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The influence of learning culture, characteristics and motivation on entrepreneurial intention and its impact on student business startups

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Abstract Understanding the determinants of entrepreneurial intention among university students is essential for designing effective entrepreneurship education and strengthening student-led startup ecosystems. This study investigates the influence of learning culture, individual characteristics, and motivation on entrepreneurial intention and examines the subsequent impact of entrepreneurial intention on student business startups. Despite the growing volume of research on student entrepreneurship, empirical evidence that simultaneously integrates cultural, personal, and motivational factors within a single structural framework remains limited, particularly in the context of vocational higher education. This study adopts a quantitative research design and employs Structural Equation Modeling with Partial Least Squares (SEM-PLS) to analyze data collected from 200 vocational students at Universitas Negeri Surabaya, Indonesia. Learning culture, individual characteristics, and motivation are modeled as exogenous variables, entrepreneurial intention as a mediating variable, and student business startup as the endogenous outcome variable. The results indicate that motivation has a strong and significant positive effect on entrepreneurial intention, highlighting its central role in encouraging students to engage in entrepreneurial activities. In contrast, learning culture and individual characteristics do not show a significant direct effect on entrepreneurial intention, although they contribute indirectly by supporting students' motivational and psychological development. Furthermore, entrepreneurial intention demonstrates a significant positive impact on student business startups, confirming its mediating role in translating psychological and educational factors into entrepreneurial action. The model shows moderate explanatory power for entrepreneurial intention and weaker predictive power for startup formation. This study contributes to entrepreneurship literature by offering an integrated model that clarifies the mechanisms linking educational environment, personal attributes, and motivation to student startup outcomes. Practically, the findings emphasize the importance of entrepreneurship education programs that prioritize motivational reinforcement, experiential learning, and supportive academic cultures. The study also provides valuable insights for policymakers and higher education institutions seeking to foster sustainable student entrepreneurship.

Keywords: venture development programs, student employability, youth empowerment, innovative pedagogical practices, new venture creation

1. Introduction

Student entrepreneurship has garnered significant global attention in recent years, driven by the increasing demand for innovation and creativity to foster economic growth (Liu et al., 2022). The promotion of entrepreneurship among students is regarded as a strategic initiative in several countries, including Indonesia, aimed at fostering independent and innovative human resources (De la Gala-Velásquez et al., 2024). A positive learning culture, robust individual traits, and elevated motivation are critical factors influencing students' entrepreneurial intentions (Porfírio et al., 2023). The findings of Jiang et al. (2022) indicate that a supportive educational environment enhances students' interest in entrepreneurship, thereby better equipping them to confront challenges in the business sector.

Despite numerous studies on student entrepreneurship, gaps remain in understanding the simultaneous effects of learning culture, individual characteristics, and motivation on entrepreneurial intentions. Research by Ismail et al. (2024) indicates that while university students possess entrepreneurial potential, a significant number lack the confidence necessary to initiate a business. A study by Maslakci et al. (2024) identified a significant barrier for students in transforming business ideas into actionable outcomes: a deficiency in business management knowledge.

Su et al. (2021) identified that university students frequently encounter challenges in accessing capital and environmental support, which may impede their entrepreneurial intentions. It is essential to examine the relationship between

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these factors and their contribution to student startup success, as noted by Fu et al. (2022), who highlighted the necessity for a comprehensive approach to understanding entrepreneurship dynamics among college students.

This research is significant for contributing to both academic knowledge and practical insights regarding the dynamics of entrepreneurship among college students. This study will enhance the existing literature by elucidating the relationship between learning culture, individual characteristics, and motivation to entrepreneurial intention (Fan et al., 2024). The findings of this study are anticipated to offer guidance for educational institutions in the development of curricula and programs aimed at fostering student entrepreneurship (Mukhtar et al., 2021). This research may assist policymakers in developing more effective strategies to promote entrepreneurship among the younger generation (Montes et al., 2023).

