Engineering Education and Entrepreneurial Attitudes Among Students: Ascertaining the Efficacy of the Indian Educational System

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Abstract

An attempt has been made with the help of this paper to recognize the entrepreneurial attitudes among students pursuing technical courses from institutes affiliated to Uttar Pradesh Technical University, Meerut, Uttar Pradesh. The present research paper aims to determine the roles of training at the secondary and graduation levels in familiarizing entrepreneurship as a career choice and boosting the interests among students to take up entrepreneurship as their preferred calling. In the present study, 206 scholars from different engineering courses were examined using the entrepreneurial attitude orientation scale. Outcomes indicate that a significant difference existed between the thinking of female and male students towards entrepreneurship. The respondents revealed that the approach of the education system does affect entrepreneurial orientation in an individual. Unfortunately, it was found that the Indian technical education system was not contributing significantly towards developing entrepreneurial orientation among students.

Keywords: **entrepreneurs, entrepreneurship, engineering students, undergraduates, orientation, management students, technical courses**

JEL Classification: A22, A23, I25, L26

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Entrepreneurs and innovations, worldwide, are considered to be the engines of a nation's economic growth. Almost every stabilized government in the world has kept entrepreneurship as one of the main agenda in its policies and plan documents. The US Council on Competitiveness (1998) in its report argued that a nation that fosters an infrastructure of linkages among and between firms, universities and government, gains a competitive advantage through quicker information diffusion and product deployment. According to the EC Commission, (HM Treasury, 2002), the EU policy objectives have been to make the EU the 'leading knowledge based economy in the World' (Lisbon Council) and key issue for the EU is to build a 'climate in which entrepreneurial initiative and business activity can thrive'. Schools, colleges, and universities have a major obligation to stimulate innovative and entrepreneurship led economic development.

Significance of institutions of higher-education augments manifold when they are able to create not only skillful and employable human resources, but also help develop attitudes among their students to choose entrepreneurship as a career option. Educational institutions are a distinctive place of knowledge transfer and innovations, which help nurturing entrepreneurial activities. While in India, such entrepreneurial activities of

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institutions of higher education are not common yet, in Russia and China, factories and firms are owned and operated by higher educational institutions (Agarwal, 2008).

It is well documented in varieties of literature that inclination towards entrepreneurship is usually linked with several personal characteristics that are more often than not determined by conventional programs of teaching, family, and societal refinement. Many researchers have highlighted the importance of primary and secondary-level education in the development of particular personality traits in individuals. Gibb (1987) argued for building an enterprise culture in the educational process. He further emphasized on the entrepreneurial response from the higher educational system (Gibb, 2009). Importance of the learning experience of students (Ulrich & Cole, 1987), behavioral simulation of teaching entrepreneurship (Stumpf, Dunkar, & Mullen, 1991), reorientation of the school system (Singh, 1990), and so forth have been few among many suggestions put forth by these researchers. Filion (1994) even suggested that "high school is the most determinant level in the development of young people's entrepreneurial potential" (p. 68). Gupta (1992) indicated that cultural conditioning and family conditioning are a good deal more important than conventional training in shaping entrepreneurial attitudes and that the primary benefits of formal education lead to an increase in self confidence. Nair and Pandey (2006) stated that economic conditions, age, technical education/training, and work experience in a similar or related field have a favourable influence towards entrepreneurship.

Hisrich and Peters (2004) in their studies proved to demonstrate a relationship between entrepreneurial orientation and personality components. They tried to assess individuals' backgrounds, which might be helpful in the development of such personality traits. Among the personality traits, locus of control, feeling of independence, need for achievement (McCelland, 1961), and risk taking attitude have been considered to be important traits, which separate individuals on entrepreneurial orientation attitude.

Objectives of the Study

The aim of this report is to identify entrepreneurial orientation of male and female undergraduate engineering students. This study was particularly taken up to contemplate the contributions that the Indian educational system (primary, secondary, and higher level) has made in enhancing awareness about entrepreneurship and developing inclination towards entrepreneurship as a career choice among students. The present research paper also tries to analyze the psychology of students towards entrepreneurship who came from families that owned a business. Differences between the students' perceptions (who came from families having a business background and those who did not) were also analyzed. Thus, this study examines the orientation and thinking of undergraduate engineering/technical students about entrepreneurs and entrepreneurship.

Hypotheses

The following hypotheses have been proposed for this study:

➲ **H01:** There is no significant difference between the orientation of female and male students towards entrepreneurship.

➲ **H02:** There is no significant difference between the orientation of female and male students towards entrepreneurship (belonging to business family).

➲ **H03:** There is no significant difference between the orientation of female and male students towards entrepreneurship (belonging to non business family).

Besides these hypotheses, the responses of the students were also examined to assess their attitudes about different aspects of entrepreneurship.

