International Journal of Environmental Sciences
ISSN: 2229-7359
Vol. 11 No. 4,2025
https://theaspd.com/index.php

# Modelling And Fostering Innopreneurship Spirit Of Students Through Innovation And Entrepreneurial Spirit For Sustainable Education

**Anjana R Arakerimath[1], Chhabi Sinha Chavan[2]**
[1]Asso.Professor MCA Dept. Pimpri Chinchawad College of Engineering. Pune, Research Scholar, MIT Arts, Design and Technology University. Pune, a.anjana@pccoepune.org
[2]Professor and Dean, Faculty of Commerce and Management , MIT College of Management, MIT Art, Design and Technology University, chhabichavan@gmail.com

***Abstract:***
*This research study investigates the relationship between entrepreneurial inclination and students' Innopreneurship. Findings are limited to engineering and management students at private universities. It also assesses the private institute's efforts to promote Innopreneurship among the students through various initiatives. Given the goals of the study, the information was gathered from students at a private university and their delegates. According to the results, hands-on experiences including innovation competitions, internships, and start-up projects are the most effective at developing entrepreneurial skills. The study recommends that private universities should place a high priority on expanding practical initiatives, integrating business principles into the curriculum, and creating an environment that encourages entrepreneurial spirit. This work highlights the importance of strategic investment in entrepreneurial and innovation education in preparing the next generation of leaders and innovators from universities. The analysis and modelling results reveal that the Innopreneurship spirit of students can be boosted by 18%, resulting in increased Enterpreneurship development within the organisation.*
***Key Words:*** *Entrepreneurship, Innovation. Innopreneurship. Simulink Model.*

## INTRODUCTION:

In the changing Indian economy, entrepreneurship has become a key focus, particularly over the last four years since the Covid-19 pandemic. All stakeholders, including governments, educational institutions, and incubation centers, acknowledge the significance of entrepreneurship. Entrepreneurship is a significant factor, but innovation within this field is equally crucial. Typically, it is propelled by the entrepreneur's skills and innovative mindset. Universities play a crucial role in the development of students' Innopreneurship skills. Particularly notable is the role of private universities, which are highly attractive to students due to their flexible structures, class infrastructure, resource-rich environment, and exceptional ability to promote inno-preneurial skills among students. This study seeks to investigate the private university student entrepreneurial skills that promote Innopreneurship. Recent studies have sought to comprehend the various strategies employed by private universities to promote Innopreneurship and cultivate entrepreneurial enthusiasm among students, which can ultimately enhance the students' creativity and innovation capabilities. As each day passes, the job market is becoming increasingly competitive for those seeking employment, while also being shaped by the impact of emerging technologies, making it crucial for individuals to cultivate a entrepreneurial mindset in order to achieve future success. Private universities play a crucial role in developing Innopreneurship competence through their academic activities, entrepreneurship-oriented curriculum, co-curricular and extracurricular activities in their dynamic landscape. This study focuses on the part private universities play in encouraging students to develop new ideas that can be turned into potential business ventures. It also assesses the support infrastructure, which encompasses proper guidance, mentorship, and incubation, a central facility, access to financing, and advice from industry specialists. This paper also investigates the attributes of private university students that fostered their Innopreneurship skills, as well as factors that contributed to their success. A comprehensive systematic review of existing literature is conducted to identify the research gap and the syllabus structure of private universities that fosters an entrepreneurial mindset among students. This research comprehends the mechanisms of private universities that enable them to foster entrepreneurial spirit and innovative thought processes effectively.

The ultimate goal of the study is to improve the students' entrepreneurial abilities, giving them the necessary skills and mindset to create and improve innovative ideas and make a significant economic contribution. Fig-1 shows the Innopreneurship process consisting the input variables of Innovation and entrepreneurship.

