

# Entrepreneurial Passion and Self-Efficacy Among Business and Engineering Students

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**Abstract**—This study examines entrepreneurial passion (EP) and perceived entrepreneurial capability among 736 business (Management) and engineering students at Lovely Professional University, India. Utilizing a 23-item Likert-scale survey, we assessed EP across inventing, founding, and developing domains, with perceived capability as a proxy for self-efficacy. Findings reveal that Management students exhibit significantly higher EP ( $M=5.8$ ) compared to Engineering students ( $M=4.6$ ). A moderate positive correlation ( $r=0.42$ ) exists between EP and perceived capability. Independent t-tests confirmed significant EP differences between streams ( $p<0.001$ ), and regression analysis indicated EP predicts perceived capability ( $R^2=0.18$ ). These results highlight the influence of educational background on entrepreneurial traits and suggest tailored entrepreneurship education strategies to enhance EP and capability across disciplines.

**Index Terms**—Entrepreneurial Passion, Self-Efficacy, Perceived Capability, Business Students, Engineering Students, Entrepreneurship Education

## I. INTRODUCTION

Entrepreneurship is a cornerstone of innovation, economic growth, and societal development, fostering the creation of new ventures and solutions to global challenges [1]. Central to entrepreneurial success are psychological constructs such as entrepreneurial passion (EP) and self-efficacy, which drive individuals to pursue and sustain entrepreneurial activities [2], [3]. EP is defined as a consciously accessible, intense positive feeling toward entrepreneurial activities that are central to an individual's identity, encompassing domains such as inventing new products, founding ventures, and developing businesses [1]. Self-efficacy, rooted in social cognitive theory, refers to an individual's belief in their ability to execute tasks and achieve goals [3]. In this study, perceived entrepreneurial capability serves as a proxy for self-efficacy, capturing confidence in performing entrepreneurial tasks.

The comparison between business (Management) and engineering students provides a unique lens to explore these constructs. Management students are typically exposed to curricula emphasizing marketing, management, and entrepreneurial strategies, which may foster a stronger entrepreneurial mindset [4]. In contrast, engineering students focus on technical problem-solving and innovation, potentially prioritizing product development over business creation [5]. This distinction raises critical questions about how educational background shapes EP and its outcomes, a topic underexplored in existing literature [6]. Furthermore, entrepreneurship education plays a pivotal role in cultivating these traits, yet its effectiveness may vary across academic disciplines [7].

This study addresses three primary objectives: (1) to examine the levels of EP among Management and Engineering students, (2) to investigate the influence of educational background on EP, and (3) to assess the relationship between EP and perceived entrepreneurial capability. Data were collected from 736 students (368 Management, 368 Engineering) using a 23-item

Likert-scale survey. The findings aim to contribute to the literature on EP and inform the design of targeted entrepreneurship education programs that enhance entrepreneurial tendencies across diverse student groups. This paper is structured as follows: Section II reviews relevant literature, Section III details the methodology, Section IV presents results, Section V discusses findings, and Section VI concludes with implications and future research directions.

## II. LITERATURE REVIEW

### A. Entrepreneurial Passion

Entrepreneurial passion (EP) is a pivotal driver of entrepreneurial behavior, characterized by intense positive emotions and a strong identification with entrepreneurial activities [1]. Cardon et al. [1] define EP as a consciously accessible, intense positive feeling directed toward activities that are meaningful and central to an entrepreneur's identity, such as inventing new products, founding ventures, or developing businesses. Their framework identifies three domains of EP: inventing (creating new solutions), founding (establishing new ventures), and developing (growing and sustaining businesses). Subsequent research by Cardon et al. [2] validated scales to measure these domains, demonstrating that EP enhances persistence, creativity, and effort, significantly influencing entrepreneurial intent and performance.

Murnieks et al. [11] argue that EP distinguishes entrepreneurs from non-entrepreneurs by fostering a deep commitment to their ventures, often through identity centrality, where entrepreneurial tasks become integral to one's sense of self. For instance, entrepreneurs with high EP are more likely to overcome obstacles and sustain motivation, as evidenced by Cardon et al. [2]. These studies collectively suggest that EP is not merely an emotional state but a catalyst for entrepreneurial action, making it a critical construct for understanding entrepreneurial tendencies among students, who represent the next generation of innovators and business leaders.

### B. Self-Efficacy and Perceived Capability

Self-efficacy, as conceptualized by Bandura [3], is an individual's belief in their capacity to execute tasks and achieve specific outcomes. In the entrepreneurial context, self-efficacy translates into perceived entrepreneurial capability, encompassing confidence in identifying opportunities, managing resources, and navigating risks [10]. Bandura's work highlights that self-efficacy enhances motivation, resilience, and performance, particularly in challenging domains like entrepreneurship. Research by Boyd and Vozikis [9] demonstrates that self-efficacy mediates the relationship between entrepreneurial intentions and actions, suggesting that individuals with higher confidence are more likely to pursue and succeed in ventures.

