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Entrepreneurship and Team Orientation in Engineering Graduates

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Abstract: The present research purports to study the relationship between certain soft skills and entrepreneurship measured in terms of performance of the young technical graduates/engineering students. The study was based on 4 week intensive exercise of Product Launch of 3rd Semester Engineering graduates of a University in NCR. The sample size for the present research was 183 students from different branches of 3rd Semester of engineering and the method for data collection was convenient sampling. Data has been analysed on the basis of the judgement sheet of the evaluators for this particular exercise. Factor Analysis was conducted to generate factors that influence the performance of students and data was analysed using Pearson correlation coefficient to study the relationship between certain soft skills and entrepreneurship measured in terms of performance. Factor Analysis generated 5 factors namely innovation, team-work, leadership, presentation skills and communication skills. Out of these factors, the Correlation (r) conducted showed that innovation had an inverse relationship with team-work for most of the branches except the mechanical students, where the obtained values of r 0.885 between innovation and team work, 0.758 between innovation/creativity and performance and 0.970 between team work and performance show a very high positive correlation. The study could help the program developers further enhancing the program as to develop and test more soft skills of the students.

Keywords: Entrepreneurship, Team Orientation, innovation, leadership, presentation skills, communication skills.

INTRODUCTION

India is considered to be a start-up nation, today the start-up ecosystem in our country has really taken off well and has acquired an existence of its (Honnavar 2016). The start-ups in India today have evolved to be global market leaders and are challenging the authority of traditionally established companies and industries in their own rights. The Entrepreneurial spirit is an ongoing characteristic of India's history, particularly visible in a number of communities engaged primarily in trading (Nandamuri & Gajulapally, 2012). Amidst this growth, it is interesting to note that one of the main differentiators of India's start-ups have remained

to be Indian in terms of addressing the needs of our community at large. There are many tier 2 cities in India who now boast of a rich start-up legacy with hundreds of young minds working for a 'Better India'. The start-ups like Ola, Flipkart, Jugnoo, Grofers and Big Basket have transformed the style of living in tier 2 cities. This transformation has sent across a strong message to the world over that start-ups in our country are not only the products for the tech savvy urban upper class but also a fresh way for the youth in our country to start afresh and come back to their cities/villages and contribute to the improvement of economic stability (Poornima 2011). Given the way the entire start-up ecosystem is progressing in India it is evident that start-ups will excel in dealing with our country's developmental needs. Entrepreneurial orientation is often thought of as a three-legged stool consisting of creativity/innovation, risk – taking and proactivity (Bolton & Lane 2012).

However, we need to prepare our youth to the changing entrepreneurial ecosystem in order to fully leverage this opportunity, and to achieve this we have to address the fundamental crisis in the knowledge-skill gap. The big factor which can help bridge this gap is, the industry and academia collaboration. There is a need for them to work together to persuade the start-up culture among the students to create an ecosystem of change. While this is in some way progressing well with Tier 1 institutes like IITs have progressed well in this by taking a lead in creating incubation zones within their campuses, we however still need to replicate this kind of success across the tier 2 universities and colleges of the country.

Creating an entrepreneurial ecosystem for students

Fresh graduates or students still pursuing their education are not very well placed to build their own start-ups majorly because of the fact that they are not well familiar to traditional structures and industry practices. The skills for start-up and entrepreneurship based economies are not fostered in schooling system today in our country. The gap between the number of graduates who venture into entrepreneurship and those who emerge successful is huge, which indicates that most graduates are failing disastrously in terms of practical applications and real life challenges in the world of business and entrepreneurship (Fiet 2001). Although, they are well versed technically, but their lack of understanding of the legal and financial aspects makes it very difficult for them to take their ideas to market successfully and thereby reducing their success rate.

