Entrepreneurial Intention

A review of the literature reveals quite several empirical studies in the last few years that focused on entrepreneurial intention. However, many of these studies were conducted in developed countries (Veciana, Aponte, & Urbano, 2005; Lee et al., 2006; Kolvereid, 1996; Koh, 1995; Tkachev & Kolvereid, 1999; Peterman & Kennedy, 2003; Guerrero, Rialp & Urbano, 2008; Wang & Wong, 2004; Li, 2007).There is limited research on the entrepreneurial intention of university students from developing nations. A brief review of the literature shows that most past studies on students' entrepreneurial intention tend to focus on developed countries (Krueger et al., 2000; Guerrero, Rialp, & Urbano, 2008; Koh, 1995; Audet, 2002; Tkachev & Kolvereid, 1999; Gnoth, 2006). This research intends to close this gap by providing some insights into students' entrepreneurial intentions in developing countries. The entrepreneurial intention has been extensively researched in the West, for example, Carr and Sequeira (2007), Kautonen et al., (2009, 2010), and Schwarz et al., (2009), just to name a few. However, it remains an understudied area in Malaysia. Applying Western studies in the Malaysian context would raise a question of their appropriateness and applicability. As findings on determinants that predict entrepreneurial intention vary across countries and cultures (Boulton & Turner, 2005; Moriano et al., 2011); some studies are indeed needed in the local setting to increase the relevancy and accuracy of the results.

Although some local scholars have attempted to study entrepreneurial intention in Malaysia, several limitations can be found in their studies. For instance, Yusof et al., (2007) and Ismail et al., (2009) focused on the influence of personality traits on entrepreneurial intention. In addition, Zain et al., (2010) focused on personality and economic traits; meanwhile, Joyce & Gomathi (2010) emphasized the influence of personality and demographic factors. No other variables were tested in their studies; thus causing a limited understanding of the influence of other factors towards entrepreneurial intention.

Entrepreneurial Traits

As pointed out by Nga & Shamuganathan (2010, p. 259) “Personality traits are partly developed by innate nurturing, socialization and education.” The specific school and the educational system in general play a crucial role in predicting and developing entrepreneurial traits. While a school’s curriculum should focus on encouraging independence, innovation, creativity and risk-taking, the pedagogical approach should encourage children to make decisions, accept mistakes and learn from them (Ibrahim & Soufani, 2002).

However, in today's business schools around the world, rather than being educated in entrepreneurship, students are educated about entrepreneurship and enterprise (Kirby, 2005; Laukkanen, 2000). Previous research suggests that individuals' traits influence their intentions to start a business (Koh, 1996; Mueller & Thomas, 2001; Robinson, Stimpson, Huefner, & Hunt, 1991). Individuals with traits such as a high propensity for risk-taking, tolerance for ambiguity and internal locus of control are more likely to start a new business. However, while investigating the interface between the traits of individuals and their intentions, these studies do not consider socio-cultural elements, namely, education, entrepreneurial family background and national culture.

Entrepreneurship Development (Education + Training)

Entrepreneurship education is high on the political agenda and is currently a top priority for countries worldwide (Mitra & Matlay, 2004). Although there is a substantial amount of research on entrepreneurship education, (Holmgren & From, 2005), there is limited and contradictory empirical research (for example, Collins et al., 2004; Guerrero et al., 2008; Gurel et al., 2010; Thompson et al., 2010; Wu & Wu, 2008) on its effects. Besides that, available literature considers only the direct effect of education on entrepreneurship.

The moderating effect of education has not been previously investigated except in the studies conducted by Gurel et al., (2010) on tourism students and Thompson et al., (2010) on male students. This study fills this gap by considering the moderating effect of today's higher education between the entrepreneurial traits and intentions of students or potential entrepreneurs. What happens to the personal traits, skills, attitudes and desires after having formal education? In this study, we intend to find an answer to this question. Previous studies claim that education influences individuals' cultural values and thus their level of entrepreneurship (Hayton, Zahra, & Zahra, 2002;

Morrison, 2000). For example, how people are educated from an early age and the transferable skills that they develop during higher education play a significant role in establishing characteristics generally associated with entrepreneurial behaviour (Casson, 1991; Ronstadt, 1985).

