

UNIVERSITIES AS ENGINES OF ENTREPRENEURSHIP: A STUDY OF STUDENTS' AWARENESS OF START-UP SUPPORT SYSTEMS IN PUNJAB

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ABSTRACT

Background: Universities are increasingly expected to function as engines of entrepreneurship by fostering innovation, start-up creation, and entrepreneurial mindsets among students through structured support systems such as entrepreneurship education, incubation centres, mentorship, and industry linkages. In Punjab, despite growing institutional investments in entrepreneurial infrastructure, there is limited empirical evidence on how effectively these support systems are communicated to students and how aware students are of the opportunities available to them.

Aim/Objectives: The primary aim of the study is to examine students' awareness of start-up support systems provided by universities in Punjab and to assess how effectively educational institutions contribute to building a start-up culture from the students' perspective. The study specifically seeks to evaluate awareness of institutional resources such as incubation centres, seed funding, mentorship programmes, entrepreneurship events, and external collaborations.

Methodology: The study adopts a quantitative, cross-sectional research design. Primary data were collected from 392 undergraduate, postgraduate, and doctoral students from selected public and private universities in Punjab using a structured and validated questionnaire. A five-point Likert scale was employed, and the data were analysed using descriptive statistics, correlation, and regression analysis with the help of SPSS (Version 26).

Results: The findings indicate that students exhibit a moderate to high level of awareness of start-up support systems, particularly regarding incubation centres, entrepreneurship events, and idea-pitching platforms. However, relatively lower awareness was observed in areas related to mentorship accessibility and participation in awareness sessions. The results further reveal a strong and statistically significant positive relationship between students' awareness of start-up support systems and their entrepreneurial intentions.

Conclusion: The study concludes that students' awareness of institutional start-up support systems is a critical enabling factor in translating university resources into entrepreneurial intentions. Universities can effectively act as engines of entrepreneurship only when entrepreneurial initiatives are not only available but are also clearly visible, accessible, and aligned with students' aspirations. Strengthening awareness-building and engagement strategies is therefore essential for fostering a vibrant start-up culture in Punjab.

Keywords: Entrepreneurial universities; Start-up support systems; Student awareness; Entrepreneurial intentions; Higher education in Punjab

1. INTRODUCTION

In the contemporary knowledge-driven economy, universities are no longer viewed solely as centers for teaching and research; they are increasingly recognized as **engines of entrepreneurship** that actively contribute to innovation, job creation, and regional economic development. Across the globe, higher educational institutions are expected to nurture entrepreneurial mindsets, facilitate knowledge commercialization, and support student-led start-ups through structured ecosystems comprising entrepreneurship education, incubation facilities, mentorship, funding access, and industry linkages (Isenberg, 2011; Audretsch, 2014). This expanded role of universities aligns with the broader transformation toward entrepreneurial universities, where academic institutions function as catalysts for new venture creation and socio-economic progress (Guerrero et al., 2008).

Entrepreneurship education has emerged as a critical mechanism through which universities influence students' entrepreneurial intentions and behaviors. Prior research consistently highlights that exposure to entrepreneurship courses, experiential learning, and start-up-oriented pedagogies enhances students' opportunity recognition, risk-taking ability, self-efficacy, and intention to pursue entrepreneurial careers (Souitaris et al., 2007; Fayolle & Gailly, 2015; Nabi et al., 2018). However, education alone is insufficient unless it is complemented by institutional support systems such as incubation centers, seed funding schemes, networking platforms, and access to mentors. These support mechanisms collectively form an entrepreneurial ecosystem within universities, enabling students to translate ideas into viable ventures (Rasmussen & Wright, 2015; Eesley & Lee, 2020).

A foundational yet often overlooked component of an effective university-based entrepreneurial ecosystem is students' awareness of the available start-up support systems. Awareness acts as a prerequisite for utilization; students cannot benefit from incubation facilities, funding opportunities, or mentorship programs unless they are adequately informed about their existence, accessibility, and relevance (Walter et al., 2013). Empirical studies suggest that limited awareness and poor communication of institutional resources significantly weaken the impact of entrepreneurship initiatives, leading to underutilization despite substantial institutional investments (Sandhu et al., 2011; Trivedi, 2016). Consequently, assessing students' awareness levels provides crucial insights into the effectiveness of universities' entrepreneurial outreach and engagement strategies.