The Indian education curriculum focuses largely on the theoretical base and considerably lesser on practical aspects. There is an urgent need for a curriculum revamp so that our students are well poised to leverage the start-up space. The universities and colleges should work with those students who are eager to become entrepreneurs and guide them through various aspects of starting their own venture, be it market research, business skills, registration of documents or leveraging government allotted budgets.

The introduction of entrepreneurial studies in the curriculum changes the mind set from becoming employees to being self-employed. In addition, through these courses the students will also receive exposure towards a better understanding of the concept of entrepreneurship and be aware about the various opportunities in the business world; learning that there is actually a different way to think and behave as an entrepreneur, than what is typically reinforced in their school system. In accordance with a competency approach, we come across with prescriptive demand in specialised economics education, but we also realistically see the need of development of competency for initiative and enterprise skills.

Role of the industry

In addition to the universities and colleges, industry also plays a major role in helping students to become entrepreneurs. At present, there is a need for key players in the industry to provide several internship opportunities to help students gain experiential knowledge. The budding entrepreneurs can also be identified, nurtured and mentored, by the industry, which is something less explored in India (Honnar 2016). Although, the companies are working towards this new culture of helping the young designers and budding entrepreneurs in receiving trainings from industry experts through online platforms, which is quite encouraging. Various solutions provided through these platforms are helping students to create innovative products and solutions in the electronics domain, giving them novel ideas and wings to take their products to the market faster. To educate the individuals for entrepreneurship, determining methods and details of training programs has become very important for social development therefore multidimensional analysis of entrepreneurship has also become more important (Frese, 2009).

The present study deals with examining one such initiative of entrepreneurial training of the technical graduates (B.Tech 3rd Sem students) and evaluating their certain skills in order of their preference for a successful venture.

LITERATURE REVIEW

The concept of entrepreneurship did not have an operational definition that everyone agrees on because it is multi-dimensional and it is affected by many variables (Gerben et al.1998). Entrepreneurship research continues by linking itself with psychological variables like perception, cognition, emotion, motivation and behaviours whose impact over entrepreneurship cannot be ignored. Cognitive perspective has provided new points of view to understand the phenomena which are related to entrepreneurship (Lucas et al., 2009). The data that psychology obtained about entrepreneurship, became popular and the relationship between entrepreneurship and the traits like risk-taking and risk-management, power distance, uncertainty avoidance and need for achievement has been studied (Frese 2009).

People are made to take new and sharp decisions all the time because of the effect of time pressure, information over-load, high level of uncertainty, strong emotions in the face of incidents etc (Zhun, .& Zhao. 2014). This situation is a fact for entrepreneurial cognition as well. Therefore, cognition research is mainly focused on human cognitive processes or information processing systems and has aimed to predict whether these processes show any difference between entrepreneurial individual and people who do not have any tendency for entrepreneurship (Benesova, 2015).

Entrepreneurs need two types of leadership competencies in order to succeed, including functional and self-competencies (Swiercz & Lydon 2002) Functional competencies consist of four performance subsystems (i.e., operations, finance, marketing, and human resources), while self-competencies include intellectual integrity, promoting the company rather than the individual leader, utilising external advisors, and creating a sustainable organisation (Kundu & Rani 2004). Besides, they are expected to have the ability of interpersonal communication skills like having good relationships, which include communicating and influencing other people so they must rely on employees (Laeser *et al.* 2003). Economic, social, demographic, cultural and other factors help in decision making for new venture creation but none of these individually or together can create an enterprise. It is the individual, who makes it possible. He

foresees innovation in a concept, he who has the motivation to accomplish the task. (Chatterjee & Das, 2015).

Teamwork and Entrepreneurship

The skills related to the narrow fields are useful for entrepreneurship, but soft skills like critical thinking, networking, team work and creativity are more actively looked for these days in all organizations. Negotiating could be also considered as working effectively in a team, since it is not only in the buyer-seller context but instead it also helps in the times of conflict in a team and to come to an agreement (Gerben et al. 1998). It is also possible that “to motivate others to work together” and “to work effectively in a team were thought of as skills needed to work with people in one’s own organization (Lucas et al. 2009). These require good interpersonal skills too which will be vital in starting and growing a business with a team rather than individually. To think creatively and to design something novel and innovative are quite similar skills (Giles 1994).