Statement of the Problem

It was apparent from the previous studies that entrepreneurship has occupied a significant place in the economic development of the nation. A study on entrepreneurial propensity has become extensively a topic of town today by many researchers in economics, management, sociology, psychology, as well as in anthropology due to its importance to the development of an economy by way of job creation and wealth creation. Today, the Indian economy is emerging as a leading economy in the world as the Honorable Prime Minister of India, Narendra Modi has recently launched the "Make in India" Campaign on 25 September 2014 to encourage companies and entrepreneurs to manufacture their products in India. Make in India is an initiative program of the Government of India designed to encourage entrepreneurship in the minds of the people. The aim of the "Make in India" program is to transform India into a global entrepreneurship hub.

Economists have predicted that the number of companies in India is expected to grow rapidly as a result of the national campaign "Make in India". India is now becoming a centre of new business opportunities as international and domestic investors have begun to view India as the place to invest their money and establish their business ventures. India has emerged as a front-runner for attracting a large amount of domestic and foreign investment. This has made the development of the Entrepreneurship Development Cell (EDC) one of the significant agendas of educational institutions at the undergraduate and postgraduate levels of education in India. Entrepreneurship education has become a part of academic pedagogy in higher education institutions in India. This has paved the way for the researchers to explore whether female engineering students in South India are more inclined about becoming successful entrepreneurs and to highlight the motivators which encourage them to become entrepreneurs and obstacles which prevent them from the intension of becoming successful entrepreneurs.

4 RESEARCH QUESTIONS AND OBJECTIVES

To explore the entrepreneurial proclivity among female engineering students in rural provinces of South India, the researchers have developed four major research questions:

a) What is the history that is associated with entrepreneurial propensity among male engineering students in Tamil Nadu?
b) To what extent is entrepreneurial propensity influenced by entrepreneurship image, entrepreneurial personality, entrepreneurship development and entrepreneurial motivators?
c) What are the drivers that encourage male engineering students to become successful entrepreneurs? and
d) What are the significant obstacles that might prevent male engineering students from the intention of becoming successful entrepreneurs?

These were the overall questions to be answered by the present study and defined by the following three research objectives:

a) To throw light on the antecedents that are associated with entrepreneurial orientation and inclination of male engineering students in rural provinces of South India.
b) To explore the subtle correlation between the research variables such as entrepreneurial propensity, entrepreneurship image, entrepreneurial self-efficacy, and entrepreneurship development.
c) To highlight the driving forces that might motivate male engineering students to become successful entrepreneurs and the stumbling challenges that might prevent them from the intention of becoming successful entrepreneurs.

Research Methodology & Design

The research methodology of this study includes research framework, hypotheses formation, research instrument, pilot survey, reliability analysis, sampling frame & design.

5 RESEARCH FRAMEWORK

As stated earlier, the sole objective of this research is to analyze the entrepreneurial orientation and inclination of rural male engineering students towards becoming successful entrepreneurs in India. To realize this broad objective, the research framework was developed by the researchers as shown in Figure 1. This research framework is a simple linear model of the relationship between

the independent and dependent variables. The research variables such as Entrepreneurship Image, Entrepreneurial Self-efficacy, and Entrepreneurship Development (Education + Training) were considered as the independent variables. The entrepreneurial Propensity of the male engineering students was considered to be the dependent variable of the research model. The arrows in Figure 1 represent the relationships or the proposed hypotheses to be tested to achieve the research objectives.