In the Indian context, and particularly in Punjab, the role of universities in promoting start-up culture is gaining increasing policy and academic attention. While Punjab has traditionally been associated with agriculture, manufacturing, and small family-run enterprises, recent years have witnessed a growing emphasis on innovation-driven entrepreneurship, supported by national initiatives such as *Startup India* and *Atmanirbhar Bharat*. Universities in Punjab, both public and private—have responded by introducing entrepreneurship courses, establishing incubation centers, organizing start-up events, and forging collaborations with industry and government bodies. Despite these efforts, evidence suggests that students' participation in entrepreneurial activities remains uneven, raising questions about the visibility, accessibility, and perceived relevance of institutional support systems (Shinnar et al., 2012; Chatterji et al., 2014).

From a theoretical perspective, this study draws support from Human Capital Theory, which posits that education and skill development enhance individuals' productivity and entrepreneurial potential (Becker, 1964), and the Resource-Based View, which emphasizes the role of valuable and unique institutional resources, such as knowledge, infrastructure, and networks—in generating sustainable competitive advantage (Barney, 1991). Within this framework, universities serve as repositories of entrepreneurial resources, while students' awareness determines the extent to which these resources are converted into entrepreneurial intentions and actions.

Against this backdrop, the present study aims to investigate students' awareness of start-up support systems offered by universities in Punjab. By focusing on students' perspectives, the study aims to evaluate how effectively universities communicate and promote entrepreneurial resources such as incubation centers, seed funding, mentorship programs, entrepreneurship events, and external collaborations. Understanding awareness gaps is crucial for strengthening institutional strategies, enhancing student engagement, and improving the overall effectiveness of university-led entrepreneurial ecosystems. Ultimately, the study contributes to the growing literature on entrepreneurial universities by offering region-specific empirical insights and policy-relevant recommendations for fostering a vibrant and inclusive start-up culture in Punjab.

2. REVIEW OF LITERATURE

A large and growing body of research shows that formal entrepreneurship education—when it combines theory with experiential methods—positively shapes students' entrepreneurial knowledge, self-efficacy, and intentions. Longitudinal and cross-sectional studies report that participation in courses, case-based learning, business plan exercises, and competitions increases the recognition of opportunities and perceived capability to found ventures (Souitaris et al., 2007; Fayolle & Gailly, 2015). Recent empirical work in diverse contexts confirms the mediation effect: entrepreneurship education enhances entrepreneurial competencies, which in turn raise intentions (Lv et al., 2021; Yijun et al., 2021). However, scholars caution that the type of pedagogy matters—purely theoretical modules produce weaker effects than programs with incubator linkages, mentoring and hands-on projects. This implies that institutional linkages between curricula and support services are central to converting learning into action. Incubation centres, seed funding, lab access and technology transfer offices are reported as critical tangible resources that universities can deploy to nurture student ventures. Studies in India and abroad have found that incubators enhance start-up survival and provide vital networks, although perceived service gaps often exist between what incubators *claim* to offer and what entrepreneurs experience (Mehta, 2022). Recent analyses of incubation effectiveness emphasise reputational legitimacy, access to external partners (VCs, industry), and sustained mentoring as decisive success factors (Panakaje et al., 2024). These works support the Resource-Based View, which suggests that universities endowed with high-quality infrastructure and external linkages create an enabling advantage for student entrepreneurship. Yet, the literature also highlights an uneven distribution—large private universities typically exhibit stronger infrastructure and student awareness than smaller public institutions, a pattern observed in the Punjab samples. Mentoring (internal faculty and external entrepreneurs), alumni networks, and a formal university. Industry collaborations are repeatedly shown to accelerate learning, market access, and fundraising for student teams. Cross-national studies indicate that meaningful mentorship closes the gap between classroom knowledge and market realities by providing practical advice and introductions to investors (St-Jean & Audet, 2012; Rasmussen & Wright, 2015). Recent large-sample research also demonstrates that university–industry partnerships can significantly improve student start-up profitability and commercialization outcomes, especially when collaboration is structured around joint R&D, internships, and accelerator programs (Shenkoya et al., 2024). For Punjab, these findings imply that merely having networks is insufficient; visibility and active facilitation of industry links are necessary to make them usable for students. A recurrent and policy-relevant theme is *awareness*—students must first be aware of available supports to utilize them. Several studies note that poor communication, low event publicity, or fragmented outreach led to under-utilization of incubators, funding schemes and mentoring. Empirical analyses show strong correlations between awareness and entrepreneurial intention (students who know about resources report higher perceptions of education impact and stronger intentions). Recent Punjab-focused empirical results in your files similarly report that awareness explains a substantial portion of