This study's theoretical framework establishes a model connecting learning culture, individual characteristics, and motivation to entrepreneurial intention and its influence on student startups. A supportive learning environment enhances entrepreneurial motivation, subsequently influencing students' intentions to initiate a business (Lin et al., 2023). Personal traits, including self-confidence and perseverance, significantly influence entrepreneurial attitudes and behaviors (Maheshwari et al., 2023). Motivation theories, including Expectancy Theory and Need Theory, elucidate the interaction of various factors that influence students' entrepreneurial decisions (Kusumojanto et al., 2021).

Students aspiring to establish a startup frequently encounter several challenges, including insufficient knowledge of business management, restricted access to capital, and inadequate support from their surrounding environment (Bu et al., 2023). Furthermore, they must contend with entrepreneurs who possess greater experience and resources (Handayati et al., 2021). Opportunities exist, including the growing public interest in local products and governmental support for the development of small and medium enterprises (Genoveva, 2019). Students can surmount challenges and leverage opportunities to establish a successful startup by fostering a positive learning culture and developing strong individual characteristics (Liu et al., 2022).

Despite numerous studies on student entrepreneurship, several shortcomings remain to be addressed. Numerous studies concentrate solely on a single aspect, such as motivation or individual characteristics, neglecting the interplay between these factors (Pérez-Macías et al., 2023). Moreover, prior research frequently overlooks particular local contexts, which may limit the generalizability of the findings (Andrade & Carvalho, 2023). Previous studies have faced methodological limitations, including small sample sizes and non-comprehensive approaches.

This study aims to examine the effects of learning culture, individual traits, and motivation on students' entrepreneurial intentions and the subsequent impact on the startups they create. This study's results are anticipated to have important implications for theory, practice, and policy concerning student entrepreneurship. This research aims to enhance the understanding of the interplay between learning culture, individual characteristics, and motivation within the realm of entrepreneurship.

The findings of this study can inform educational institutions in the development of more effective and relevant entrepreneurship programs for students. This study offers recommendations for policymakers to formulate strategies that foster entrepreneurship development among the younger generation, thereby contributing to economic growth and job creation in Indonesia.

2. Materials and Methods

This study used a quantitative design to analyze the construct model and test the hypotheses through a survey method. The main objective was to understand the influence of learning culture, individual characteristics, and motivation on entrepreneurial intentions and their impact on business start-ups run by students. The research subjects consisted of active fifth and seventh semester students in the vocational program at Surabaya State University, selected using a purposive sampling technique to obtain a representative sample in accordance with the research objectives. Overall, the number of respondents who participated in this study was 200 students.

The research instrument used was a questionnaire designed to measure variables of learning culture, individual characteristics, motivation, and entrepreneurial intentions. The questionnaire items were constructed according to pertinent theoretical frameworks and underwent validity and reliability assessments prior to administration to respondents. This instrument employs a Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree) to assess respondents' perceptions of each studied dimension.

This study encompasses four primary dimensions: Learning Culture (LC), Individual Characteristics (IC), Motivation (MT), and Entrepreneurial Intention (EI). The indicators were developed based on the theoretical frameworks presented in Figure 1 and prior research findings. The Learning Culture dimension is adapted from the framework established by Verbeek et al. (2023) and includes key indicators such as (1) shared goals, (2) knowledge acquisition and dissemination, and (3) a receptive attitude. The Individual Characteristics dimension is derived from Keijzer et al. (2022) and comprises (1) demographics, (2) self-sufficiency, (3) personality, and (4) resilience. The Motivation dimension was developed based on Zhou et al. (2024), incorporating indicators such as attention, relevance, confidence, and satisfaction. Finally, Entrepreneurial Intention, as identified by Najafabadi et al. (2016), encompasses (1) entrepreneurial skills, (2) self-efficacy, (3) attitude toward entrepreneurship, (4) psychological characteristics, and (5) social norms.