Adding teams to the entrepreneurial process, however, requires careful consideration as team performance can depend on many factors including cognitive ability, diversity, team size, psychological safety, level of interdependence and autonomy, task type, shared mental models, or the presence of team conflict (Deakins & Freel 1998). The existing research will be expanded on role adoption as well as experiential learning theory to help develop more effective research and teaching tools in entrepreneurship education. It was argued that the quality of students’ team experiences affects their learning. Experts suggest that students should self-select their teams, avoid changing teams frequently, and that they should be given adequate descriptions of outcomes and processes (Bacon *et al.* 1999).

Results from a research study suggest that the gender composition of teams influenced the interactions between team members, but also had an impact on the quality of their final reports (Laeser et al. 2003). Entrepreneurship programs can be considered non-traditional in the context that they often involve multiple disciplines and may be administered, funded, and delivered by multiple academic departments or centres. Second, programs at many institutions rely heavily on non-tenure track faculty or practitioners in both teaching and/or administrative positions (Benesova 2015), (Wang *et al.* 2014).

METHODOLOGY AND ANALYSIS

Entrepreneurship education plays a critical role in providing engineering students with the necessary skills and content knowledge to collaboratively develop products and services in a rapidly changing technological and market environment (Harryson 2008). This paper is based on an intensive exercise with B.Tech. 3rd Semester students of all branches, which aimed to develop a fictitious product, decide the budget, develop and implement marketing & selling strategies of the product in 4 weeks. The students were divided into teams of 6-8 students with a unanimously chosen leader to each team. This activity focussed on uncovering their entrepreneurial orientation and developing personal soft skills like team-work, innovation and creativity, leadership and presentation skills. In this research an attempt has been made to study the relationship amongst the soft skills like team work, innovation & creativity, leadership with entrepreneurial success. The relationship was studied between amongst innovation and team work, innovation/creativity and performance and team work and performance.

The activity started with testing their innovative capabilities. The groups were then evaluated on their creativity and team spirit. The result showed that the mean of the creativity & team orientation of students from all the branches was 7.6 & 7.23, they seemed to be prepared for the job to be assigned to them. The results varied in all branches where the Computer Science (CSE) students were high on team orientation (7.8) and low on creativity (7.05) and the Mechanical (ME) students rated high on creativity (7.85) and comparatively low on team orientation (7.12).

The intensive exercise was of 4 weeks which included presentation of their product idea to the facilitator, preparation of their teams promotion plan, budgeting, documentation and rehearsal leading to the final event. The whole process was to introduce the critical thinking, team building and networking exercise in the engineering students with focus on research & innovation. The facilitators measured certain parameters viz., teamwork, leadership abilities, domain knowledge, innovation and novelty. The students were under constant observation with total of 4 hrs classes in a week of 5 facilitators who coordinated and prepared the students for this activity. Initially the students were not very participative but eventually started taking interest and showed involvement because of counselling or assessment pressure.

The engineers normally face various challenges like idea generation, product's feasibility, of presentation in front of the audience, coordination of their show etc (Schmidt et al., 2012). Therefore, the groups were made according to student's choice and compatibility with each other. The activity was conducted in around 17 batches across B.Tech. 3rd Semester. The students started churning their minds and ideas started generating with full excitement and zeal. They were given evaluation parameters and rubrics which are mentioned in Table 1.

Table 1
Parameters

<i>S.No.</i>	<i>Parameters</i>
1.	Team work
2.	Leadership
3.	Innovation
4.	Product Promotion
5.	Presentation Style

Initially, it was turbulent for the students with things settling and complicating one after another. The groups which seemed to be the most proactive took a backseat on moving ahead because of some issues between the group members. The major challenge faced were ego issues among the members because of the disapproval of their ideas or following the orders of their team leader. Very few groups seemed to be working in team-spirit and coordination. The team with a unique idea and best product had lesser active participation of members.