Methodology

This study was conducted on prospective entrepreneurs (college students) of India enrolled in engineering/technical courses in Meerut district of Uttar Pradesh. The sample for the study was drawn on the basis of stratified random sampling to get the proper representation of the male and female students. Meerut is a well-known educational hub in Uttar Pradesh, especially in technological training. This region of Uttar Pradesh is known for some of the top-ranked engineering institutes (all self financed) affiliated to Uttar Pradesh Technical University (UPTU). Major software companies regularly visit these institutes and provide job opportunities to the students on good pay packages. The UP Technical University conducts the state level entrance examination to provide admission to students. These self financed engineering colleges admit students with diverse demographic backgrounds, not only on the intellectual level, but also on the basis of socioeconomic factors. Availability of the management quota seats provides a different dimension to the demographic composition of the colleges, and a good population of students study in these colleges - who either have their parents doing some business, or they know someone close to them who is running a business.

Pupils of different branches of technology courses comprised of the sample for cogitation. It was, likewise, kept in mind that there should be a full representation of both male and female pupils. The sample was basically taken from the final and pre-final year students, belonging to the top 5 engineering colleges of Meerut, Uttar Pradesh. UPTU website publishes rankings of institutes affiliated to it on an annual basis. This ranking was employed as the criteria for choosing the top 5 colleges of Meerut region. The selected colleges were the most popular and oldest colleges of the region and have a good reputation at the state level in terms of their academic and placement performance.

The questionnaire was administered to 246 students. Out of these, 206 questionnaires were found fit for evaluation purposes. The remaining questionnaires were discarded due to incomplete or incorrect answers. The final sample design consisted of 88 female students and 118 male students. The demographic characteristics suggest that out of 88 women students, 32 belonged to the group having some business/entrepreneurial people known to them, while 56 belonged to the other group. Similarly, out of 118 male students, 55 came from a business background, and 63 belonged to the other group (having no business background). The data were collected during the period from January to April 2013.

Thirty five students belonging to business families were also interviewed for the present research study. Out of these 35 students, 25 students were pursuing an MBA from the said institutes. The remaining 10 students were pursuing engineering courses. Though MBA students were not a part of the sample who were administered the questionnaire, still these students were interviewed to acknowledge the differences in the orientations about entrepreneurship, which might have been affected by the level of education and the prevailing placement opportunities. It is important to mention here that on campus job opportunities for MBA graduates studying in the selected colleges were not as bright as they were the for engineering students.

An entrepreneurial attitude orientation (EAO) scale was developed and administered to the students. EOA is a self developed tool, though various research studies (on entrepreneurial motives) conducted by different authors (Collins & Moore, 1964; Manimala & Pearson, 1998 ; McCelland, 1961; Mitchell, 2004) were studied and analyzed to obtain a better understanding about the topic. Hisrich and Peters's (2004) book *Entrepreneurship* was primarily helpful in designing the questionnaire. As the study focuses on the Indian scenario, statements were designed in such a manner that they were most suited to the Indian population. The initial structure of the questionnaire was then sent to fellow academicians for their comments and suggestions. The questionnaire was divided into two parts. Part A consisted of questions on the demographic profile and the socioeconomic background of the respondents. This section also contained 7 statements to evaluate the respondents' understanding about basic characteristics of entrepreneurs. Part B of the questionnaire consisted of 38 points. These items were constructed in three dimensions- Society (12 items), Education (13 items), and Personal Characteristics (13 items). All the items were rated on a 5- point scale. The total score of this scale was considered in the assessment of entrepreneurial orientation. Initially, the EAO scale was administered to a group of students and 3 items were deleted from the scale after item analysis. Thus, the final scale consisted of 35 items. The final questionnaire was then administered to the target sample. The *t* - test was applied to examine the theory. Significant points of the EAO scale were also analyzed on an individual basis to judge the orientation/thinking of the scholars belonging to different classes.

Table 1. Comparison of Female and Male Students on the EAO Scale (Total and for Category Ent and NEnt)

t - test for total females and total males					
Group	***N***	***M***	**Variance**	***t*-value**	**Level of Significance**
Female	88	111.20	165.13	-3.47	Significant at .05 level
Male	118	117.36	149.7		df=204
***t*-test for females (Category Ent) and males (Category Ent)**					
Group	***N***	***M***	**Variance**	***t*-value**	**Level of Significance**
Female (Category Ent)	32	111.88	160.76	-1.83	Insignificant
Male (Category Ent)	55	117.04	160.04		
***t*-test for females (Category NEnt) and males (Category NEnt)**					
Group	***N***	***M***	**Variance**	***t*-value**	**Level of Significance**
Female (Category NEnt)	56	110.82	170.19	-2.95	Significant at .05 level
Male (Category NEnt)	63	117.63	142.95		df=117
***t*- test for females (Category Ent and Category NEnt)**					
Group	***N***	***M***	**Variance**	***t*-value**	**Level of Significance**
Female (Category Ent)	32	111.88	160.76	0.37	Insignificant
Female (Category NEnt)	56	110.82	170.19		
***t*- test for Males (Category Ent and Category NEnt)**					
Group	***N***	***M***	**Variance**	***t*-value**	**Level of Significance**
Male (Category Ent)	55	117.04	160.04	-0.26	Insignificant
Male (Category NEnt)	63	117.63	142.95		