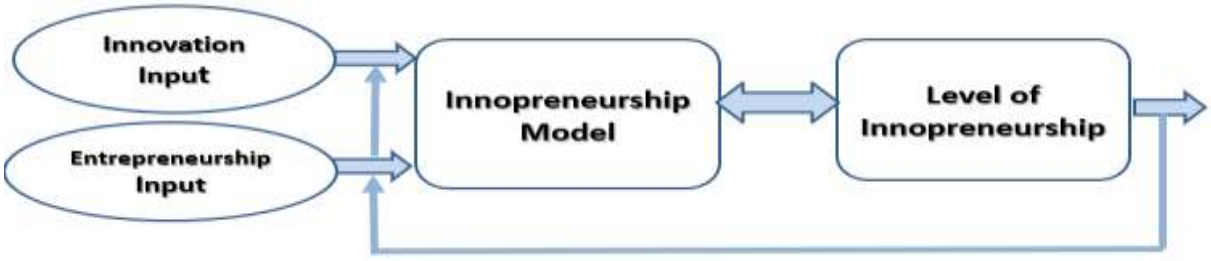


Fig-1 Innopreneurship Process

**2. Objectives:**

a) The primary objective is to identify the key strategies used by private universities to promote entrepreneurial spirit and Innopreneurship among students.

b) To identify the key strategies employed by private universities to foster entrepreneurial spirit and Innopreneurship among students.

c) The goal is to create a mathematical model that explains the relationship between various parameters.

**2.1 Hypothesis:**

H0: Entrepreneurial spirit does not determine student's inclination towards Innopreneurship

H1: Entrepreneurial spirit determines student's inclination towards Innopreneurship

**LITERATURE REVIEW:**

Anil K. Gupta (2012) in his research paper defined the concept of Innopreneurship as "The strategic utilization of innovative capabilities to start and grow enterprises that address unmet needs and contribute to societal progress."

A research paper authored by André Cherubini Alves et al in 2018 aimed to determine the traits and characteristics of student entrepreneurship across different universities and departments. A research paper proposed a model comprising various dimensions including entrepreneurial activity, potential entrepreneurs, high-impact entrepreneurship, serial entrepreneurship, and innovation-driven entrepreneurship, among others.

Alexandor Harsono (2013) explains importance of Innopreneurship education in building students career has been explored in the current research paper. Researcher mentioned that entrepreneurship is a discipline and it can be learned and it has nothing to do with genes.

Faisal Iddris (2016) conducted a literature review-based study to investigate the business organisations' innovation capacity building initiatives. A researcher conducted an analysis of several research papers and found that innovation capability building has multiple dimensions. The review identified several key factors, which include the organisation's vision and mission, its capability to generate knowledge, and its ability to retain knowledge.

Xingjian Wei,, Liu, and Jian Sha (2019) study was oriented towards to understand the mediating effect of entrepreneurship education on entrepreneurial innovation. Study shows that perception of entrepreneurial education has mediating effect on perception of innovation.

Kolawole Shola Ojo (2023) studied role of self-monitoring and resilience in innovation was through current research article. Author examined the model of componential theory of creativity. It was observed that this theory suggesting two important aspects that determines the innovation among the students, those are individual resilience and self-assessment.

Brian C et al (2020) discusses co-simulation approach provides a modular, scalable, and adaptable architecture framework to support facilitate the evaluation of integrated vehicle systems. By enabling the coupling dynamic linking of multiple subsystem models, it speeds up trade-study iterations and enhances

the fidelity, the accuracy of system-level simulations particularly for thermal and power integrated vehicle systems.

The study further referred following papers to study the status of Innovation and Entrepreneurship in Higher educations and focused towards Innopreneurship spirits of students are listed in Table 1.