The aim of this activity was to foster team-spirit and innovation in the students to encourage them for entrepreneurship. The students seemed to possess many traits to be entrepreneur such as risk-taking, innovation, competitive aggressiveness, autonomy etc. The challenges faced by the students were the absence of participation of key members on their crucial requirement, lack of sincerity and proactivity, lesser

confidence and knowledge in members, lack of sincerity in the genius chaps of the group and lack of communication and many more which all targeted to the requirement of team orientation amongst the students.

2 teams from every batch were selected for the final event. The students, considered to be the most proactive members, happened to withdraw at the last moment because of reasons cited above. Lack of preparedness was also expected because of them being exposed to the idea at a considerably raw stage of their career. The groups chosen for the finale was also on the basis of the rubrics shared above. The performance was evaluated by judges from different departments. It was a daylong event. The order of winning teams was found low on novelty and innovation but proactive in marketing and sales of their product. Around 32 teams were finalized, out of which 26 performed finally. It was also witnessed that one team was represented by a single member who was responsible for all the jobs assigned which shows lack of team spirit among those students.

Out of 26 teams, 10 were chosen in for best product idea (innovation), best promotion (creativity), Best Company (Team-work and Leadership) and best presenters (Presentation style).

Pearson Correlation Coefficient

The Pearson's Correlation Coefficient (r) tests were conducted on the three variable set *innovation & teamwork, innovation/creativity & Performance, teamwork & performance*.

For variable Innovation and team work the coefficient of correlation -0.548 which is significant at 5% level of significance. It is moderate negative correlation, which means higher innovation, leads to low teamwork (and vice versa). The correlation between Innovation/creativity and performance is 0.254. Although a positive correlation, the relationship between the variables is weak. And the correlation between last set of variables, viz, teamwork and performance is 0.748. A moderate positive correlation means there is a tendency for high teamwork for better performance of the team and vice versa.

For variable Innovation and team work the coefficient of correlation is 0.885 which is positive and significant at 5% level of significance which means more team work leads to high innovation and vice versa. The correlation between Innovation/creativity and performance is 0.758 which is strong and positive correlation implying that high innovation & creativity leads to better performance and vice versa. And the correlation between last set of variables, viz, teamwork and performance is 0.970 stating higher the teamwork better is the performance and vice versa.

The result of correlation between innovation and teamwork was negative and significant. (-0.81) A strong negative correlation, which means higher the innovation, leads to lesser team work and vice versa. For the next set of variables, innovation /creativity and performance, the correlation is 0.520 which is moderate and positive. For the last set, the correlation is -0.03 which is very weak and insignificant.

CONCLUSION

The study intended to find out a relationship between certain soft skills like teamwork, innovation & creativity on entrepreneurship measured as performance. The data was collected from 183 students who participated in the activity. On the basis of the above analysis it was concluded that there is a strong

relationship of innovation & creativity and teamwork and eventually on performance. The obtained value of r between innovation & teamwork for CS and Electrical & Electronics students -0.548 & -0.81 shows a moderate to high inverse relationship on innovation and teamwork which shows they work better on already existing technologies. They are more focussed towards their individual work and results. . The value of r between team work and performance (0.748) is highly positive which shows teamwork had a great impact on performance. Whereas, the obtained value of r in all the three sets of variables for ME & Civil 0.885 for innovation and teamwork, 0.758 for innovation/creativity and performance and 0.970 for teamwork and performance show a strong correlation depicting that the students mostly work well in team leading to innovative ideas and their performance is the result of overall creativity of the team members.