Analysis and Results

The sample comprised of male and female pupils. Students were been subdivided into two classes, that is, category Ent and Category NEnt.

Category Ent denotes a group of students (male and female) who had prior business/entrepreneurship exposure. Category NEnt denotes a group of students (male and female) who had no prior business/entrepreneurship exposure. The *t* - test was conducted to ascertain the responses of the students on the EAO scale, and the following results (Table-1) are drawn: The EOA scale was administered to the students and then the scores earned were tabulated and calculated for the various categories of students as desired by the present research study. For the first hypothesis, scores for the total male and female respondents were used, and the *t* - test was applied. The value of the *t* - test came out to be -3.47, which is significant at the 0.05 level. The mean score of the male students is greater than what it was for the female students, representing more favourable entrepreneurial orientation in male students. Thus, the hypothesis H01 is rejected.

Furthermore, the scores of the EOA scale were arranged and segregated for the two different groups- Category Ent and Category NEnt of male and female students. Means, standard deviations, and variances were calculated and the value of *t* was identified. The values in the Table 1 present the following results: When female and male students falling in the Category Ent were tested, it was found that the difference (-1.83) at the 0.05 level is not significant, and thus, the hypothesis H02 is accepted. The value once again shows that male students had a higher orientation towards entrepreneurship. When female and male students were compared for the Category NEnt, it was found that significant differences (-2.5 at 0.05 level of significance) exist.

The statistical tests show that there was a significant difference between the orientation of female and male students towards entrepreneurship (belonging to non- business families), and thus, the hypothesis H03 is rejected. Female students belonging to the Category NEnt had a low orientation towards entrepreneurship. We

Fig.1. Is there a difference between a businessman and an entrepreneur?

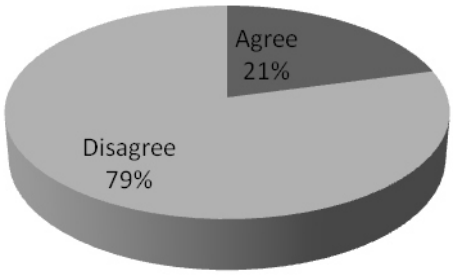
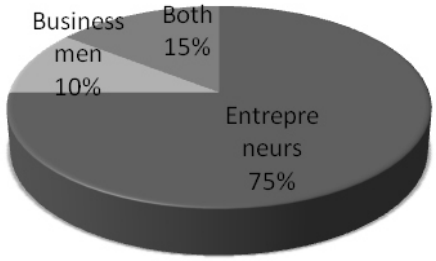


Fig.2. Who is more innovative: A businessman or an entrepreneur?



further tried to compare the male and female students belonging to the Category Ent and Category NEnt, and it was found that no significant differences exist in the orientation towards entrepreneurship within the same group of students in two different categories. The distinguishing characteristic that emerges out of this comparison is that the female students belonging to the category Ent had a greater orientation towards entrepreneurship than the female students belonging to the category NEnt. This finding supports the results obtained by Anand and Panchanatham (2011), who also found that women with or exposure to entrepreneurship background had greater propensity to take up entrepreneurship as a career option as opposed to their (women) counterparts who had no such background. However, an opposite scenario was observed in case of the male students, where the respondents falling in the Category NEnt had a high orientation towards entrepreneurship as a career option than the Category Ent male students.

Hence, the following results can be drawn :

(1) There was a significant difference between the orientation of female and male students towards entrepreneurship.

(2) There was no significant difference between the orientation of female and male students towards entrepreneurship (both groups belonging to the Category Ent).

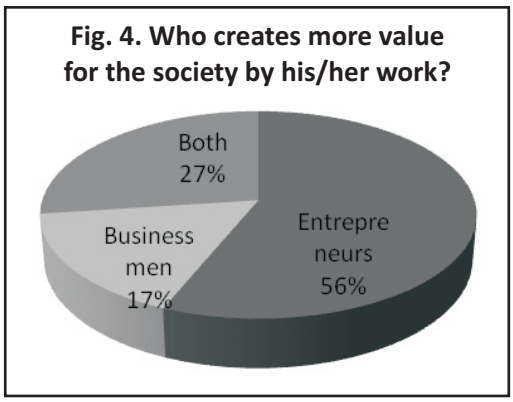
(3) There was a significant difference between the orientation of female and male students towards entrepreneurship (both groups belonging to the Category NEnt).