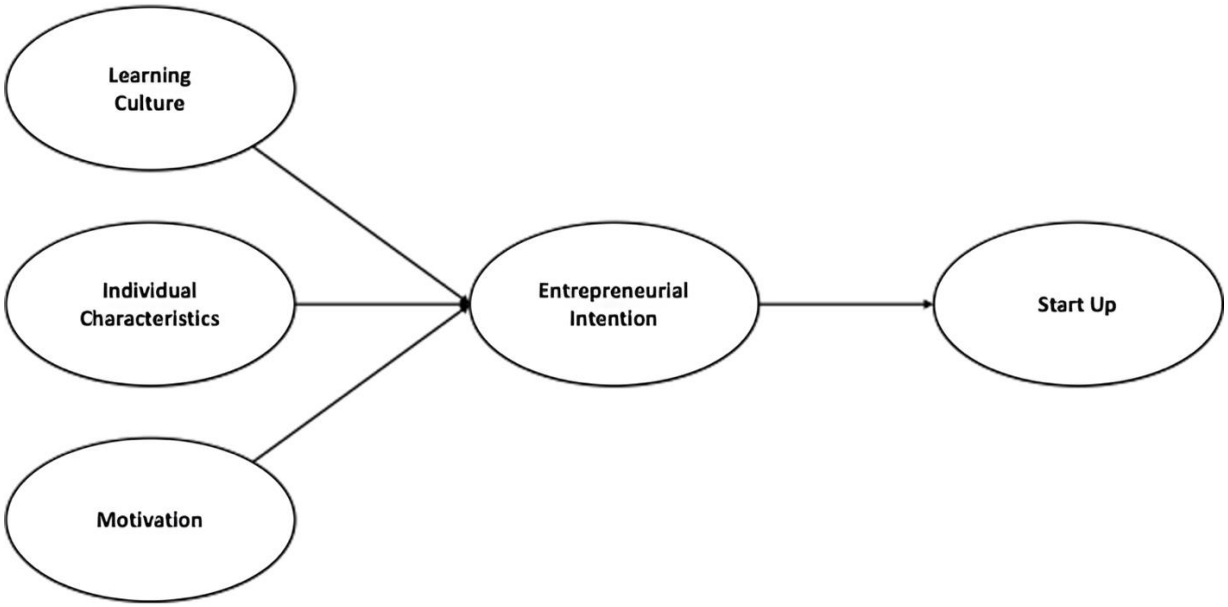

Figure 1 Research conceptual frame work.

Data were collected through the distribution of questionnaires directly to students at Surabaya State University. A five-level Likert scale was employed to gather detailed quantitative data regarding respondents' perceptions of the assessed variables. The data were analyzed using Structural Equation Modeling (SEM) with Partial Least Squares (PLS) to examine the structural relationships among the variables. The SEM-PLS analysis facilitates the concurrent examination of multiple hypotheses, reduces prediction errors, and offers comprehensive insights into variable relationships.

This study aims to analyze hypotheses regarding the direct relationships between learning culture, individual characteristics, and motivation concerning entrepreneurial intention (H1, H2, H3), alongside the indirect relationships through entrepreneurial intention affecting student business startups (H4, H5). The hypothesis analysis aims to identify the mediating role of entrepreneurial intentions in enhancing the impact of independent variables on student business startups, thereby offering a more nuanced understanding of the factors that contribute to entrepreneurial success.

The analysis of the hypothesis indicates that learning culture, individual characteristics, and motivation variables have a significant impact on entrepreneurial intention, both directly and indirectly. This relationship underscores the significance of cultivating elements of learning culture, including active student engagement and collaborative values, alongside fostering intrinsic motivation to bolster entrepreneurial intentions. The influence of entrepreneurial intentions on student business startups indicates that students with elevated intentions are more likely to effectively manage their ventures. The findings underscore the necessity of a comprehensive approach that incorporates cultural, individual, and motivational factors to enhance the entrepreneurial success of vocational students.

This study employs a quantitative approach and the SEM-PLS method to analyze complex inter-variable relationships, yielding empirical findings that contribute to the advancement of entrepreneurship theory among vocational students. This study contributes significantly to the entrepreneurship literature and offers practical implications for educational institutions in fostering the student startup ecosystem.

