

# Linking Entrepreneurship and students of Mechanical Engineering in Kerala – A study on involvement in campus startups

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**Abstract-** Startup policy report revealed that, India will have to create 1 million new jobs every month for the next 20 years. It will make unemployment a problem to the nation. The Government of India and Kerala is gradually withdrawing their role from the employer and they are promoting and giving scientific and economic support for the people having new ideas to become an entrepreneur or startup. Unemployment of educated youth, lack of campus recruitment, change in policies of central and state government and drastic development and changes in technology are the motivations for selecting this topic. For India, entrepreneurship is a journey from poverty to prosperity. Entrepreneurship is one of the main roads to new technological innovation. Creativity and innovativeness are among the most essential attributes of engineering graduates and also of successful entrepreneurs. Innovation and Entrepreneurship Development Centre in campuses are motivating engineering students to develop entrepreneurial culture. The aim of this paper is to evaluate the involvement of Mechanical engineering students in Kerala in campus startups.

**Key Words:** Unemployment, Entrepreneur, Startup, Entrepreneurship, Creativity, Innovativeness, Mechanical Engineering

## 1. INTRODUCTION

As the socio-economic development of a country is dependent on the entrepreneurship, governments and international organizations launch a number of programs to support entrepreneurship to fulfill its economic and societal roles. While promoting entrepreneurship, specific thrust on youth entrepreneurship was not given since entrepreneurship and youth entrepreneurship were perceived to be the same. Hence, it is seen that in many countries; considerable attentions have been given to entrepreneurship in general. The problems of entrepreneurship have been addressed in the same way for different age sub groups within the population by the use of "one size fits all" policies and programmes. Recently, we see a change in this trend. As a result of the high levels of unemployment among the young people, interest in youth entrepreneurship has been fuelled and it tries to foster employment opportunities or to address social exclusion. Furthermore, entrepreneurship is seen as a channel for the talents of many highly educated young people in areas such

as information technology, biotechnology and other modern industries. The educated and technically qualified youth are migrating for jobs and for sufficient employment opportunities. The abundance of capital and manpower are not being tapped adequately. People in Kerala are reluctant to invest in economically productive activities even though there is a surfeit of techno-economic talent. The factors contributing to this state of affairs may range from labour market rigidities to the absence of a favorable investment climate and has to lead to a generation of entrepreneurship being lost. This has forced many Keralites to leave and look for greener pastures outside Kerala.

The present study is focusing on the involvement of mechanical engineering youth in campus startups towards entrepreneurship in Kerala. Youth unemployment and brain drains are comparatively high in Kerala with respect to other states in India. Even though over the years various governments of Kerala have initiated numerous interventions to encourage entrepreneurship among youth, enough progress has not been made up to date in the area of entrepreneurship when compared to other states in India. This can be attributed to the lack of understanding of the youth's attitudes towards entrepreneurship. Attitudes play a vital role in the life of an individual. Attitude of youth towards entrepreneurship can decide their attractiveness towards entrepreneurship as a career. A better understanding of these attitudes can be instrumental in assisting the government, policy makers and educators in encouraging entrepreneurship among youth in Kerala.

## 2. LITERATURE REVIEW

A detailed study was done on various literatures related to Entrepreneurship and have examined the concept of entrepreneurship and entrepreneur (David McClelland, 1961; Peter Drucker, 1964; Kilby, 1971).

Many of the empirical researches (; Moen et al., 2004; Van Wyk and Boshoff, 2004; Wilson et al., 2004; Veciana et al., 2005; Lindsay, 2005; Goel et al., 2007; Kadir et al., 2008; Turker and Selcuk, 2008; Shariff and Saud, 2009; Gibson et al., 2010; Burkhalter et al., 2010; Pihie and Bagheri, 2010; Ooi Yeng Keat et al., 2011) were done to determine the attitude and intention of students belonging to various streams of study towards entrepreneurship.