In this study, perceived capability serves as a proxy for self-efficacy, inferred from motivation and engagement in entrepreneurial tasks, aligning with Bandura's broader framework [3]. For example, Chen et al. [10] found that entrepreneurial self-efficacy distinguishes entrepreneurs from managers, emphasizing skills like opportunity recognition and risk tolerance. This linkage underscores the importance of confidence as a complement to passion in driving entrepreneurial outcomes, particularly among students exposed to varying educational curricula.

### C. Research Gap

Despite the established roles of EP and self-efficacy, few studies have explored how these constructs vary across academic disciplines, particularly between Management and Engineering students [6]. Existing research often focuses on general student populations or practicing entrepreneurs, neglecting the influence of educational background on entrepreneurial traits [8]. Management students, exposed to entrepreneurial curricula, may develop higher EP and capability due to training in business planning and marketing [4]. In contrast, Engineering students, with a technical orientation, might prioritize innovation over entrepreneurial identity, potentially exhibiting lower EP [5].

For example, Zhao et al. [8] found that entrepreneurship education enhances self-efficacy, but their study did not differentiate between student streams. Similarly, while Cardon et al. [1] and Murnieks et al. [11] highlight EP's role, they do not compare its manifestation across disciplines. This gap is significant, as understanding how entrepreneurship education shapes EP and capability across Management and Engineering students could inform tailored pedagogical approaches, a need this study seeks to address.

### III. METHODOLOGY

#### A. Research Design

This study adopts a quantitative research design to examine the relationship between EP and perceived entrepreneurial capability among Management and Engineering students. A structured survey was utilized to collect data, which was analyzed using statistical techniques including descriptive statistics, independent samples t-tests, correlation analysis, and regression analysis. The research follows a comparative approach, investigating differences in EP between Management and Engineering students while assessing the predictive relationship between EP and perceived capability. The selection of statistical tools was guided by the research objectives, ensuring a comprehensive understanding of the variables.

#### B. Sample Selection

The study involved a sample of 736 students from two distinct academic disciplines: - Management Students (N=368, 50%) - Engineering Students (N=368, 50%) Participants were recruited from Lovely Professional University, India, which offers entrepreneurship-related courses, ensuring relevance to the study's objectives. They are distributed across different academic years, with the highest proportion in the second year (46.1%), followed by the third year (21.3%), first year (18.3%), and fourth year (14.3%)

#### C. Instrumentation

Data were collected using a 23-item Likert-scale survey adapted from Cardon et al. [1], [2], designed to measure EP. The survey employed a 7-point scale (1=Strongly Disagree, 7=Strongly Agree) and assessed EP across two dimensions: - Intense Positive Feelings (IPF): 10 items, including 4 for inventing (e.g., "It is exciting to figure out new ways to solve unmet market needs"), 3 for founding (e.g., "Establishing a new company excites me"), and 3 for developing (e.g., "Pushing my employees and myself to make our company better motivates me"). - Identity Centrality (IC): 3 items, one per domain (e.g., "Inventing new solutions to problems is an important part of who I am").

Ten additional items repeated IPF questions for validation, but only the unique 13 items (10 IPF + 3 IC) were used for primary analysis. Cronbach's Alpha values ( $\geq 0.80$ ) confirmed the instrument's reliability [2]. Perceived capability was derived from the item, "Pushing my employees and myself to make our company better motivates me," serving as a proxy for self-efficacy.

#### D. Variables

The study included the following key variables:

- **Independent Variable:** EP, measured as a total score (average of 13 items) and by subdomains (IPF-Inventing, IPF-Founding, IPF-Developing, IC-Inventing, IC-Founding, IC-Developing).
- **Dependent Variable:** Perceived entrepreneurial capability, used as a proxy for self-efficacy.
- **Moderator:** Academic stream, coded as Management (1) and Engineering (2).

#### E. Data Analysis

Data were analyzed using SPSS software in four stages:

- **Descriptive Statistics:** Means, standard deviations, and ranges were calculated for total EP and its subdomains, with comparisons between Management and Engineering students.

- **Independent Samples Ttests:** Conducted to compare total EP and subdomain scores between streams, using a one-tailed test hypothesizing higher EP among Management students.
- **Correlation Analysis:** Pearson's correlation coefficient ( $r$ ) assessed the relationship between total EP and perceived capability.
- **Regression Analysis:** A simple linear regression model analyzed the predictive relationship between total EP and perceived capability, with EP as the predictor.

#### IV. RESULTS

##### A. Descriptive Statistics

The sample comprised 736 respondents, with 45.0% female, 38.9% male, and 16.2% identifying as other. The academic stream was evenly split (50.0% Management, 50.0% Engineering), with most respondents in their second year (46.1%).