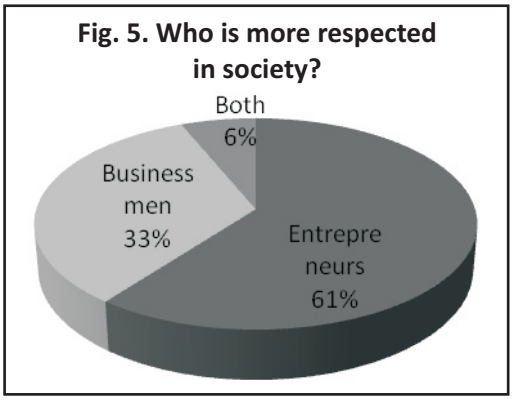
(4) There was no significant difference between the orientation of female students - towards entrepreneurship - belonging to the categories Ent and NEnt.

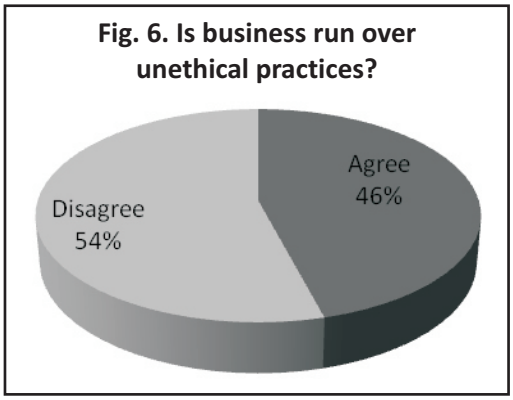
(5) There was no significant difference between the orientation of male students belonging to the categories Ent and NEnt.

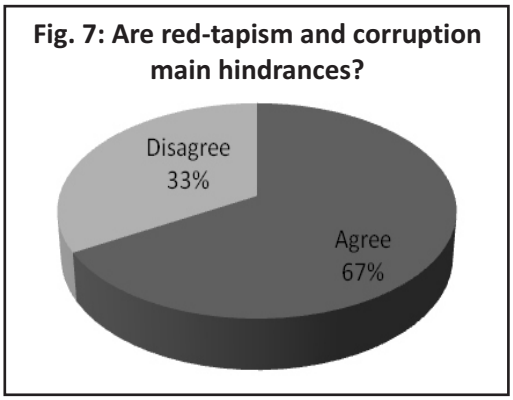
Some straightforward questions were put forth to the respondents to judge their understanding about entrepreneurship, and the responses were analyzed with the help of pie charts. This analysis was conducted only on those students who belonged to the Category Ent. It was assumed that such students had greater exposure about the functioning of a business, and they were more exposed to the intricacies of running a business. The respondents' (Category Ent respondents) know-how about entrepreneurship is analyzed here.

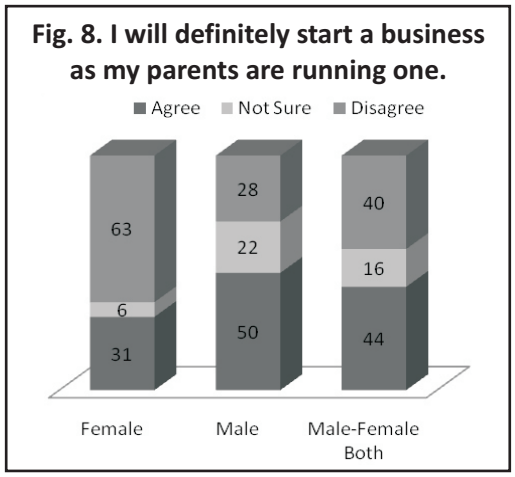
The Figure 1 depicts that 21% of the students felt that entrepreneurs and businessmen are the same and thought them to be synonymous to each other. On the innovation index, 75% of the respondents felt that entrepreneurs are more innovative (Figure 2). The Figure 3 shows polarized views among the students on their thinking about the risk taking capacity of businessmen and entrepreneurs. fifty -six percent of the respondents assumed that it is an entrepreneur who takes more risks, while 44% thought that it is either businessmen or both businessmen and entrepreneurs who take on greater risks. On the factor of value creation for the society, 56% of the respondents felt











that entrepreneurs create more value for society than the businessmen (Figure 4).