N. K. Nikhil et al. (2015), argued that Kerala have a high per capita rate of consumption, but it imports a major share of its requirements including food. The educated and technically qualified youth are migrating for want of jobs and for sufficient employment opportunities. The abundance of capital and manpower are not being tapped adequately. Keralites are reluctant to invest in economically productive activities even though there is a surfeit of techno-economic talent. The factors contributing to this state of affairs may range from labour market rigidities to the absence of a favorable investment climate and has to lead

to a generation of entrepreneurship been lost. The major problem faced by the startups are lack of return over time and fund deployed, poor mentoring, poor product market fit with least problems with funding and infrastructure.

Entrepreneurship education will improve the attitude of students towards entrepreneurship (Peterman and Kennedy, 2003; Rachel Shinnar et al., 2009; Packham et al., 2010; Nathalie Duval- Couetil et al., 2011; Lorz, 2011; Zhou Hong et al., 2012; Hattab, 2014; Badariah Hj Din et al., 2015; Dianne H. B. Welsha et al., 2016). The results showed that the Entrepreneurship Programmes raised attitudes and the overall entrepreneurial intentions of students (Souitaris et al., 2007; Dionco-Adetayo, 2012). Bonte et al. (2007) was conducted research based on startups revealed that, individuals belonging to 20-30 age had positive effect on the number of high-tech startups.

The attitude of Engineering students towards entrepreneurship could examined in the studies of Sundar and Madhavan (2013), Lutfiah Natrah Abbas (2013), Pratheesh Pretheeba (2014), Salwah Che Mat et al. (2015), Mohd Sufian Abdul Karim (2016).

### 3. RESEARCH FRAMEWORK AND PROPOSED HYPOTHESIS

According to the theory of planned behaviour by Ajzen (1991) and entrepreneurial event model proposed by Shapero and Sokol (1982), conceptual framework for the current study was built. This conceptual framework explains that entrepreneurial behavior is associated with the entrepreneurial attitude and intention among students. The theory explains the relationship between people's attitude and beliefs. According to the model, people's evaluation of the attitude towards behaviour is determined by their accessible beliefs about the behavior and the belief is defined as the subjective probability that the behaviour will produce a certain outcome. Empirical testing of entrepreneurial intention among students has found support for both Shapero entrepreneurial event model and the theory of planned behavior (Kolveriod, 1996; Kreuger, et al., 2000). Following, Ajzen and Shapero's model, the current study proposes that more favourable the attitude, more favourable should be the person's intention to perform the behavior.

The following hypothesis will be tested in this research.

H1 : There is a significant positive relationship between involvement of ME students in campus startups and activities and inclination towards entrepreneurship.

H2 : There is a significant positive relationship between involvement of ME students in campus startups and influence of IEDC in colleges.

H3 : There is a significant positive relationship between involvement of ME students in campus startups and effectiveness of programs conducted by Govt. organizations.

H4 : There is a significant relationship between involvement of ME students in campus startups and effect of barrier factors in entrepreneurial creativity of ME students.

H5 : There is a significant relationship between involvement of ME students in campus startups and entrepreneurship education.

## 4. RESEARCH METHODOLOGY

A questionnaire survey methodology was adopted and was carried out in selected Engineering colleges across Kerala to accomplish the objective of this research study.

### 4.1 Survey Instrument

A self-administered structured instrument was designed and most of the items were taken from the studies. The instrument was modified by consulting with academicians, IEDC nodal officers and startup persons, and was initially validated through a pilot survey before it was actually used for primary data collection. The questionnaire consisting of 6 categories (variables such as Involvement, Entrepreneurial activities, Influence of IEDC, Effectiveness of programs conducted by Govt. organizations, Effect of barrier factors, Entrepreneurship education) with 36 items. A five point likert scale was used in the questionnaire for marking level of implementation. 1 (Strongly disagree), 2 (Disagree), 3 (Neutral), 4 (Agree), 5 (Strongly agree).

### 4.2 Data Collection

This study utilizes direct approach survey method, electronic mail (e-mail) and google forms as the means of data collection which is commonly used in similar kind of research. The area selected for the present study are Thrissur, Ernakulam, Palakkad, Kozhikode and Malappuram districts. Data were collected from various engineering colleges affiliated to Kerala Technological University (KTU) in the above mentioned districts. 353 mechanical engineering students of third and fourth year are responded to the survey. Before conducting the detailed survey, initially a pilot study was conducted using this questionnaire and these responses were used to check the reliability of the questionnaire. These data obtained

from survey was tabulated using Microsoft Excel. Then the data were analyzed using IBM SPSS statistics 22 software.