TABLE I  
DESCRIPTIVE STATISTICS FOR ENTREPRENEURIAL PASSION

Group	Mean	SD	Range
Total EP	5.5	1.2	2.5-7.0
Management	5.8	1.1	2.8-7.0
Engineering	4.6	1.3	2.5-6.8

Cronbach's Alpha values indicated high reliability: IPF-Inventing ( $=0.85$ ), IPF-Founding ( $=0.80$ ), and IPF-Developing ( $=0.82$ ). Demographic analysis showed balanced gender and stream representation, with second-year students dominating due to increased exposure to entrepreneurial concepts.

##### B. T-tests

Independent samples t-tests confirmed significant differences in total EP between Management and Engineering students ( $t(295)=5.12$ ,  $p<0.001$ ,  $d=0.98$ ). Subdomain analysis revealed Management students scored higher in IPF-Inventing ( $t=-3.452$ ,  $p<0.001$ ) and IPF-Founding ( $t=-3.505$ ,  $p<0.001$ ), with moderate effect sizes (Cohen's  $d=0.98$ ), indicating meaningful differences.

##### C. Correlation Analysis

Pearson's correlation analysis revealed a moderate positive correlation between total EP and perceived capability ( $r=0.42$ ,  $p<0.01$ ), suggesting that higher passion is associated with greater confidence. Within subdomains, IPF-Inventing correlated significantly with enjoyment in searching for new ideas ( $r=0.379$ ,  $p<0.01$ ), reinforcing the link between passion for innovation and idea generation. However, correlations with the dependent variable  $g$  were weak and non-significant ( $r=-0.003$ ,  $p=0.943$  for IPF-Inventing;  $r=0.031$ ,  $p=0.407$  for idea generation).

##### D. Regression Analysis

Simple linear regression indicated that total EP significantly predicted perceived capability ( $F(1,295)=62.368$ ,  $p<0.001$ ,  $R^2=0.18$ ,  $=0.54$ ), explaining 18% of the variance. However, a separate regression model for IPF predictors (inventing, idea generation, and motivation to improve products) on the dependent variable  $g$  was non-significant ( $F=0.816$ ,  $p=0.485$ ). Coefficients for IPF-Inventing ( $=-0.005$ ,  $p=0.897$ ), idea generation ( $=0.056$ ,  $p=0.192$ ), and motivation ( $=-0.053$ ,  $p=0.208$ ) showed no significant impact, suggesting other factors influence  $g$ .

## V. DISCUSSION

The findings confirm that educational background significantly influences EP, with Management students exhibiting higher passion ( $M=5.8$ ) than Engineering students ( $M=4.6$ ). This aligns with Gibb [4], who notes that business curricula foster entrepreneurial mindsets through exposure to marketing and venture planning. Engineering students, focused on technical innovation, may view entrepreneurship as secondary to product development, as suggested by Rae and Carswell [5]. The significant t-test results ( $p<0.001$ ) and moderate effect size ( $d=0.98$ ) underscore the practical importance of these differences.

The moderate positive correlation between EP and perceived capability ( $r=0.42$ ) supports Bandura's [3] theory that confidence complements passion in driving behavior. Students who are passionate about entrepreneurial activities are more likely to believe in their ability to succeed, regardless of their academic stream. However, the regression model's limited explanatory power for  $g$  ( $p=0.485$ ) suggests that factors beyond EP, such as mentorship, practical experience, or exposure to real-world challenges, may influence entrepreneurial outcomes [8].

### A. Limitations

Several limitations temper the findings. First, the equal sample size per stream ( $n=368$ ) may limit generalizability, as larger or more diverse samples could reveal additional nuances. Second, using a single item as a proxy for self-efficacy restricts the robustness of capability findings. Validated self-efficacy scales, as recommended by Chen et al. [10], would capture multidimensional aspects like opportunity identification and risk management. Third, the study's focus on one institution may introduce contextual biases, necessitating multi-institutional research for broader applicability.

### B. Implications

Practically, the findings suggest tailoring entrepreneurship programs by academic stream. Management students, with higher EP, could benefit from advanced venture creation opportunities, such as business incubators or pitch competitions. Engineering students, with lower EP, need curricula that bridge technical innovation with entrepreneurial skills, such as workshops on commercialization or startup fundamentals [7]. Theoretically, this study extends Cardon et al.'s [1] EP framework to student populations, highlighting educational background as a determinant of entrepreneurial traits. Future research should incorporate validated self-efficacy measures and explore moderators like prior entrepreneurial exposure or cultural influences.

## VI. CONCLUSION

This study provides evidence that educational background shapes entrepreneurial passion, with Management students demonstrating greater EP than Engineering students. The positive relationship between EP and perceived capability underscores the importance of fostering both passion and confidence to prepare students for entrepreneurial success. While EP significantly predicts capability, other factors likely influence entrepreneurial outcomes, necessitating further investigation. Educators can leverage these findings to design targeted entrepreneurship programs that enhance EP and capability across disciplines, ultimately contributing to a more innovative and entrepreneurial society. Future research should address the study's limitations by using larger, more diverse samples and validated self-efficacy measures to deepen understanding of these relationships.

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