variance in entrepreneurial intention ($R^2 \approx 0.40$) and is uneven across institutions and academic levels—postgraduates and doctoral candidates tend to be more aware than undergraduates. This strand underscores your study's focus: measuring awareness is not trivial, but rather central to assessing institutional effectiveness. The literature consistently identifies barriers, financial constraints, fear of failure, family and social expectations, bureaucratic hurdles, and lack of role models as major inhibitors of students' entrepreneurial action (Shinnar et al., 2012; GEM reports). Recent empirical work confirms that perceived barriers have a significant and negative influence on entrepreneurial intentions and can moderate the effect of education and institutional support. Contextual factors (discipline, gender, family business background) also shape responses: engineering and management students often report higher awareness and utilization than those in arts or agriculture, while students from family-business backgrounds show greater confidence. These heterogeneities highlight the need for targeted institutional interventions rather than one-size-fits-all programs.

3. RESEARCH GAP AND AIMS OF THE STUDY

A review of existing literature indicates that although universities are increasingly recognized as key drivers of entrepreneurship, significant gaps remain in understanding how effectively their start-up support systems are communicated to and perceived by students. Most prior studies have focused primarily on the impact of entrepreneurship education on entrepreneurial intentions, often if the mere presence of incubation centres, funding schemes, and mentorship programs ensures student engagement, while paying limited attention to students' actual awareness of these institutional resources. Moreover, existing research has largely adopted institutional or faculty perspectives and is concentrated in developed economies or major innovation hubs, leaving regional contexts such as Punjab underexplored despite their growing entrepreneurial potential. The literature also lacks integrated frameworks that position students' awareness as a foundational mechanism linking institutional resources with entrepreneurial outcomes, and there is a scarcity of multi-institutional empirical studies using validated measures to capture awareness across diverse student groups. In response to these gaps, the present study aims to examine the extent of students' awareness of start-up support systems provided by universities in Punjab and to evaluate how effectively educational institutions function as engines of entrepreneurship from the students' perspective, with the objective of generating evidence-based insights to enhance the visibility, accessibility, and impact of university-led entrepreneurial ecosystems.

4. METHODOLOGY USED

The present study employed a quantitative, cross-sectional descriptive research design to investigate students' awareness of start-up support systems offered by universities in Punjab. Primary data were collected from 392 students enrolled in undergraduate, postgraduate, and doctoral programmes across selected public and private universities in the state. A stratified random sampling technique was employed to ensure adequate representation across gender, level of study, discipline, and type of institution, thereby enhancing the representativeness and generalizability of the findings. Data were gathered using a structured and validated questionnaire administered through both online and offline modes. The instrument comprised two sections: the first captured respondents' demographic profiles, while the second measured students' awareness of start-up support systems, including incubation centres, seed funding, mentorship programmes, entrepreneurship events, and institutional external collaborations, using a five-point Likert scale ranging from "strongly disagree" to "strongly agree." Before administering the final survey, the questionnaire underwent pilot testing to ensure clarity, reliability, and content validity. The collected data were coded and analyzed using SPSS (Version 26). Descriptive statistics, such as frequencies, percentages, means, and standard deviations, were used to

assess awareness levels. Inferential statistical techniques, including correlation and regression analysis, were applied to examine relationships among key variables. Reliability of the measurement scales was confirmed through Cronbach's alpha, ensuring internal consistency of the constructs used in the study.

5. ANALYSIS AND INTERPRETATION

The demographic profile in Table 1 indicates that the sample is diverse and representative of the higher education student population in Punjab, thereby enhancing the credibility of the study's findings. The gender distribution is balanced, with males comprising 54.6% and females 45.4%, reflecting the growing participation of females in higher education and entrepreneurship-related activities. Most respondents (57.7%) fall within the 21–25 years age group, a crucial stage for career exploration and entrepreneurial decision-making, while the inclusion of younger and senior students adds breadth and maturity to the sample. Undergraduate students form the largest segment (57.7%), followed by postgraduate (32.7%) and doctoral scholars (9.6%), aligning with typical university enrolment patterns.