Sixty-one percent of the respondents thought that entrepreneurs are more respected in society as compared to businessmen; whereas, 33% felt that businessmen are respected more, and 6% of the respondents felt that both are equally respected (Figure 5). Nearly half of the respondents felt that businesses are run using unethical practices (Agreed: 46%; Disagreed: 54% - Figure 6). When inquired about red-tapism and corruption, 67% of the students agreed that these factors are one of the main obstacles in establishing, starting, and running a business (Figure 7). When asked about starting a business, as their parents/family/people known to them were running one, only 37% of the female students and 50% of the male students showed an interest in taking up business as a career option. Twenty two percent of the male students were not sure about their chances of taking up business as a career choice, while 28% of the male students showed their disinterest in running a business (Figure 8).

Table 2. Item Wise Analysis of EAO (Entrepreneurial Attitude Orientation) Scale

Statements	Background	Male-Female	*Agree* (%)	*Disagree* (%)
1. I have never been taught about taking entrepreneurship as a career option.	Category Ent	Female	56	44
		Male	34	56
Result : The respondent students were not quite convinced that they had been trained for a career in entrepreneurship, as the sample was equally divided on the *agree* and *disagree* scale.		F-M	42	52
	Category NEnt	Female	58	42
		Male	62	36
		F-M	61	38
2. My parents will appreciate me more if I score good marks to get a high profile job, rather than thinking of doing some business to earn more money.	Category Ent	Female	69	31
		Male	78	19
		F-M	75	23
Result : Students across each group convincingly agreed that getting a good job was still the priority in their respective societies.	Category NEnt	Female	74	26
		Male	67	29
		F-M	69	28
3. My experience suggests that owning a business does not fetch much appreciation in society.	Category Ent	Female	31	56
		Male	31	63
Result: The students agreed that businessmen are respected in society, but the degree of agreeability reduced significantly among the students having some business background.		F-M	31	60
	Category NEnt	Female	16	84
		Male	12	83
		F-M	13	84
4. Starting a business is fraught with so much risk that it is always safe to go for job oriented studies.	Category Ent	Female	63	38
		Male	66	31
Result: Majority of the students were convinced about the risk factors in business, but many also felt that the risk is not as hefty as it is perceived to be. A good percentage of students showed their disagreement on this issue too.		F-M	65	33
	Category NEnt	Female	58	42
		Male	45	50
		F-M	49	48
5. I have learnt that there is a shortage of infrastructural support to start a business.	Category Ent	Female	88	13
		Male	72	22
Result: Maximum respondents, without any hesitation, agreed that there is a shortage of infrastructural support to entrepreneurs. This may be due to the below average awareness about the entrepreneurship process on the students' part.		F-M	77	19
	Category NEnt	Female	79	21
		Male	52	40
		F-M	61	34
6. Entrepreneurs are very important individuals for the economy of countries, as claimed by various media.	Category Ent	Female	81	6
		Male	72	28
Result: 63 to 81 % of the sample respondents believed that entrepreneurs are quite important for the development of various economies.		F-M	75	21
	Category NEnt	Female	63	26
		Male	79	21
		F-M	74	23
7. I have come across the word "Entrepreneur" during my education so far.	Category Ent	Female	88	6
		Male	97	3
Result: 88 to 97 % of the students agreed that they had come across the word "Entrepreneur" during the course of their studies.		F-M	94	4
	Category NEnt	Female	95	5
		Male	90	2
		F-M	92	3

8. I fully understand the concept and meaning of "Entrepreneurship".	Category Ent	Female	69	19
Result: Though a high percentage of the sample respondents claimed to have		Male	72	22
awareness about entrepreneurs, but the conceptual knowledge		F-M	71	21
was low among all categories of students.	Category NEnt	Female	47	42
		Male	86	10
		F-M	74	20
9. I think that my education in the technical field has developed my	Category Ent	Female	44	31
inclination towards owning a business in the future.		Male	56	38
Result: Students having no business background responded more		F-M	52	35
favorably toward this question as compared to the other group.	Category NEnt	Female	74	16
		Male	64	29
		F-M	67	25
10. I intend to pursue higher education as it will give me better	Category Ent	Female	100	0
job opportunities.		Male	66	28
Result: A wide gap existed between male and female students on the		F-M	77	19
importance of higher education. Women respondents perceived higher	Category NEnt	Female	95	5
education to be the most important means of getting a better job .		Male	60	36
		F-M	70	26
11. Do you think that higher education will give a better	Category Ent	Female	94	6
understanding about the business environment and give a push to		Male	75	25
increased inclination towards owning a business?		F-M	81	19
Result: Women respondents were more convinced that higher	Category NEnt	Female	89	11
education will increase their understanding about the business		Male	71	26
environment.		F-M	77	21
12. I consistently think about earning good money, even at the	Category Ent	Female	63	38
cost of certain risk.		Male	72	25
Result: Results show that males were more motivated and were		F-M	69	29
willing to take risks to earn good money as compared to their	Category NEnt	Female	58	42
female counterparts.		Male	76	21
		F-M	70	28
13. I am not comfortable with the understanding of	Category Ent	Female	56	31
financial terms and financial/economic scenario of the country.		Male	19	75
Result: There was a clear divide between male and female respondents		F-M	31	60
in this regard. Male students perceived themselves to be better	Category NEnt	Female	26	74
conversant with financial terms as compared to their female counterparts.		Male	26	74
		F-M	26	74
14. It will be a foolish decision to quit a job and start a business.	Category Ent	Female	44	56
Result: Majority of the male students did not think that quitting a job		Male	9	91
and starting/joining a business is a silly decision. A small percentage		F-M	21	79
of the female students also thought on the same lines.	Category NEnt	Female	32	68
		Male	7	83
		F-M	15	79