Table 1: List of reference papers and areas used in this study.

| S No | Area of Work | Number of Papers | Authors and Years |
|---|---|---|---|
| 1 | Innovation Capability or Spirit | 11 | Anil K.Gupta (2012), Kolawole Shola(2023), Ng, P. T 2009, Faisal Iddris(2016), Talat Ahmad (2020), SerdyukovP.(2017), Yuanyuan Yang (2024), Ya-ling Xu (2023), Irma, Ana Isabel etal (2023) |
| 2 | Enterpreneurship Capability or Spirit | 3 | Xingjian Wei,, Liu, and Jian Sha (2019), Irina, Petimat and Aliyeva (2023), Manuel Antonio Morante Dávila (2024). Huebscher, J., & Lendner, C. (2010). |
| 3 | Innovation and Entrepreneurship Ability | 2 | Manuel Antonio Morante Dávila (2024), Sadan Kulturel-Konak (2024) |
| 4 | Supporting to Above area | 3 | Alicia C. Bunger (2022), Kolawole Shola Ojo (2023). Wang, C. L., & Chugh, H. (2014). |

**RESEARCH METHODOLOGY:**

The Data was collected from 10 representatives each from 5 private universities. The qualitative approach involved reviewing literature, whereas the quantitative research involved analyzing numerical data from surveys. Data was collected directly from a structured questionnaire. Interviews are conducted with two types of respondents: students and university representatives such as teachers, the ED Cell Head, the Incubation Centre in charge, etc. Secondary data is collected from various research papers, studies on innovation and entrepreneurship, university curricula, and reports, among others. Purposive sampling is the sampling method employed in the current study. The research includes a total of 310 participants in its sample. The feedback was gathered from 300 students at 5 private universities. Data also collected from 10 representatives of 5 private universities. Data collection is limited to students enrolled in engineering and management courses. Data analysis is carried out using both descriptive and hypothesis testing methods. Mean frequencies, values, and graphical representations are employed for descriptive analysis, while a Chi-square test was utilised to verify the hypothesis. The data analysis was carried out using SPSS and MATLAB software.

**5. Data Analysis:**

Data analysis is done using descriptive as well as hypothesis testing as follows.

Table 2. Student's demographic profile

| | **Demographic Profile** | **Frequency** |
|---|---|---|
| **Students Age** | 18-21 | 127 |
| | 21-25 | 132 |
| | 25 and above | 41 |
| **Gender** | Male | 176 |
| | Female | 124 |
| **Graduation/PG Stream** | Engineering | 65 |
| | MBA | 142 |
| | MCA | 93 |
| **Have you taken any entrepreneurship-related courses or workshops at your university?** | Yes | 243 |
| | No | 67 |

**Interpretation:** The demographic profile of student respondents, as shown in Table 02, indicates that they are primarily from engineering, MBA, and MCA graduation streams. Men make up a slightly larger

proportion of the survey respondents, numbering 176, compared to the 124 female respondents. On average, students' ages range from 21 to 25 years, with the majority falling into this age group (132). Approximately 80% of students participating in the survey have enrolled in courses related to entrepreneurship as part of their current degree program.

**Table 3. Students Entrepreneurial Spirit**

| Statements showing Students Inclination towards Entrepreneurship | Strongly Disagree | Disagree | Neutral | Agree | Strongly Agree | Mean Value |
|---|---|---|---|---|---|---|
| I am interested in starting my own business in the future. | 25 | 31 | 41 | 83 | 120 | 3.8 |
| I actively seek out information and resources related to entrepreneurship. | 15 | 24 | 16 | 73 | 172 | 4.2 |
| I feel a strong desire to become an entrepreneur. | 13 | 43 | 14 | 110 | 120 | 3.9 |
| I frequently think about potential business opportunities. | 12 | 11 | 23 | 123 | 131 | 4.2 |
| I am inclined to pursue entrepreneurship as a career path. | 19 | 29 | 43 | 132 | 77 | 3.7 |

**Interpretation:** Above Table 3, displaying frequency and mean value in relation to the statements indicating students' inclination towards entrepreneurship. The frequency table examines students' responses to five different statements. All five statements yield a mean value that is near 4. The data suggests that students exhibited a positive inclination towards entrepreneurship. The data suggests that students are eager to launch their own business and opt for entrepreneurship as their chosen career path. The average response score of 3.8 indicates that 66% of the participants are open to launching their own businesses in the future. Students are actively looking for the information and resources needed to pursue entrepreneurship, as stated in figure 4.2. The average response to a statement reflecting a strong desire for entrepreneurship was 3.9, while a mean of 4.2 was attributed to the notion that students frequently search for business ideas. Furthermore, 70% of them had a mean value of 3.7, indicating they strongly believe entrepreneurship is a viable career path.