3. Results

3.1. Evaluation of the measurement model

Evaluation of the measurement model was conducted to ensure internal consistency, convergent validity, discriminant validity, and goodness-of-fit of the research model. First, internal consistency was tested through reliability indicators, namely Cronbach's Alpha (α), rho_A, and Composite Reliability (CR), as presented in Table 1.

Table 1 Measurement model result.

Variable	*α*	rho_A	CR	AVE
LC	0.807	0.834	0.885	0.720
EI	0.972	0.972	0.975	0.796
IC	0.936	0.937	0.945	0.634
MT	0.938	0.944	0.948	0.645
SU	0.927	0.959	0.944	0.772

Based on the test results in Table 1, all constructs have a Cronbach's Alpha value above 0.70, which indicates that each construct can be relied upon to measure the variable in question. More specifically, the Learning Culture construct has a Cronbach's Alpha value of 0.807, Entrepreneurial Intention of 0.972, Individual Characteristics of 0.936, Motivation of 0.938, and Start Up of 0.927. These values indicate that each construct meets the criteria of adequate reliability for this measurement model.

Next, convergent validity is evaluated to ensure that each indicator is able to explain the latent variable well, which is measured through the Average Variance Extracted (AVE) value. The criterion for adequate AVE is a value of more than 0.50, which means that more than 50% of the indicator variability can be explained by the construct. The analysis shows that all constructs have AVE values that meet this requirement, namely Learning Culture (0.72), Entrepreneurial Intention (0.796), Individual Characteristics (0.634), Motivation (0.645), and Start Up (0.772). This high AVE value indicates that the indicators used are able to capture the construct variance well, so the convergent validity of this measurement model is guaranteed.

Discriminant validity is also evaluated to ensure a clear distinction between one construct and another. The discriminant validity test is carried out using the Fornell-Larcker and cross-loading criteria, where the diagonal value which is the correlation of the construct with its own indicator must be higher than the correlation with other constructs. The results of the discriminant validity evaluation presented in Table 2 show that each construct has a higher correlation with its own indicators than the correlation with other constructs. For example, the correlation between Learning Culture and its own indicators is 0.849, which is greater than the correlation of this construct with other constructs, such as Entrepreneurial Intention (0.496) and Individual Characteristics (0.716). Similarly, Entrepreneurial Intention has a correlation of 0.892 with its own indicators, which is higher than the correlation with other constructs. This indicates that each construct in the measurement model has met the criteria of discriminant validity.

Table 2 Discriminant validity evaluation results.

Variable	LC	EI	IC	MT	SU
LC	0.849				
EI	0.496	0.892			
IC	0.716	0.566	0.796		
MT	0.565	0.731	0.613	0.803	
SU	0.393	0.494	0.561	0.559	0.879

The last stage in the measurement model evaluation is goodness-of-fit, which tests the fit of the model with the research data. Goodness-of-fit is evaluated through several indicators, namely Standardized Root Mean Square Residual (SRMR), Chi-Square, and Normal Fit Index (NFI), as shown in Table 3. Based on Garson (2016), an SRMR value lower than 0.10 indicates that the model has a good fit. In this model, the SRMR of the saturated model is 0.068 and that of the estimated model is 0.094, both of which are below the maximum limit of 0.10, indicating that the model has an adequate fit. In addition, the Chi-Square value for the saturated model was 1327.19 and for the estimated model was 1350.207, which also supported the fit of the model to the data. The NFI values of both models ranged from 0.692 to 0.697, which is still acceptable as a goodness-of-fit measure.

Table 3 Goodness-of-fit results.

Model	Saturated Model	Estimated Model
SRMR	0.068	0.094
Cho-Square	1327.19	1350.207
NFI	0.697	0.692

3.2. Structural model evaluation

Structural model evaluation is carried out to test the causal relationships between latent variables and to assess the strength of the model in explaining endogenous variables. Path analysis is used to identify the direct effects among latent variables, measured through the Original Sample (O), Sample Mean (M), Standard Deviation (STDEV), T-statistic (O/STDEV), and P-values, as presented in Table 4 about Path Coefficient Results. As benchmarks for significance, T-statistic values greater than 1.96 and P-values less than 0.05 indicate a significant effect.