15. I am fully convinced that only those individuals start a business who come from a business background. **Result:** Results show that a major percentage of the respondents felt that the sole reason for starting a business was not poor academic records.	Category Ent	Female	31	69
		Male	22	75
		F-M	25	73
	Category NEnt	Female	26	74
		Male	31	64
		F-M	49	48
16. I would make my children aware about entrepreneurship as a career option. **Result:** Majority of the students agreed to make their children aware about entrepreneurship as a career option.	Category Ent	Female	94	6
		Male	78	13
		F-M	83	10
	Category NEnt	Female	63	26
		Male	79	17
		F-M	74	20
17. I believe that only those individuals start a business who are either not able to get a good job or are frustrated with their employers. **Result:** Maximum no. of respondents felt that starting an enterprise was not a result of frustration.	Category Ent	Female	6	94
		Male	19	75
		F-M	15	81
	Category NEnt	Female	16	84
		Male	29	69
		F-M	25	74
18. When you think of your future, do you ever envision yourself running your own business? **Result:** Majority of the respondents aspired to have their own company.	Category Ent	Female	63	19
		Male	75	19
		F-M	71	19
	Category NEnt	Female	74	26
		Male	69	19
		F-M	70	21

* Sum of the percentages of *Agree* and *Disagree* is not equal to 100%, as few respondents opted for the 'not sure' option also.

➲ **Item Wise Analysis and Inferences:** Item wise analysis was done and is presented in the Table 2. Inferences are drawn on the basis of item wise responses that were submitted by the student respondents. The results show that a significant difference existed between the orientation of female and male undergraduate engineering level students towards entrepreneurship. Male students had a better orientation towards entrepreneurship than the female students. The difference is more prominent and significant when the Category NEnt male and female students are compared (male students of the NEnt group had a positive orientation towards entrepreneurship as compared to the female students falling in the Category NEnt).

Within the group of male students belonging to Category Ent and Category NEnt and the group of female students belonging to Category Ent and Category NEnt, the differences are insignificant. It was observed that male students belonging to a business/entrepreneurship background (Ent) had a low orientation towards entrepreneurship as compared to male students belonging to the non - business background (NEnt). It can be assumed that students who had some association/business related background did not find the ecosystem related to business to be quite supportive. They did not visualize their parents or relatives/people close to their family as role models and were less motivated to take up running a business. Refusal to join/run a business or an entrepreneurial venture as a career option by the students coming from a business background further reinforces such a conclusion. Only 33% of the female students and 50% of the male students were willing to go into the business field, irrespective of the fact that they had grown up in business families.

It can be reasoned that though the students coming from a business setting had more potential or opportunities to become a businessman, but overall, their thinking about entrepreneurship does not differ significantly from

those pupils who did not come from any entrepreneurial background (significant difference exists only with respect to male and female students). Hisrich and Peters (2004) in their book *Entrepreneurship* said, "in terms of occupation of the entrepreneurs' parents, there is strong evidence that entrepreneurs tend to have self employed or entrepreneurial fathers" (p. 18). It is evident that even in the entrepreneurial scenario of India, majority of the existing entrepreneurs have entrepreneurial backgrounds. Hence, despite the reluctance shown at the initial stages, majority of the children from entrepreneurial or business backgrounds end up being entrepreneurs or businessmen, which suggests that entrepreneurship in India is either forced or is necessity oriented, rather than being opportunity oriented.

The study reveals that general understanding of students about entrepreneurship was not very encouraging. It can be safely concluded that only 50% of the sample population had some clear understanding about the meaning of entrepreneurship. Furthermore, students had pre-conceived notions that businesses are run over unethical practices, there is a lack of infrastructural support, and they lacked the requisite understanding of business and financial terminology (particularly female students). These factors caused de-motivation among the students to think about entrepreneurship as one potential career option. These students also agreed that though higher education will lead to a better understanding of the business environment, yet they were likely to pursue higher education to seek better job opportunities as that will please their parents more than anything else. Most of the students believed that finding a respectable job will please their parents and close relatives/family circle more than anything else.