### 4.3 Data Analysis

#### 4.3.1 Reliability Analysis

Cronbach's coefficient  $\alpha$  is the most popular test within the internal consistency method (Nunnally, 1978; Cronbach, 1951). Cronbach's  $\alpha$  computes internal consistency reliability among a group of items combined to form a single scale. It can also be computed for any subset of items. Nunnally (1978) advocates that new developed measures can be accepted with Cronbach's  $\alpha$  of more than 0.60, otherwise 0.70 should be the threshold. The measure with Cronbach's  $\alpha$  0.80 or more is significant and reliable. An Alpha value of 0.70 or above is considered to be criterion for demonstrating strong internal consistency; Alpha value of 0.60 or above is considered to be significant. (Seun Azeez Olugbola, 2017). The Cronbach's Coefficient alpha value was determined by using SPSS software (version 22.0). Cronbach's alpha ( $\alpha$ ) for the whole questionnaire was found to be 0.872 with 40 items. The Cronbach's  $\alpha$  for the six factors ranged from 0.615 to 0.780 indicating a good reliability of the instrument.

**Table-1:** Cronbach's Alpha ( $\alpha$ ) for Entrepreneurial factors

Sl. No	Entrepreneurial Factor	No.of Items	Cronbach's Alpha ( $\alpha$ )
1	Involvement In Campus Startups	5	0.676
2	Activities and Inclination towards Entrepreneurship	5	0.660
3	Influence of IEDC in colleges	6	0.744
4	Effectiveness of programs conducted by Govt. Organization	5	0.780
5	Effect of barrier factors in entrepreneurial creativity of ME students	10	0.615
6	Entrepreneurship Education	5	0.736

#### 4.3.2 Validity Analysis

The concept of validity was formulated by Kelly (1927, p. 14) who stated that a test is valid if it measures what it claims to measure. The general purpose of checking validity is to find a way of condensing or summarizing the information into a smaller set of new composite dimensions with a minimum loss of information. There are mainly two types validity; content validity and construct validity. Content validity is a subjective evaluation, which was considered suitable because these critical factors and results in the evaluation of quality management have been obtained from a literature review expert opinions. The objective of the content validity is to ensure that the selection of construct items extends past empirical issues to also include theoretical and practical considerations (Robinson et al., 1991). In this study the 6 Entrepreneurial factors and 36 items for finding the involvement of mechanical engineering towards entrepreneurship should have content validity, as the measurement items were developed based on both on comprehensive review of the literature and detailed evaluations by academicians and practicing managers. Construct validity refers to the degree to which a test or other measure assesses the underlying theoretical construct it is supposed to measure. The construct validity of each measure was evaluated through a principal component factor analysis.

#### 4.3.3 Factor Analysis

In order to assess the construct validity, factor loadings are obtained for each item. Factor analysis with principal component by varimax rotation, was performed separately to find out the factor structure of dependent and independent variables. The loadings reflect the strength of the relationship between an item and a particular factor or practice. The higher the loading, the better the representation that particular item has on the factor. For this study, a loading of 0.40 or greater on the factor was considered. For the independent variable since some items were below 0.40 or are having collinearity with more than one factor, it is continued to perform factor analyzing by removing the items one by one until we get all the items are having a factor loading above 0.4. Therefore, out of 40 items, totally 6 items relating to these factors were deleted due to low factor loading.

The Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy was 0.704 ( $\chi^2= 351.008$ ,  $p=0.000 <0.01$ ) for involvement of ME students in campus startups, 0.730 ( $\chi^2=253.857$ ,  $p=0.000 <0.01$ ) for entrepreneurial activities, 0.751 ( $\chi^2=529.702$ ,  $p=0.000 <0.01$ ) for influence of IEDC in colleges, 0.809 ( $\chi^2=435.443$ ,  $p=0.000 <0.01$ ) for programs carried out by gov. organizations, 0.614 ( $\chi^2=361.819$ ,  $p=0.000 <0.01$ ) for barrier factors, 0.735 ( $\chi^2=444.557$ ,  $p=0.000 <0.01$ ) for entrepreneurship education which are greater than 0.60 (Kaiser,1974) indicate sufficient inter

correlations while the Barlett’s test of sphericity was significant.(Bartlett,1950).