It also illustrates that performance is directly related to team work. Although there are few groups which worked together and presented a better work but majority of the engineering graduates lacked in team work (with the value of r -0.03). they were good in idea generation and were having lot of sense of self issues which made their peers dependent on the leaders resulting in group partitions. The factors responsible for such results could be being puzzled on delegation of responsibility, lack of trust on peer group, confusion in communicating with team members, poor leadership, lack of proactivity, ego clashes, lesser risk taking ability and lesser interest in the activity (Robinson *et al.*, 2014).

The groups, initially not very keen into the activity, tend to develop more than the other active groups (since beginning). These students got smarter in presenting their ideas, collating their thoughts, being innovative and creative at their peak and working together keeping aside their personal differences. Taken together all the categories of students, who participated and excelled as well as the ones who participated uninterestingly, benefitted in the sense of exposure in putting their thinking hats on and performing in front of their peer groups.

The ability to be creative and to network both increased significantly over the course of the activity. Being creative often comes from the concurrence of seemingly unrelated ability to network which could logically contribute to the ability to think creatively and innovatively (Poornima 2011). People with strong networks are also more likely to be able to obtain resources they need if they decide to start business (Yeboah, 2014), (Zappe *et al.*, 2012). It has been suggested earlier (Lucas *et al.*, 2009) and seems to be confirmed here that a supportive environment in which students can take risks and work on their soft skills is useful in education. If trained and counselled well the budding engineers can revolutionize the entrepreneurial world with out of the box ideas thereby creating jobs and not seeking the jobs only.

REFERENCES

- Bacon, D. R., Stewart, K. A. & Silver, W. S. (1999). "Lessons from the best and worst student team experiences: How a teacher can make the difference." *Journal of Management Education*; 23; 467.
- Benesova Tereza. (2015). Towards entrepreneurship: Reflections between theory and practice. *International Journal of Entrepreneurial Knowledge*, 2/ Pg:7
- Bhandari N (2006), "Intention for entrepreneurship among students in India", *Journal of Entrepreneurship*, Vol. 15, No. 2.
- Bolton, D.L. & Lane, M.D. (2012). Individual entrepreneurial orientation : development of a measurement instrument. *Education + Training*, 5(4), 219-233.
- Burger, Thierry- Helmchen, Entrepreneurship – Born, Made and Educated, Published by InTech, ISBN 978-953-51-0210-6, Online: www.intechopen.com.