➲ **Analysis of Personal Interviews :** Thirty five students belonging to business families were interviewed during the research. Out of these 35 students, 25 were doing an MBA. The analysis concludes that whatever orientation engineering students had about entrepreneurship; it was mainly necessity based. Campus placements provide a lot of job opportunities to the students while they are pursuing their educational course at the college campus itself, and this has made the students more of job oriented individuals rather than exploring other ways to earn their livelihood. Handsome salary packages, lucrative career growth, and little awareness about entrepreneurship are the other reasons that have further diminished entrepreneurial orientations.

As opposed to the engineering students, the MBA students (during interactions) revealed their plans to assist their parents in running an existing business after the completion of the MBA course. Campus placement scenario for MBA courses in these institutes has not been that much encouraging. As these institutions compete with each other in terms of quality and performance in technical education, they lose focus from the MBA course. Poor possibilities of obtaining good jobs have made the MBA students to be more inclined towards taking up business as a preferred career option. When these students were asked about their chances of starting a new business other than joining their family business, no respondent had a clear answer. However, none of the interviewed female students showed any interest in taking up business/entrepreneurship as a career option. They were rather interested in looking up for job opportunities.

Managerial Implications

The outcomes of this survey highlight the importance of educational institutions in generating entrepreneurial

Table 3. Entrepreneurial Attitudes and Perceptions

	Perceived opportunities	Perceived capabilities	Fear of failure	Entrepreneurial intention	Entrepreneurship as a good career choice	High status of successful entrepreneurs
India	41.4	55.8	38.9	22.8	61.5	70.4
Brazil	50.9	52.6	38.7	27.2	84.6	82.2
China	33.1	36.3	34.3	14.4	69.6	73.5

Source: Global Entrepreneurship Monitor 2013, p.78

Table 4. Best and Worst Places for Running a Business

Easiest	Rank	Most Difficult	Rank
Singapore	1	Guinea-Bissau	180
Hong Kong SAR, China	2	Venezuela, RB	181
New Zealand	3	Myanmar	182
United States	4	Congo, Dem. Rep.	183
Denmark	5	Eritrea	184
Malaysia	6	Congo, Rep.	185
Korea, Rep.	7	South Sudan	186
Georgia	8	Libya	187
Norway	9	Central African Rep.	188
United Kingdom	10	Chad	189

Source: Reprinted from the World Bank and International Finance Corporation. (2013). Doing business 2014. Understanding regulations for small and medium-size enterprises (p. 11).

attitude among students. Results indicate that the students were not very keen on taking up entrepreneurship as a career option. This is particularly due to their ignorance towards the various aspects of entrepreneurship. It is felt that many educational institutions are following the traditional course curriculum, and students are not exposed to lateral and creative thinking. Policy makers have to work on this aspect of the educational system, and they have to take self financed and private institutions in their policy making framework before making policies as such institutions have become the major source of providing technical and management education. The government also has to take note that entrepreneurial intentions can only be improved by improving the business environment in the country.

Conclusion

Broadly speaking, there is a lack of availability of entrepreneurship related courses and teaching at the higher educational level for non-business students in India. As far as engineering studies are concerned, entrepreneurship as a subject is only introduced in the final year of the course, and that too, as an optional subject. There is a lack of research and project oriented study in the Indian engineering education, particularly in second rung institutes. These institutes, which form a major chunk of engineering educational institutes, are not able to ignite entrepreneurial attitudes among students. Results suggest that students are not able to perceive other opportunities beyond putting their best efforts to secure good jobs. The same views have been expressed by Amoros and Bosma (2014), as they have reported that India is lacking behind Brazil and China on the constituents of "Entrepreneurship as a serious career option" (p. 78) (Table 3).

A survey done by the Entrepreneurship Development Institute, India (EDII) in 2003 showed that young people are afraid to start their own businesses because they are not confident, not capable, and lack knowledge in starting a business. The Indian family culture also fails to instill positive perceptions about entrepreneurship. Though, it can be safely assumed (after analyzing the responses of the student respondents (Table 2)) that they did have the intentions to pursue entrepreneurship as one of the career options, but they were not sure about the processes involved and did not find an apt ecosystem that can give wings to their dreams (mainly due to ignorance about entrepreneurship and perceived obstacles and risks involved). The Table 4 presents the ranking of the various countries where it is easy and difficult to start a business. India is ranked at the 134th position out of total 189 ranked countries, thus highlighting the poor ecosystem which is so important to develop entrepreneurship (The World Bank and International Finance Corporation, 2013).