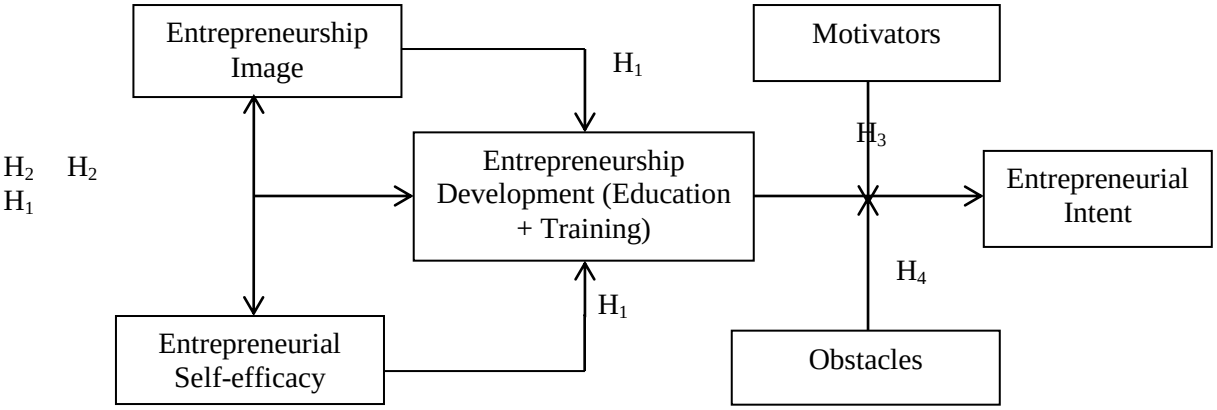

Figure 1: Entrepreneurship Image, Entrepreneurial Self-efficacy and Entrepreneurship Development (Education + Training) and Their Influence on Entrepreneurial Intent of the Female Engineering Students

Hypotheses Formulation

In this study, significant hypotheses were framed to find out whether there is any significant relationship between the dependent variable and independent variables (or) either one of these independent variables or some of them may have a positive effect to influence the entrepreneurial propensity.

- H_1: The male engineering students, who are inclined to become entrepreneurs, are likely to be oriented with various antecedents of entrepreneurship.
- H_2: There is a significant relationship between entrepreneurial intent, entrepreneurship image, entrepreneurial self-efficacy, and entrepreneurship development.
- H_3: Basic drivers or motivators positively affect the entrepreneurial propensity of male engineering students.
- H_4: Basic obstacles or problems negatively affect the entrepreneurial propensity of male engineering students.

Research Instrument

The development of the research instrument was mainly based on new scales because the researchers could not identify any past studies directly addressing all of the issues discussed in this research. However, and wherever possible, the researchers used validated measures that have been previously applied. The reliability and validity of the constructs and scale items used in the research instrument were tested through a pilot survey and Cronbach's Alpha.

Two consecutive rounds of pre-testing were conducted to ensure that the respondents could understand the measurement scales used in this study. First, the questionnaire was reviewed by academic researchers experienced in questionnaire design and development and next, the questionnaire was piloted with successful entrepreneurs known to the researchers. All of the items/questions in the structured questionnaire were being asked using a 5-point Likert scale with 1 indicating Strongly Disagree, 2 indicating Disagree, 3 indicating Neutral, 4 indicating Agree, and 5 indicating Strongly Agree.

Pilot Survey

To prepare an effective questionnaire, a pilot survey of 70 male engineering students was conducted in four engineering colleges located in the main provinces of south India. The pilot work took the form of a personal interview, where the participants were first handed a copy of the questionnaire and asked to complete it followed by a discussion on any comments or questions they had concerning major issues of this study. The outcome of the pre-testing process was a slight modification and alteration of the existing scales, in light of the scales context under investigation.

Based on the results and comments from the pilot tests, revisions were made to the design of the questionnaire.

Reliability Analysis & Cronbach's Alpha

After designing the questionnaire, a reliability test was done to ensure whether the measurements are reliable for our research. The reliability of the questionnaire was tested as well using a reliability test **(**Cronbach's Alpha) with the help of SPSS software and the results obtained thereof are shown in Table 1. The alpha values of the research variables range from 0.922 to 0.970, which indicates an internal consistency with the alpha value of more than 0.70, so no items were dropped from the questionnaire.