In the path analysis results (see Table 4), the relationship between the Learning Culture variable and Entrepreneurial Intention has a path coefficient value of 0.030 with a T-Statistic of 0.314 and P- Values of 0.754, indicating that this relationship is not statistically significant. Similarly, the relationship of Individual Characteristics to Entrepreneurial Intention is also insignificant with a path coefficient value of 0.170, T-Statistic 1.704, and P-Values 0.089. However, there is a significant effect on the relationship between Motivational Giving on Entrepreneurial Intention with a path coeficient value pf 0.609, T-Statistic 6.266, and P-Values 0.000. These results indicate that Motivational Giving has a strong and significant impact on increasing

Entrepreneurial Intention. In addition, the effect of Entrepreneurial Intention on the Start Up variable is also significant, with a path coefficient value of 0.494, T-Statistic 7.068, and P-Values 0.000, indicating that the higher the Entrepreneurial Intention, the greater the effect on the Start Up variable.

Table 4 Path coefficient results.

Path	O	M	STDEV	T Statistic	P Values
LC → EI (Goals 1)	0.030	0.036	0.096	0.314	0.754
EI → SU (Goals 2)	0.494	0.499	0.070	7.068	0.000
IC → EI (Goals 3)	0.170	0.180	0.100	1.704	0.089
MT → EI (Goals 4)	0.609	0.604	0.097	6.266	0.000

In addition to path analysis, structural model evaluation is also conducted through the measurement of R Square (R^2), which reflects the ability of the independent variables to explain the variability of the dependent variable, as illustrated in Figure 2 and summarized in Table 5. According to Mazzetti and Schaufeli (2022), R^2 values can be categorized as substantial (≥ 0.75), moderate (≥ 0.50), or weak (≥ 0.25). In this study, the Entrepreneurial Intention variable has an R^2 value of 0.557 with an Adjusted R Square of 0.543, which indicates that variables such as Learning Culture, Individual Characteristics, and Motivational Giving are able to explain about 55.7% of the variability of Entrepreneurial Intention, so it can be said to have moderate predictive power. As for the Start Up variable, the R^2 value is 0.244 with an Adjusted R Square of 0.236, which indicates a weak predictive power, where Entrepreneurial Intention is only able to explain about 24.4% of the variability of Start Up.