Table 4. What type of entrepreneurial activities have you been involved in during your time at the university?

| **Entrepreneurial Activities** | **Frequency** |
|---|---|
| Participation in business plan competitions | 194 |
| Internships or projects with start-ups | 252 |
| Member of entrepreneurship clubs or societies | 37 |
| Attending networking events with entrepreneurs | 273 |

**Interpretation:** It is observed that students have kept their keen interest as they involved in various entrepreneurial activities during their university studies. There were 252 students have done their internship projects with start-up companies as in Table 4.

Table 5. Statement Showing Students Innopreneurship Spirit

| Parameter | Statement | Strongly Disagree | Disagree | Neutral | Agree | Strongly Agree | Mean Value |
|---|---|---|---|---|---|---|---|
| Motivation | I am motivated to take risks in pursuing new business ideas. | 10 | 21 | 39 | 105 | 125 | 4.0 |
| Confidence | I am confident in my ability to turn innovative ideas into successful ventures. | 5 | 32 | 21 | 93 | 149 | 4.2 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Risk Taking ability | I am eager to explore opportunities for creating and running my own business. | 14 | 27 | 16 | 136 | 107 | 4.0 |
| Proactiveness | I am proactive in seeking out entrepreneurial learning experiences. | 7 | 32 | 13 | 133 | 115 | 4.1 |
| Passion | I am passionate about solving problems through creative and entrepreneurial approaches. | 13 | 14 | 66 | 114 | 93 | 3.9 |

**Interpretation:**
Table 5 examine students' opinions in relation to the entrepreneurial statements as provided above. The data suggests that students possess a robust entrepreneurial inclination. Entrepreneurial students express the most confidence in bringing innovative ideas to life, with a mean score of 4.2, indicating a strong sense of capability and assurance in their business abilities. Pro-activeness, scoring 4.1 on average, and Motivation, at 4.0, also stand out as key strengths, reflecting students' willingness to take risks and actively pursue entrepreneurial opportunities. Their capacity for taking risks is also very strong (mean: 4.0), showcasing a willingness to pursue business ventures. Although a slightly lower enthusiasm for problem-solving (mean: 3.9) exists, there is still a considerable level of passion for entrepreneurial challenges. The results as a whole show a comprehensive entrepreneurial attitude among the students to improve Innopreneurship.

**Private University/Institute Representative Responses**

**Interpretation:** The Demographic profile of the Institute/University representatives is explored. Respondents collected from the varied profile. There were 50% of the responses collected from the University Incubation and Innovation centre. From the experience feedback, it is observed that most of the respondents are having enough experience as there were total 70% respondents fall under the experienced category in the same institute. These universities/institutes conducting various stream's but majority is of Engineering followed by Science stream and Business management courses.

Table 6. Institute/University strategies to foster entrepreneurship and innovation among the students

| S No | Strategies | Mean Value |
|---|---|---|
| 1 | Offering entrepreneurship-focused courses and workshops-x1 | 3.9 |
| 2 | Providing access to mentorship from successful entrepreneurs-x2 | 3.2 |
| 3 | Organizing innovation and business plan competitions-x3 | 4.5 |
| 4 | Facilitating internships and projects with start-ups-x4 | 4.1 |
| 5 | Establishing incubators and innovation labs on campus-x5 | 3.87 |
| 6 | Encouragement to participate in startup incubators-x6 | 3.62 |
| 7 | Access to funding and resources for student-led ventures-x7 | 3.23 |
| 8 | Collaboration opportunities with industry experts-x8 | 3.7 |
| 9 | Exposure to entrepreneurial role models through guest lectures-x9 | 3.27 |
| 10 | Networking events with successful entrepreneurs and investors-x10 | 3.46 |