Table 1: Cronbach's Alpha for Variable Constructs

Sl.No.	Variable Constructs	Cronbach's α	No. of item
1.	Entrepreneurial Intent	0.928	7
2.	Entrepreneurship Image	0.889	5
3.	Entrepreneurial Self-efficacy	0.912	4
4.	Entrepreneurship Development	0.941	3

Sampling Frame & Design

The survey reported here was conducted at engineering colleges located in Tamil Nadu. The survey population of this study was defined as male engineering students who have a general inclination towards becoming successful entrepreneurs in India. The data required for the study were purely primary data collected by the means of the structured questionnaires mailed to 600 male engineering students. A sample size of 600 respondents was drawn based on area-cum purposive sampling technique. This procedure resulted in 500 useful questionnaires or an 80% overall response rate. Thus, the sample size of the study was confined to 500 male engineering students only.

Data Analysis, Results & Discussions

The data analysis, survey results and conclusive discussions of the study are summarized in the following section.

Demographic Profile of Respondents

From the survey, it was observed that the majority of the respondents fall in the age group of 21-23 years (45%), 30% belong to 19-21 years of age, 15 % are in the age group of 23-25 years, and 10 % belong to 17-19 years of age. Concerning the domain of the study, the majority of the respondents (23%) pursue Electronics and Communication Engineering (ECE), 20% study Civil Engineering, 17% have chosen the domain of Electricals and Electronics Engineering, 14 % pursue Computer Science Engineering, 8 % study Information Technology, 7% pursue Mechanical Engineering, 6% study Bio-Technology and remaining 5% have chosen other domains related to the engineering field.

Factor Analysis of Entrepreneurial Propensity

One of the main purposes of this research is to identify the basic antecedentsthat are associated with the entrepreneurial propensity and inclination of rural female engineering students in South India. The first hypothesis (H_1) of this study indicated that female engineering students, who are inclined to become entrepreneurs, are likely to be oriented with the constructs that encourage and motivate them to have an entrepreneurship culture in society. For this purpose, exploratory factor analysis was performed using SPSS Statistic 17.0.

Principal component analysis with varimax rotation was used to identify the underlying factors that determine entrepreneurial propensity among engineering students in India. The 39 statements, that best reflect the views of the engineering students on "Entrepreneurial Propensity", have been subjected to a multivariate data analysis technique (Factor Analysis) to reduce them to a few uncorrelated factors. First, all 39 items were used for the factor analysis which extracted six factors. It was observed that some items were not loaded on any of the factors and some items were duplicated. Therefore, 10 items were deleted from the original list. Another factor

analysis was done with 29 research items and four factors were obtained with eigenvalues greater than 1.

Table 2: Statistics for Construct Validity of the Research Construct "Entrepreneurial Propensity"

Kaiser-Meyer-Olkin (KMO) Measure of Sampling Adequacy		0.820
Bartlett's Test of Sphericity	Approx. Chi-Square	4907.444
	Df	120
	Sig.	0.000

Table 3: Total Variance Explained for Research Construct "Entrepreneurial Propensity"

Factors	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	4.316	26.972	26.972	4.316	26.972	26.972	3.888	24.303	24.303
2	3.178	19.862	46.834	3.178	19.862	46.834	3.2	20.001	44.304
3	2.934	18.338	65.172	2.934	18.338	65.172	3.039	18.992	63.295
4	2.393	14.954	80.126	2.393	14.954	80.126	2.693	16.831	80.126
Extraction Method: Principal Component Analysis.									

To test the suitability of the data for factor analysis, the correlation matrix was computed and examined. This revealed that there were enough correlations to go ahead with factor analysis. Anti-image correlations were computed. These showed that partial correlations were low, indicating that true factors existed in the data. Kaiser-Meyer-Olkin (KMO) Measure of Sampling Adequacy (MSA) for individual variables was studied from the diagonals of the partial correlation matrix. This was found to be sufficiently high for all variables. Overall MSA was calculated to find if the sample was good enough for sampling.