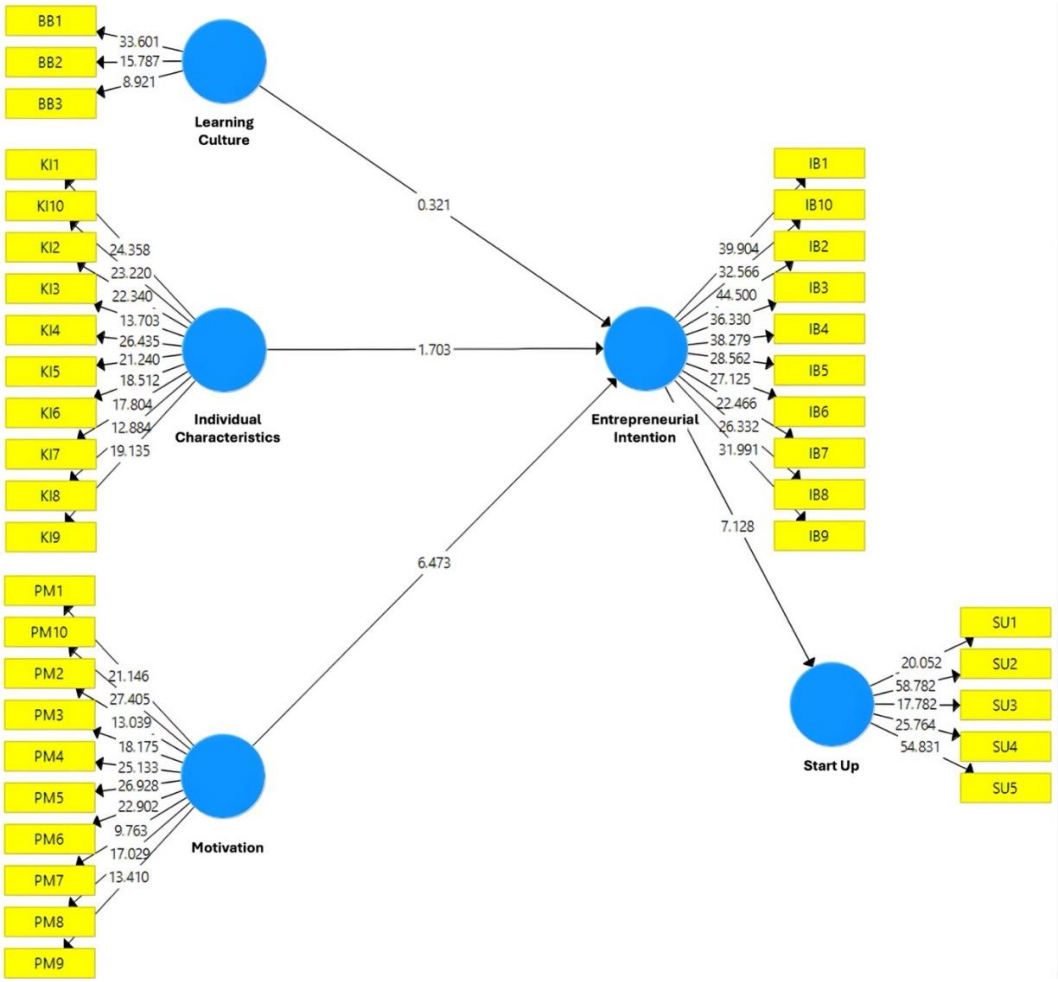

Figure 2 Structural model analysis results.

Table 5 Coefficient of determination (R^2) results.

Variable	R Square	R Square Adjusted
EI	0.557	0.543
SU	0.244	0.236

4. Discussion

4.1. Surabaya state university vocational student entreneurship

The learning culture plays a crucial part in shaping the level of interest that students have in entrepreneurship and in providing support for the establishment of first business ventures. Research indicates that a supportive learning culture, characterized by collaboration, active discussion, and exposure to entrepreneurial settings, can enhance students' entrepreneurial intentions. A study by Porfírio et al. (2023) indicates that students immersed in an innovative learning culture exhibit a greater interest in entrepreneurship, as they develop skills in problem-solving and critical thinking, which are essential traits for entrepreneurs.

The analysis indicates that learning culture does not exert a direct influence on entrepreneurial intention, evidenced by a path coefficient of 0.030, a T-Statistic of 0.314, and a P-value of 0.754. This indicates that while learning culture may facilitate the development of entrepreneurial intentions, its impact in this context is insufficient to directly enhance students' entrepreneurial intentions. Learning culture serves as a crucial foundation that indirectly fosters the establishment of business startups by shaping an entrepreneurial mindset (Rocha et al., 2024).

The analysis of the relationship between entrepreneurial intention and business startups indicates a significant effect, evidenced by a coefficient value of 0.494, a T-Statistic of 7.068, and P-Values of 0.000. This suggests that entrepreneurial intentions significantly influence the establishment of business startups. This finding aligns with the research conducted by Zulfiqar et al. (2021), which indicates that students exhibiting high entrepreneurial intentions are more inclined to establish their own startups, particularly when bolstered by the skills and knowledge acquired from a proactive learning environment. While the direct impact of learning culture on startups is not substantial, entrepreneurial intention serves as a crucial mediating variable that connects learning culture to the success of students' business startups. Learning culture serves as a significant factor in promoting entrepreneurial intention, thereby facilitating the establishment of startups. Entrepreneurial intention serves as the primary factor connecting this relationship. Enhancing the quality of a learning culture that promotes entrepreneurial education can elevate students' potential to initiate new ventures in the future, as indicated by the research of Triyono et al. (2023).