Table 1: Demographic Profile of the Respondents

Demographic Variable	Category	Frequency	Percentage (%)
Gender	Male	214	54.6
	Female	178	45.4
Age Group	Below 20 years	62	15.8
	21–25 years	226	57.7
	26–30 years	74	18.9
	Above 30 years	30	7.6
Educational Level	Undergraduate	226	57.7
	Postgraduate	128	32.7
	Doctoral	38	9.6
Year of Study	1st Year	70	17.9
	2nd Year	82	20.9
	3rd Year	96	24.5
	Final / 4th Year	144	36.7
Discipline / Stream	Engineering & Technology	146	37.2
	Management & Commerce	114	29.1
	Agriculture & Allied Sciences	50	12.8
	Arts, Humanities & Social Sciences	54	13.8
	Sciences	28	7.1
Family Business Background	Yes	166	42.3
	No	226	57.7
Attended Entrepreneurship Events	Yes	234	59.7
	No	158	40.3
Received Formal Entrepreneurship Training	Yes	190	48.5
	No	202	51.5

More than one-third of respondents are in their final or senior years, when entrepreneurial intentions are likely to crystallize. Although Engineering & Technology and Management & Commerce students dominate the sample, representation from agriculture, humanities, and sciences highlights the multidisciplinary spread of entrepreneurship. Additionally, 42.3% of students reported a family business background, and nearly 60% had attended entrepreneurship-related events, indicating reasonable exposure. Meanwhile, the near-equal split in formal entrepreneurship training suggests the need for broader curricular integration.

Table 2: Item-wise Descriptive Statistics for Awareness of Start-up Support Systems

S. No.	Awareness Statements	Mean	Std. Deviation
1	Awareness of institutional support for student entrepreneurs	3.71	0.88
2	Awareness of start-up incubation centre	3.84	0.85
3	Availability of seed funding / grants	3.49	0.94
4	Communication about start-up events and services	3.66	0.91
5	Entrepreneurship bootcamps, seminars, workshops	3.75	0.87
6	Familiarity with faculty/institutional mentors	3.56	0.92
7	Attendance in entrepreneurship awareness sessions	3.42	0.96
8	Visibility of entrepreneurship opportunities on campus	3.70	0.89
9	Encouragement to pitch ideas in competitions/forums	3.88	0.83
10	Collaboration with external start-up bodies	3.61	0.90

The results indicate that students exhibit a moderate to high level of awareness regarding start-up support systems available within their universities. The mean scores range from 3.42 to 3.88, suggesting that respondents generally *agree* that their institutions provide entrepreneurial resources, although the depth of awareness varies across components. The highest mean score was observed for *encouragement to pitch ideas in competitions and forums* ($M = 3.88$), highlighting that innovation challenges, hackathons, and pitching events are among the most visible and actively promoted entrepreneurial initiatives on campus. Similarly, high awareness of *incubation centres* ($M = 3.84$) and *entrepreneurship workshops and bootcamps* ($M = 3.75$) reflects institutional efforts to develop experiential entrepreneurial learning environments. However, comparatively lower mean values were reported for attendance in awareness sessions ($M = 3.42$) and familiarity with mentors ($M = 3.56$). This suggests that while facilities and programs exist, direct student engagement and personalized guidance mechanisms remain uneven, pointing toward gaps in outreach and sustained mentoring. The relatively higher standard deviation values for these items further indicate variability in awareness across institutions and student groups.

Table 3: Overall Awareness Level of Start-up Support Systems

Awareness Level	Mean Score Range	Frequency	Percentage
Low Awareness	< 2.50	42	10.7
Moderate Awareness	2.50 – 3.50	156	39.8
High Awareness	> 3.50	194	49.5
Total	—	392	100

The classification reveals that nearly half of the respondents (49.5%) fall under the high awareness category, indicating that a substantial proportion of students are well-informed about entrepreneurial resources within their institutions. However, 39.8% of students exhibit only moderate awareness, and

10.7% demonstrate low awareness, which is a matter of concern given the significant investments universities have made in start-up infrastructure.

These findings suggest that although universities in Punjab are progressing toward becoming entrepreneurial hubs, information asymmetry and uneven communication strategies continue to restrict the full utilization of available support systems. Bridging this awareness gap is critical for strengthening the effectiveness of institutional entrepreneurial ecosystems.

Table 4: Correlation between Awareness of Start-up Support Systems and Entrepreneurial Intentions

Variables	Awareness of Start-up Support	Entrepreneurial Intentions
Awareness of Start-up Support	1	0.64**
Entrepreneurial Intentions	0.64**	1

Correlation is significant at the 0.01 level (2-tailed)

The results reveal a strong and positive correlation ($r = 0.64$, $p < 0.01$) between students' awareness of start-up support systems and their entrepreneurial intentions. This indicates that students who are more aware of institutional entrepreneurial resources are significantly more likely to express intentions to start their own ventures. This finding reinforces the argument that awareness serves as a critical enabler, transforming institutional infrastructure into a perceived opportunity. It empirically supports the premise that universities can effectively act as engines of entrepreneurship only when students are adequately informed and engaged with the available support mechanisms.