Therefore, out of 36 items, totally 4 items relating to these factors were deleted due to low factor loading as given below,

- Involvement in campus startups – 0 item
- Activities towards Entrepreneurship – 0 item
- Influence of IEDC in colleges – 1 item
- Effectiveness of programs conducted by Govt. Organization – 0 item
- Effect of barrier factors in entrepreneurial creativity of ME students – 3 items
- Entrepreneurship Education – 0 item

Finally, a total of 34 items which are unidimensional and factorially distinct loaded on the constructs were retained for further analysis.

**Table-2:** Reliability after Factor Analysis

Sl. No	Entrepreneurial Factor	No.of Items	Cronbach’s Alpha (α)
1	Involvement In Campus Startups	5	0.676
2	Activities and Inclination towards Entrepreneurship	5	0.660
3	Influence of IEDC in colleges	5	0.766
4	Effectiveness of programs conducted by Govt. Organization	5	0.780
5	Effect of barrier factors in entrepreneurial creativity of ME students	7	0.634
6	Entrepreneurship Education	5	0.736

**4.3.4 Multiple Regression Analysis**

It is used to investigate the relationship between single dependent variable (criterion) and several independent variables (predictors or explanatory) at one time. It is employed to test the research hypotheses. In this analysis, a set of independent variables is weighted to form the regression variate (regression equation or model) and that may be used to explain its relative contribution towards one dependent variable. This analysis was undertaken to better understand the relationships between Attitude and other five independent variables such as Entrepreneurial activities, Influence of IEDC, Programs carried out by Govt. organizations, Barrier factors and Entrepreneurship education.

In order to judge the magnitude of effects in this study, Cohen’s rules for effects sizes can be used. According to Cohen (1988), R<sup>2</sup> value between 1.0 and 5.9 percent is considered as small, between 5.9 and 13.8 percent is medium, and above 13.8 percent is large. From table 4, it can be observed that coefficient of determination (R<sup>2</sup>) for attitude was 0.640, representing that 64.0 percent of attitude can be explained by the 5 independent variables. Thus, the effect size for this study is large and H1, H2, H3, H4 and H5 were partially supported. p-value (sig. value) for activities was 0.003, for influence was 0.000, for programs was 0.012, for barrier factors was 0.000 and for entrepreneurship education was 0.000. The proposed model was adequate as it was significant at 5 percent level (p < 0.05). This indicated that the overall model was statistically significant and positive relationship between entrepreneurial factors and involvement of mechanical engineering students in campus startups towards entrepreneurship. Barrier factors have unstandardized Beta coefficient of -0.210, indicated that there is a negative relation between involvement of mechanical engineering students in campus startups and barrier factors. Due to barrier factors such as lack of capital investment, high risk, lack of family support, govt. policies etc. , it leads to decrease in the involvement of mechanical students in campus startups.

**5. CONCLUSION**

Entrepreneurship plays a crucial role in the growth and development of economy and it is a key contributor to innovativeness and product improvement. As a change agent, they initiate economic activity by taking initiatives through business ventures. Most of the developing countries, consider entrepreneurship as an engine of economic growth, job creation and social adjustment. The role of entrepreneurs is of fundamental importance to a country like India, where the twin problems of poverty and unemployment coexist. Fostering entrepreneurship has become a topic of the highest priority in public policy since well-educated entrepreneurs are of paramount importance. Portals of higher education are the centers where new



products and processes consolidate the foundation for the new enterprises. More specifically, college students are the most promising sources of entrepreneurship. Because attitude and intention are precursors of entrepreneurial action, an understanding of the attitude and the factors influencing the attitude including educational background, is a critical step in promoting greater entrepreneurial initiative.

The study revealed that the involvement of mechanical engineering students in campus startups are quite good but quantitatively and comparatively low compared to other branches. Lack of capital investment, high risk, lack of family support are the major barriers for youth to become an entrepreneur. The study indicates that entrepreneurship education for students would give better result in improving the attitude and involvement of youth towards entrepreneurship.

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