Bartlett's Test of Sphericity was calculated to find whether the number of correlations among the variables is statistically significant or not. Overall Kaiser-Meyer-Olkin MSA was found to be 0.729 and Bartlett's Test of Sphericity was also significant (Chi-Square = 4907.444, df =120, significance = 0.000) indicating the suitability of data for factor analysis. Thus, all of these examinations revealed that data was fit for factor analysis. Principal Component Analysis was employed for extracting factors. The number of factors to be extracted was finalized based on the 'Latent Root Criterion' (Table 2). All factor loadings greater than 0.50 (ignoring signs) have been considered for the analysis. Guidelines for identifying significant factor loadings based on sample size suggest considering a factor loading of 0.30 for a sample size of 350 or more. (Hair et.al, 1998. p.385).

Table 4: Factor Loadings, Percentage of Variance Explained and Cronbach's Alpha for Extracted Factors for the Research Construct "Entrepreneurial Propensity"

Sl.No.	Factors	Statements	Factors Loadings	% of Variance Explained	Cronbach's Alpha
1	**Entrepreneurial Intent**	D7. I always think of entrepreneurship as my career choice.	0.810	26.972	0.928
		D1. Tend to become an entrepreneur in my life.	0.815		

		D2. My professional goal is to become an entrepreneur.	0.769		
		D5. I am fully determined to create a new venture after my studies are over.	0.811		
		D9. I am not afraid of starting a venture even though it is too risky.	0.772		
		D3. I prefer to be an entrepreneur rather than to be an employee in a company.	0.682		
		D11. I could easily pursue a career involving self-employment.	0.624		
2	**Entrepreneurship Image**	D12. Entrepreneurship is about job creation.	0.725	19.862	0.889
		D17. I always admire those who succeed in their own business.	0.684		
		D20. Entrepreneurship gives me autonomy in my professional life.	0.741		
		D18. Entrepreneurs have the scope to achieve social status easily.	0.681		
		D15. Entrepreneurship is an honourable & respectable profession.	0.614		
3	**Entrepreneurial Self-efficacy**	D22. I am confident that I will start a new venture after my studies are over.	0.682	18.338	0.912
		D24. I possess good managerial and problem-solving skills.	0.676		
		D31. I have confidence in my skills and abilities.	0.725		
		D30. I am always seeking out opportunities for personal growth and development.	0.730		
4	**Entrepreneurship Development**	D33. I prefer to be an active member of the EDC set by the college.	0.671	14.954	0.941
		D38. The entrepreneurship courses on campus enhance my skills, knowledge and exposure to start a new venture.	0.745		
		D34. I would like to participate in training programs/kick-start programs on Entrepreneurship Development.	0.741		

Eigenvalues for factors 1 to 4 are 4.316, 3.178, 2.934, and 2.393 as revealed by the anti-penultimate row of the table. The percentage of the variance explained by individual factors is shown in the penultimate row of the table. It is observed that the percentage of variance explained by factors 1 to 4 is 26.972, 19.862, 18.338 and 14.954. The reliability of the research variables was assessed by Cronbach's α reliability coefficient. The internal consistency of the measurement scales is tested using Cronbach's alpha for each research variable as well as for the complete construct. Internal consistency analysis was used to assess the reliability and validity of the measurements. Cronbach's alpha was calculated to analyze the internal consistency of the construct and its reliability (Table 4).

The recommended minimum Cronbach's alpha coefficient reliability of 0.70 (Nunnally, 1978) was used to test the reliability and validity of each factor. The results are presented in Table 4. The reliability test was satisfied as Cronbach's α was found to be more than 0.70 for all the research variables. The alpha values for the extracted factors such as Entrepreneurial Intent, Entrepreneurship Image, Entrepreneurial Personality, and Entrepreneurship Development are 0.928, 0.889, 0.912, and 0.941 respectively.

Naming of Factors

The four extracted factors have been given appropriate names based on variables represented in each case. The names of factors, the statement labels and factor loadings have been summarized in Table 4. The factors representing entrepreneurial propensity among engineering students have been discussed below.