Table 5: Regression Analysis of Awareness on Entrepreneurial Intentions

Predictor Variable	β (Standardized)	t-value	Sig.
Awareness of Start-up Support Systems	0.64	15.92	0.000
Model Summary			
R	R^2	Adjusted R^2	Std. Error
0.64	0.41	0.41	0.58

The regression results demonstrate that awareness of start-up support systems has a significant predictive value for entrepreneurial intentions ($\beta = 0.64$, $p < 0.001$). The model explains 41% of the variance ($R^2 = 0.41$) in entrepreneurial intentions, which is substantial for behavioural research.

This finding confirms that awareness is not merely a background variable but a powerful explanatory construct in shaping entrepreneurial aspirations. The results suggest that enhancing communication, visibility, and student engagement with institutional support systems can directly increase students' willingness to pursue entrepreneurship. Overall, the analysis clearly indicates that universities in Punjab have made meaningful progress in establishing start-up support systems; however, variations in awareness and engagement persist. While infrastructure such as incubation centres and competitions is relatively visible, mentorship accessibility and consistent awareness-building efforts require strengthening. The strong statistical relationship between awareness and entrepreneurial intentions underscores the need for universities to adopt strategic communication and inclusive outreach mechanisms to fully realize their role as engines of entrepreneurship.

6. POLICY IMPLICATIONS

The study's findings have important policy implications for educational institutions and entrepreneurship policymakers in Punjab, as they reveal that the effectiveness of university-based start-up ecosystems depends not only on the availability of entrepreneurial resources but also on students' awareness and accessibility to these support systems. There is a strong need for institutional and regulatory policies that prioritize systematic awareness-building through mandatory entrepreneurship orientation programmes, centralized digital portals, and continuous communication strategies to ensure that incubation centres, funding opportunities, mentorship schemes, and networking platforms are clearly visible to all students. Policymakers and university governing bodies should consider incorporating indicators of entrepreneurship awareness and student engagement into accreditation and performance evaluation frameworks to enhance accountability. Furthermore, the observed gaps in mentorship access and participation in awareness initiatives highlight the necessity for formalized mentorship policies, including structured faculty involvement, industry mentor onboarding, and stronger linkages with national initiatives such as Startup India. The integration of entrepreneurship education with practical support mechanisms should also be encouraged through curriculum policies that connect classroom learning with incubation, live projects, and start-up competitions. At the regional level, state authorities can leverage universities as local innovation hubs by promoting inter-university collaboration, shared incubation infrastructure, and inclusive support policies targeting students from diverse disciplines and backgrounds, thereby strengthening Punjab's start-up ecosystem and contributing to sustainable economic growth.

7. CONCLUSION AND SCOPE FOR FUTURE RESEARCH

The present study concludes that universities in Punjab are increasingly assuming the role of engines of entrepreneurship by providing a range of start-up support systems; however, the effectiveness of these initiatives is significantly influenced by students' awareness and engagement levels. The findings reveal that while institutional mechanisms, such as incubation centers, entrepreneurship education, competitions, and workshops, are relatively visible, gaps persist in areas related to access to mentorship, consistent communication, and active participation in awareness programs. The strong positive relationship between students' awareness of start-up support systems and their entrepreneurial intentions underscores the critical role of awareness as a foundational enabler that bridges institutional resources and entrepreneurial outcomes. Overall, the study affirms that universities can meaningfully contribute to the development of a vibrant start-up culture only when entrepreneurial resources are not merely available but are effectively communicated, accessible, and aligned with students' needs and career aspirations. Despite its contributions, the study opens several avenues for future research. Future studies may adopt a longitudinal research design to examine whether students' awareness and intentions translate into actual start-up creation and long-term venture success. Comparative studies across different states or regions of India could provide broader insights into contextual and policy-driven differences in university-led entrepreneurial ecosystems. Further research may also explore mediating and moderating variables, such as entrepreneurial self-efficacy, digital literacy, family business background, or socio-cultural norms, to deepen the understanding of the awareness-intention relationship. In addition, qualitative approaches involving in-depth interviews with student entrepreneurs, faculty coordinators, and incubator managers could enrich the findings by capturing experiential and process-oriented insights. Such future research would not only strengthen theoretical development but also support more nuanced and evidence-based policymaking for fostering inclusive and sustainable start-up ecosystems through higher education institutions.

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