**Interpretation:**

The statements in Table 6 are evaluated using a five-point Likert scale of agreement. On a scale of 1 to 5, where 1 represents strongly disagree and 5 represents strongly agree, The mean values of the responses were calculated. The most effective strategies for fostering entrepreneurship and innovation

among students, as indicated by the means of 4.5 and 4.1, are organizing innovation and business plan competitions and facilitating internships and projects with start-ups. Courses and workshops focused on entrepreneurship, as well as on-campus incubators and innovation labs, also have significant roles to play (mean: 3.9 and mean: 3.87). Strategies such as access to mentorship from accomplished entrepreneurs (mean: 3.2), funding and resources for student-run projects (mean: 3.23), and exposure to entrepreneurial role models through guest speakers (mean: 3.27) are seen as less effective. Networking events with a mean rating of 3.46 and collaboration opportunities with industry experts, which averaged 3.7, demonstrate moderate levels of effectiveness. Hands-on experiences and competitive platforms appear to be more effective in boosting student engagement in entrepreneurship than mentorship and access to funding. The research indicates a student leaning towards enhancing Innopreneurship.

**Hypothesis Testing**

H0: Entrepreneurial spirit does not determine student's inclination towards Innopreneurship

H1: Entrepreneurial spirit determines student's inclination towards Innopreneurship

Table 7. Chi-square test result for P-value

| Variables | I am interested in starting my own business in the future. | I actively seek out information and resources related to entrepreneurship. | I feel a strong desire to become an entrepreneur. | I frequently think about potential business opportunities. | I am inclined to pursue entrepreneurship as a career path. |
|---|---|---|---|---|---|
| Motivation | 0.026 | 0.0008 | 0.0005 | **0.061** | 0.0009 |
| Confidence | 0.0001 | 0.028 | 0.025 | 0.001 | 0.0003 |
| Risk Taking ability | 0.001 | 0.0001 | 0.12 | 0.024 | 0.001 |
| Proactiveness | 0.001 | 0.0001 | **0.22** | 0.003 | 0.0007 |
| Passion | 0.0007 | 0.0002 | 0.00002 | 0.00001 | 0.007 |

**Interpretation:**

The hypothesis illustrates a link between students' entrepreneurial inclinations and entrepreneurial spirit in students. A chi-square test was conducted with a 95% confidence level and a 5% level of significance. The P-values are presented in Table 7. The p-values indicate that most of the values below the conventional significance level of 0.05, suggesting significant associations between students' entrepreneurial spirit and their inclination towards entrepreneurship. In certain instances, such as the statements "Desire to become an entrepreneur" and "Thinking about opportunities," the association with "Risk Taking Ability," "Proactiveness," and "Motivation" is not significant when p-values exceed 0.05. The Chi-square test outcome suggests that the p-values are insufficient to validate the null hypothesis. Consequently, the alternative hypothesis is accepted, indicating a significant association between multiple facets of entrepreneurial spirit and students' preference for entrepreneurship, as demonstrated by the Chi-square analysis.