- Chatterjee N, Das N. (2015) Key psychological factors as predictors of entrepreneurial success: a conceptual framework. *Academy of Entrepreneurship Journal*. Vol 21, Pg 103.
- Colakgolu, Sidika N., Sledge Sally A. (2013.) The development of critical thinking skills through a service- learning oriented entrepreneurship course. *Journal of Entrepreneurship Education*, Vol.16, Pg 115-122.
- Cope, J. “Entrepreneurial learning and critical reflection discontinuous events as triggers for ‘higher-level’ learning”. *Management learning* **34**, 429–450 (2003).
- Couetil, Nathalie Duval., Shartand, A. & Reed, Teri. (2016) The role of entrepreneurship program models and experiential activities on engineering student outcomes. *Advances in Engineering Education*.
- Deakins, D. & Freel, M. (1998). Entrepreneurial learning and the growth process in SMEs. *The Learning Organization*, 5(3), 144-155.
- Fiet, J.O. (2001).The theoretical side of teaching entrepreneurship, *Journal of Business Venturing*, 16(1), 1-24.
- Frank, A.I. (2007). Entrepreneurship and enterprise skills: A missing element of planning education? *Planning Practice and Research*, 22(4), 635-648
- Frese, M. (2009). Toward a psychology of entrepreneurship: An action theory perspective, *Foundations and Trends in Entrepreneurship*, Now Publishers, ISBN 9781601982964, Hanover, MA, USA.
- Gartner W B (1989), “Who is an entrepreneur? is the wrong question”, *Entrepreneurship: Theory and Practice* (Summer), pp. 47-68.
- Gerben Van Der Vegt, Ben Emans, Evert Van De Vliert. (June 1998) “Motivating effects of task and outcome interdependence in work teams”, *Group & Organization Management* 23(2):124-143 , . [Online]: https://www.researchgate.net/publication/246873302_Motivating_Effects_of_Task_and_Outcome_Interdependence_in_Work_Teams.
- Giles, D. W., & Eyler, J. (1994). The Impact of a college community service laboratory on student’s personal, social and cognitive outcomes. *Journal of Adolescence*, 17, 327–339.
- Harryson, S.J.(2008). Entrepreneurship through relationships: navigating from creativity to commercialization. *R & D Management*, 38(3), 290-310.
- Honnar, N. (2016, August 22). Student entrepreneur. *The Times Ascent* www.timesascent.com/hr-zone/Student-entrepreneurs/153511
- Kalkan M, Kaygusuz Canani. (2012). The Psychology of Entrepreneurship. *Entrepreneurship-Born, Made and Educated*.
- Laeser, M., Moskal, B. M., Knecht, R. & Lasich, D. (2003). Engineering design: Examining the impact of gender and the team’s gender composition. *Journal of Engineering Education* **92**, 49–56 .
- Lucas, W., Cooper, S., Ward, T., & Cave, F. (2009). Industry placement, authentic experience and the development of venturing and technology self-efficacy. *Technovation*, 29(11), 738-752.
- Kundu S. C., & Rani S (2004). “Entrepreneurial orientation of aspiring managers: a study”, *International Journal of Management and Enterprise Development*, Vol. 1, No. 3, pp. 233-250.
- Makhbul, Z. & Hasun F. (2011). Entrepreneurial success: An exploratory study among entrepreneurs. *International Journal of Business and Management*. Vol.6. No.1; Jan 2011, Pg 117.
- Nandamuri P.P., Gajulapally Radha K, Ch. (2012) A strategic analysis of entrepreneurial orientation of management graduates. *IUP Journal of Business Strategy*, Vol. IX, No. 4.
- Neumeyer, X. & Mckenna, Ann. 2016. Entrepreneurial thinking in interdisciplinary student teams, advances in engineering education.
- Poornima M Charantimath (2011), *Entrepreneurship Development and Small Business Enterprise*, p. 44, Pearson Education India, New Delhi.
- Robinson, Sherry & Stubberud, Hans Anton., (2014). Teaching creativity, team work and other soft skills for entrepreneurship. *Journal of Entrepreneurship Education*, Vol.17.

- Schmidt, J.J., Soper, J.C. & Facca, T.M. (2012). "Creativity in the entrepreneurship classroom. *Journal Entrepreneurship Education*, 15, 123-131.
- Swiercz, P. M., & Lydon, S. R. (2002). Entrepreneurial leadership in high-tech firms: a field study. *Leadership and Organization Development Journal*, 23(7), 380 – 389.
- Wang Yushuai, Yang Na and Wu Changping, 2014. An analysis of factors which influence entrepreneurial motivation focused on entrepreneurs in jiang xi province in china. *Journal of Applied Sciences*, 14: 767-775. (Online): <http://scialert.net/abstract/?doi=jas.2014.767.775>
- Yeboah, Moses A.2014. Analysis of entrepreneurship: How does culture influence risk-taking in smes in the sekonditakordi metropolis, Ghana? *American International Journal of Contemporary Research Vol. No.2*. [Online]: http://www.ajjcrnet.com/journals/Vol_4_No_2_February_2014/18.pdf
- Zappe, S., Hochstedt, K., & Kisenwether, E. (2012). Teaching to innovate: Beliefs and perceptions of instructors who teach entrepreneurship to engineering students. *International Journal of Engineering Education*, 29(1), 1-18.
- Zhun J, Zhao X.(2014). Analysing elements of the entrepreneurship practice education of college students. *Journal of Chemical & Pharmaceutical Research*,7(7):803-807, ISSN:0975-7384.