Factor 1: Entrepreneurial Intent

This factor has emerged as the most important factor explaining 26.972 % of the total variance. This factor has an eigenvalue of 4.316 andCronbach's Alpha of 0.928. In total, seven statements load onto this factor. The highest loading is for the statement "I tend to become an entrepreneur in my life (0.815)". Followed by, "I am fully determined to create a new venture after my studies are over (0.811)", "I always think of entrepreneurship as my career choice (0.810)", "I am not afraid of starting a venture even though it is too risky (0.772)", "My professional goal is to become an entrepreneur (0.769)", "I prefer to be an entrepreneur rather than to be an employee in a company (0.682)", and "I could easily pursue a career involving self-employment (0.624)"(Table 4).

Factor 2: Entrepreneurship Image

The second factor explains19.862 % of the total variance. This factor has an eigenvalue of 3.178 andCronbach's Alpha of 0.889. It is made up of five correlated statements. The highest loading is for the statement "Entrepreneurship gives me autonomy in my professional life (0.741)". Linked to this, "Entrepreneurship is about job creation (0.725), "I always admire those who succeed in their own business (0.684), and "Entrepreneurs have the scope to achieve social status easily (0.681)", and "Entrepreneurship is an honourable & respectable profession (0.614)" (Table 4).

Factor 3: Entrepreneurial Self-Efficacy

The third factor explains 18.338 % of the total variance explained. This factor has an eigenvalue of 2.934 andCronbach's Alpha of 0.912. It is made up of four correlated statements. The highest loading is for the statement "I am always seeking out opportunities for personal growth and development (0.730)". Followed by, "I have confidence in my skills and abilities (0.725)", "I am confident that I will start a new venture after my studies are over (0.682), and "I possess good managerial and problem-solving skills (0.676)" (Table 4).

Factor 4: Entrepreneurship Development

Three highly correlated statements load onto this factor and explain 14.954 % of the total variance explained. This factor has an eigenvalue of 2.393 andCronbach's Alpha of 0.941. The highest loading in this factor is for the statement **"**The entrepreneurship courses on campus enhance my skills, knowledge and exposures to start a new venture (0.745)", Linked to this, "I would like to participate in training programs/kick-start programs on Entrepreneurship Development (0.741)", and "I prefer to be an active member in the EDC set by the college (0.671)" (Table 4).

Pearson Correlation Analysis

The correlation matrix was performed to test the second hypothesis (H_2) of the research study. The second hypothesis (H_2) of this study was framed to explore whether there is a significant correlation

between the research variables such as entrepreneurial intent, entrepreneurship image, entrepreneurial self-efficacy, entrepreneurship development, and entrepreneurial motivators. The results obtained in this regard are summarized in the following Table 5.

Table 5: Pearson Correlations between Major Study Variables

Research Variables	1	2	3	4	5
1. Entrepreneurial Intent	1				
2. Entrepreneurship Image	0.742*	1			
3. Entrepreneurial Self-efficacy	0.706*	0.789*	1		
4. Entrepreneurship Development	0.698*	0.894*	0.803*	1	
5. Entrepreneurial Motivators	0.724*	0.728*	0.772*	0.753*	1

Note: *Correlation is significant at the 0.01 level (2-tailed), N = 400

One of the purposes of this study was to replicate the significant correlations between the major study variables. Table 5 presents the correlations between all variables included. As expected, the entrepreneurial motivators were highly positively correlated with entrepreneurial self-efficacy ($r = 0.772$, $P < 0.01$), entrepreneurship development ($r = 0.753$, $P < 0.01$), entrepreneurship image ($r = 0.728$, $P = 0.728$), and entrepreneurial intent ($r = 0.724$, $P < 0.01$). It was also found from Table 5 that entrepreneurship development was highly positively correlated with entrepreneurship image ($r = 0.894$, $P < 0.01$), entrepreneurial self-efficacy ($r = 0.803$, $P < 0.01$) and entrepreneurial intent ($r = 0.698$, $P < 0.01$). Entrepreneurial self-efficacy was also highly positively correlated with entrepreneurship image ($r = 0.789$, $P < 0.01$) and entrepreneurial intent ($r = 0.706$, $P < 0.01$). Further, it was clear from Table 5 that the entrepreneurship image was highly positively correlated with the entrepreneurial intent ($r = 0.742$, $P < 0.01$). These findings were consistent with the results of the factor analysis.