**FINDINGS:**

The research study draws the following inferences from the review as well as data analysis, which are discussed below.

a) Research indicates that students participating in entrepreneurial activities possess robust confidence in their entrepreneurial capabilities, with a mean score of 4.2 being the highest recorded for the statement, "I am confident in my ability to transform innovative concepts into successful business ventures."

b) The students who took part in the survey demonstrated a proactive attitude in pursuing entrepreneurial learning experiences, with a mean score of 4.1, showing an active endeavour to acquire entrepreneurial skills.

c) A mean value of 4.2 indicates that students have a significant inclination towards entrepreneurship, suggesting they frequently think about potential business opportunities.

d) Private universities often host a number of events to promote entrepreneurial endeavour. Observations suggest that hosting innovation and business plan competitions is the most effective approach employed by institutions to promote entrepreneurship, which has a mean rating of 4.5.
e) Another highly effective approach is facilitating internships and projects with start-ups, which yields a mean value of 4.1, indicating that practical experiences are vital for developing entrepreneurial skills.
f) Providing entrepreneurship-focused courses and workshops has a moderate effect on promoting a spirit of entrepreneurship among students, with a mean score of 3.9.
g) Mentorship from successful entrepreneurs (rated 3.2 on average) and access to funding and resources for student-led ventures (rated 3.23 on average) are viewed as less effective methods for promoting entrepreneurship.
h) Students exhibit a considerable amount of enthusiasm for tackling challenges through entrepreneurial methods, with a mean score of 3.9, suggesting that creative problem-solving is a primary motivator for them.
i) Strategies such as innovation labs (mean: 3.87) and networking events (mean: 3.46) show moderate effectiveness, however collaboration with industry experts (mean: 3.7) suggests that there is scope for improvement in ensuring these strategies meet student requirements.
j) Chi-square analysis reveals a significant association between various aspects of entrepreneurial spirit (e.g., motivation, confidence) and students' inclination towards entrepreneurship, with p-values well below 0.05 for most pairings, supporting the alternative hypothesis that entrepreneurial spirit influences student inclination toward Innopreneurship.

Fig -2 shows the variation of entrepreneurial spirit and Innopreneurship spirit for this study based on the analysis.

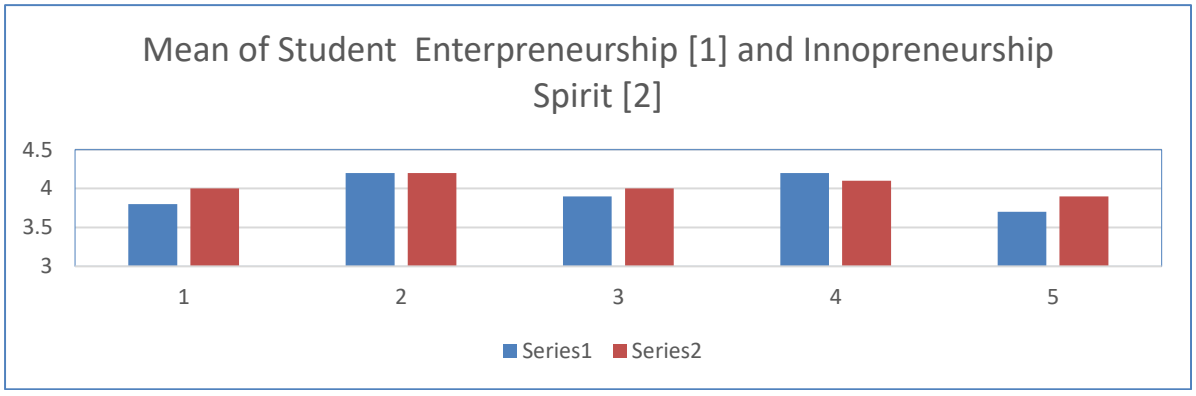


Fig 2, Entrepreneurial and Innopreneurship spirit of students

Based on the table-6 the Regression model is developed using MATLAB considering the 10 variables those contribute to Entrepreneurship and Innovation spirit reflecting the Innopreneurship of students for the choosen case study. The Model developed is:

Innopreneurship = 0.5168 + (0.2237 * x1) + (-0.4687 * x2) + (1.0403 * x3) + (-0.5291 * x4) + (-2.0058 * x5) + (-1.4283 * x6) + (-0.3840 * x7) + (1.9651 * x8) + (2.1745 * x9) + (0.1505 * x10)

The model developed indicates the strong co-relations of variables are x1, x3, x8, x9 and x10. It is found here that the major parameters contributing to Innopreneurship are x1, x3, x8,x9 and x10.