Educational methodologies in these institutions are such that they are not initiating any creativity among the

students, which is an important prerequisite to convert an individual into an entrepreneur. It can be said that entrepreneurship education and training is inadequate in the Indian educational system. Only few institutes of national importance and another few among the first rung institutes do contribute towards entrepreneurial activities at the institute's level in India. Our education system and media can play an important role towards the development of such entrepreneurial attitudes among students. It was found that students coming from CBSE (Central Board of Secondary Education) Boards have a better understanding about entrepreneurship. Personal consultations with some of the scholars (who came from schools that were affiliated to CBSE) revealed that they studied entrepreneurship during their course curriculum at the school level. The education system should also try to produce teachers who have some appreciative understanding about entrepreneurship. Teachers should also be trained in such a way that they can emphasize the importance of entrepreneurship as one of the career options to their students. Thus, there is a need to reorient teacher training programs at the B.Ed. and M.Ed. level in India.

Primary school education can also contribute towards developing entrepreneurial orientation among individuals. This system can also be helpful in changing the negative mindset of parents and the society towards entrepreneurship. The school system should discuss the issues of entrepreneurship and its importance when special parent- teacher meetings (PTM) are held at schools. Such interactions will enhance awareness about entrepreneurship, and students may find their parents and society more receptive about entrepreneurship.

The higher-educational system in India also has, by and large, ignored the paradigm shift brought about by NCF 2005 (Kumar, 2008). The admission procedures for the undergraduate courses in colleges have remained as rigid as they were, eventually reinforcing the rigidity of the class XII examination. This situation discourages children from utilizing the wide range of subject options available in class XI and XII. NCERT has introduced new subjects like heritage crafts, creative writing and translation, computer and communication technology, human ecology and family studies, but there are few takers of such courses. This education format produces students who are focused upon a predefined path. The average Indian students are generally hard-working, but they lack research orientation. On the other hand, education at the average American university relies heavily on self-discovery, reflection, open ended questions, and analysis. These concerns have also been raised by the National Curriculum Framework (NCF-2005) (Kumar, 2008). It poses three key challenges: Linking the child's life at home with learning at school, discouraging rote learning, and moving beyond the textbooks.

Engineering students or the students enrolled in professional courses have the best building blocks to develop and hone themselves into full grown entrepreneurs. There is an urgent need to change and revise our course curriculum to develop entrepreneurial attitudes among our students. Incentives, recognition, and other facilities should be given to teachers so that they can become mentors for their students and provide able guidance. The government should try to promote corruption free and hassle free business environment to decrease resistance among students to opt for entrepreneurship. The young generation, as the research suggests, is open to accept entrepreneurship as a career option, but they are generally not aware about the opportunities that exist and there is lack of awareness about governmental support offered to entrepreneurs, and people are also not aware about the organizations that are working towards the promotion of entrepreneurship in our country. An increment in the level of awareness about entrepreneurship can help students to make up their minds to take up entrepreneurial activities.

Irrespective of societal and parental pressure of finding a sound job, today's generation has the right intentions while considering entrepreneurship as a career option, provided they obtain proper counselling, skill, knowledge, and consciousness. Responses to different statements suggest that there is not so negative inclination towards entrepreneurship. This inclination needs to be reaffirmed and converted into positive attitudes by establishing a supportive ecosystem. Our system should not just rely on identifying entrepreneurial abilities in the individuals which come by birth, but should aim to develop these abilities gradually and consistently throughout life, until such potential people develop positive attitudes towards entrepreneurship.

Johansen (2010) concluded that young people who participate in entrepreneurship education are probably more likely to become entrepreneurs as compared to young people who do not participate in such programs. The role of the university in promoting entrepreneurship has a statistically significant relationship with the student's inclination towards entrepreneurship (Aaijaz, Ibrahim, & Ahmad, 2012). Positive attitudes towards

entrepreneurship may convert an individual into an entrepreneur, which in turn will stimulate positive attitudes among other people to become entrepreneurs by taking inspiration from the grown entrepreneurs. Vij and Ball (2010) concluded that the entrepreneurship education module to non business students mostly boosts their self-confidence, determination, self-belief, drive to succeed with hard work, and the acceptance of possible failures. Therefore, there is need to initiate interlinked complex phenomena of entrepreneurial attitudes, entrepreneurial activity, and motivation to create an entrepreneurial company- a fellowship that is able to perceive opportunities to turn an opportunity based entrepreneurial company.

Limitations of the Study and Scope for Further Research

This study has the following limitations: It is confined to the undergraduate students only. Students pursuing only engineering related courses for considered for the present study. The population of the study is limited to the municipal limits of Meerut Municipal Area (Uttar Pradesh). The sample size of the present study is limited to 206 students, and the present study is limited in its design, method, measuring devices, and statistical techniques.

This present research may further be stretched to include non - technical graduate and undergraduate students and their entrepreneurial intentions can also be measured to arrive at wholesome results.

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