6 CONCLUSION AND MANAGERIAL IMPLICATIONS

Entrepreneurial intentions without actions are of no value from the perspective of becoming successful entrepreneurs in society. To exploit business opportunities and translate them into new ventures, entrepreneurs should have access to the necessary resources and entrepreneurial support. Given limited exposure to market opportunities, little awareness of entrepreneurship and lack of access to resources & entrepreneurial supports, rural female engineering students must become an active members in the Entrepreneurship Development Cell (EDC) established in collaboration with the National Science &Technology Entrepreneurship Development Board (NSTEDB) by many engineering colleges located in rural provinces of South India. The outcome of the factor analysis was found to be significant and the factor loadings of all the dimensions concerning "Entrepreneurial Propensity" were found to be greater than 0.50. It was also concluded from the study that there was a higher level of concurrence among the sample respondents for most of the dimensions that putatively underpin entrepreneurial propensity among male engineering students in Tamil Nadu.

It was also evident from the study that a high degree of correlation existed between the research variables such as entrepreneurial intent, entrepreneurship image, entrepreneurial self-efficacy, entrepreneurship development, and motivators of entrepreneurship. This study also clearly highlighted that the driving forces which motivate male engineering students to become successful entrepreneurs are on the positive side

and the resisting forces that might prevent them from the intention of becoming successful entrepreneurs are on the negative side. It was recommended that future research must be done in other educational institutions to provide support for these findings and also entrepreneurial education must be introduced as a part of academic pedagogy in the tertiary institutions which are not currently offering entrepreneurship courses in South India. Based on the results of this study, the following managerial implications are drawn by the researchers:

- The engineering colleges need to organize awareness programs about various facets of entrepreneurship as an alternative career option and highlight the merits of pursuing such an option and encourage the students to take active participation in entrepreneurial activities for creating awareness among them. They must also conduct Entrepreneurship Development Programmes for providing students access to entrepreneurial resources and supports within and outside the campus. Such efforts could help the students to transform their entrepreneurial intentions into new business ventures and to inculcate a culture of innovation-driven entrepreneurship through creative projects.
- The Entrepreneurship Development Cell (EDC) is being promoted in educational institutions to develop an institutional mechanism to create entrepreneurial culture in the minds of the students and to foster techno-entrepreneurship for the generation of wealth and employment by the student community.
- With a better understanding of the antecedents of this research study which are associated with the entrepreneurial propensity of engineering students, educational institutions must create a platform to assess the entrepreneurial inclinations of the students and motivate them to become successful entrepreneurs with all kinds of kick-start training programs and all required resources.
- The educational institutions can invite self-motivated private entrepreneurs managing micro, small and medium-scale enterprises to create inspiration on becoming entrepreneurs and inculcate the entrepreneurial culture in the minds of the students. The pedagogy on entrepreneurship must be designed with the help of self-motivated entrepreneurs and in collaboration with the National Science & Technology Entrepreneurship Development Board (NSTEDB).

Scope for Future Research

Despite its strengths, the study has certain limitations. It is important to view this study in the context of its limitations. First, the research model developed in the study is an initial attempt in understanding the underlying factors that determine the entrepreneurial propensity of female engineering students in the rural provinces of South India. The survey is confined to a few engineering colleges located in rural areas of South India. There is a need to replicate the results of the study in engineering colleges located in other parts of India and abroad as well.

Another limitation worth mentioning here is that this study ignores objectively to assess the psychological dimensions of the sample respondents, which may influence their behaviours and the nature of their responses to the questionnaires. Third, due to the paucity of resources and time, it has not been possible to explore the possibilities of changes in the opinions of the respondents over time. Finally, this study fails to make a comparison of the research variables between female and male engineering students. Furthermore, more research is needed to study how the perceived importance of these proposed research variables may differ across educational institutions such as Universities, Arts and Sciences Colleges, B-Schools, etc. These findings cannot be generalized to the male engineering students studying in other local provinces of India.

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