Similarly using a MATLAB SIMULINK a Dynamic Simulation model is developed as shown in Fig 3 for knowing the spirit of Innopreneurship of students in the selected case study.

Fig 3, SIMULINK Model of Innopreneurship

From Fig 3 the inputs are fed at various levels and analysed for the Innopreneurship spirit using 10 variables and found the Innopreneurship spirit as : Low=3.2, Medium =3.9 and High=4.5 based on the collected data.

## CONCLUSION

This Research is currently to investigate the substantial influence on entrepreneurial spirit exerts in cultivating Innopreneurship among students at private institutions. Data analysis reveals that hands-on, practical experiences like innovation competitions, internships, and start-up projects are highly effective in fostering entrepreneurial skills and inclinations. Initiatives such as mentorship and funding opportunities are valuable, yet they are less effective without the necessary support and integration into a broader entrepreneurial ecosystem. According to the study's findings, private universities can concentrate on developing and broadening these practical initiatives and strengthening the incorporation of entrepreneurship into their course materials. Universities can more effectively prepare their students for entrepreneurial success by fostering an environment that promotes experimentation, innovation, and teamwork. Continuous adaptation and improvement of strategies based on feedback will be crucial to ensuring the long-term success of entrepreneurial education initiatives.

This research highlights the significance of making strategic investments in innovation and entrepreneurial education as a way to enable the next generation of innovators and leaders. The model developed suggests a strong correlation between variables such as x1, x3, x8, x9, and x10 and Innopreneurship spirit. According to the overall analysis, the student inclination towards innopreneurship enhancement is increased by 18% for the chosen case study, thereby contributing to the development of a better organisational ecosystem.

**Funding**

This article is my own contribution and I have not taken any help or funding in the conceptualization, design, data collection, analysis, decision to publish, or preparation of the manuscript from any agency or party.

**Authors' contributions**

This paper is prepared by me as my research work under guidance of my research professor. The entire work is prepared and submitted by me and it has no contribution by any other party or a person.

**Conflict of interest**

We declare that we have no financial and personal relationships with other people or organizations that can inappropriately influence our work; there is no professional or other personal interest of any nature or kind in any product, service and/or company that could be construed as influencing the position presented in, or the review of, the manuscript entitled.

**Data availability statement**

The data used to support the findings of this study are considered by the corresponding author based on our research work.

**REFERENCES:**

1. Anil K. Gupta (2012), "Grassroots Innovation: Minds on the Margin are not Marginal Minds". Penguin India, ISBN: 978-0670086511.
2. André Cherubini Alves, Bruno Fischer (2018), "Determinants of student entrepreneurship, An assessment on higher education institutions in Brazil", Vol. 16 No. 2, 2019pp. 96-117,
Alexandor Harsono (2013), "Building Technopreneurship for next generation: how the benefits of innopreneurship education affects career intentions of college students.",Vol. No.3,
3. Xingjian Wei,, Liu, and Jian Sha (2019), "How Does the Entrepreneurship Education Influence the Students' Innovation? Testing on the Multiple Mediation Model", doi:10.3389/fpsyg.2019.01557
4. Kolawole Shola Ojo (2023), "Modelling Innovation competence profiles: the empowering roles of self-monitoring and resilience", Ojo and Volkova BMC Psychology (2023) 11:293
https://doi.org/10.1186/s40359-023-01340-x
5. Faisal Iddris (2016), "Innovation Capability: A Systematic Review and Research Agenda", Interdisciplinary Journal of Information, Knowledge, and Management.
6. Ng, P. T. (2009). Innovation in education: some observations and questions. International Journal of Innovation in Education. 1 (1), 8-11.
7. Findikoglu, F., & İlhan, D. (2016). Realisation of a Desired Future: Innovation in Education. Universal Journal of Educational Research, 4(11), 2574-2580.

8. Serdyukov, P. (2017). Innovation in education: what works, what doesn't, and what to do about it? Journal of Research in Innovative Teaching & Learning. 10 (1), 4-33.
https://doi.org/10.1108/JRIT-10-2016-0007.
9. Manuel Antonio Morante Dávila (2024), "Entrepreneurship and entrepreneurial innovation of university students, Amazonas, Peru", https://doi.org/10.53894/ijirss.v7i3.2975
10. Yuanyuan Yang (2024), "Thinking on Improving Students' Innovation and Entrepreneurship Ability Based on Positive Psychology", 10.26689/erd.v6i3.6610
11. Alicia C. Bunger (2022), "Leveraging academic initiatives to advance implementation practice: a scoping review of capacity building interventions", Juckett et al. Implementation Science (2022) 17:49 https://doi.org/10.1186/s13012-022-01216-5
12. Talat Ahmad (2020), "Measures to Promote Research and Innovation In Indian Universities", University of Kashmir, Srinagar, J&K Essay No. 18.
13. Psomas (2015). "The impact of innovation capability on the performance of manufacturing companies the Greek case." Journal of Manufacturing Technology Management, 26(1), 104-130.
14. Sadan Kulturel-Konak (2024), "Overview of Student Innovation Competitions and their roles in STEM Education"ASEE-American Society for Engineering Education. Paper ID #35677
15. Daniel Ayisi, Fallys , Masambuka, Bernard Obaa (2023), "Students' Perceptions of the Role of Various Players in Agricultural Technologies and Innovations Development", Journal of agricultural studies
16. Irma, Ana Isabel Parada, Romelia and Flore (2023), "Digital Competencies in University Students through Educational Innovations: A Review of the Current Literature", Aperture
17. Ya-ling Xu (2023), "Research on Issues and Countermeasures of Innovation Education among College Students", Studies in Social Science Research, Vol.4 No. 3.
18. Wang, C. L., & Chugh, H. (2014). Entrepreneurial learning: Past research and future challenges. International Journal of Management Reviews, 16(1), 24–61.
19. Irina, Petimat and Aliyeva (2023), "Development of innovative knowledge of students of higher educational institutions", DOI: 10.36871/ek.up.p.r.2024.03.07.03.
20. Matlay, H. (2008). The impact of entrepreneurship education on entrepreneurial outcomes. Journal of Small Business and Enterprise Development, 15(2), 382-396. http://dx.doi.org/10.1108/14626000810871745
21. Federico Schimperna et al. (2022) Student Entrepreneurship in Universities: The State-of-the-Art. Administrative Sciences. 12, 5. https://doi.org/10.3390/admsci12010005
22. Findikoglu, F., and İlhan, D. (2016). Realisation of a desired future: Innovation in Education. Universal Journal of Educational Research, 4(11), 2574-2580.
23. Xingjian Wei,, Liu, and Jian Sha (2019), "How Does the Entrepreneurship Education Influence the Students' Innovation? Testing on the Multiple Mediation Model", doi:10.3389/fpsyg.2019.01557
24. Arakerimath, A. R., & Chavan, C. S. (2024). Review and Development of Innopreneurship Model to Enhance the University Ecosystem. Interantional Journal of Scientific Research in Engineering and Management, 08(008), 1–13. https://doi.org/10.55041/ijsrem37192
25. Huebscher, J., & Lendner, C. (2010). Effects of entrepreneurship simulation game seminars on entrepreneurs' and students' learning. Journal of Small Business and Entrepreneurship, 23(4), 543–554.
26. Brian C. Raczkowski, Nicholas Jones etal. (2020). A MATLAB Simulink Based Co-Simulation Approach for a Vehicle Systems Model Integration Architecture. SAE International Journal of Advances and Current Practices in Mobility. Vol 2, Issue 3. doi:10.4271/2020-01-0005.