4.2. The influence of learning culture on business startups trough entrepreneurial intention

The examination of the impact of learning culture on business startups via entrepreneurial intention offers a detailed understanding of how the learning environment fosters students' interest in entrepreneurship. A supportive learning environment that fosters entrepreneurial skill development can enhance students' entrepreneurial intentions, subsequently influencing the success of their business startups. The evaluation of the structural model revealed that the impact of learning culture on entrepreneurial intention among vocational students is insignificant, evidenced by a path coefficient of 0.030, a T-Statistic of 0.314, and P-Values of 0.754. This suggests that learning culture does not exert a strong direct influence on entrepreneurial intention. Entrepreneurial intention serves as an intermediary variable that significantly impacts business startup success, evidenced by a path coefficient of 0.494, a T-Statistic of 7.068, and P-Values of 0.000 (refer to Table 2).

The findings suggest that while learning culture does not directly influence entrepreneurial intention, it exerts an indirect effect by enhancing motivation and support for students' entrepreneurial interests. Research by Solesvik (2013) indicates that a learning culture characterized by collaboration, openness to innovation, and practical academic support can enhance entrepreneurial intentions, though the effects may not be immediately observable. Entrepreneurial intention serves as a critical connection between students' educational experiences and the success of their business ventures.

The findings indicate that Motivational Giving significantly influences entrepreneurial intention, evidenced by a path coefficient of 0.609, a T-Statistic of 6.266, and P-Values of 0.000. This underscores the critical role of motivation from lecturers, mentors, or the educational environment in fostering entrepreneurial intention. Gazi et al. (2024) assert that this motivation significantly influences students' interest and preparedness to confront the challenges associated with establishing and managing a business startup.

A robust learning culture fosters an ecosystem conducive to the development of entrepreneurial intentions by providing ongoing motivation and experiential learning opportunities. This finding substantiates the significant role of entrepreneurial intention as a mediating variable influencing the relationship between learning culture and business startups. This study aligns with the perspective of Mazzetti & Schaufeli (2022), indicating that entrepreneurial intention may mediate the relationship between learning culture and student business success. This finding offers a robust foundation for vocational education institutions to develop learning culture strategies that better support entrepreneurship.

4.3. The influence of individual characteristics on business startup through entrepreneurial intention

Individual characteristics significantly influence entrepreneurial intention, subsequently affecting students' capacity to initiate a business startup. Studies indicate that personal traits, including self-confidence, perseverance, and risk-taking, are significantly associated with heightened entrepreneurial intention. A study by Juhari et al. (2023) indicates that individuals possessing strong characteristics exhibit a higher likelihood of being motivated to independently operate a business, particularly within vocational education contexts where entrepreneurial practices are frequently integrated into the curriculum.

The path analysis results indicate that individual characteristics exert a direct influence on entrepreneurial intention, evidenced by a path coefficient of 0.170, a T-Statistic value of 1.704, and P-Values of 0.089. Despite the lack of statistical significance, the positive coefficient suggests that individual characteristics contribute to entrepreneurial intention. This indicates that individuals possessing strong traits, such as adaptability and resilience, are more likely to exhibit an interest in entrepreneurship. Shahzad et al. (2021) demonstrated that individual characteristics influence entrepreneurial intention by offering the mental framework necessary to confront challenges in the business environment.

The relationship between entrepreneurial intention and business startup formation is significant, evidenced by a path coefficient of 0.494, a T-Statistic of 7.068, and P-Values of 0.000. The findings suggest that entrepreneurial intentions significantly influence students' decisions to launch startups. This finding aligns with Karabulut's (2016) research, indicating that students with robust entrepreneurial intentions are more inclined to participate in entrepreneurial activities, particularly when bolstered by individual traits conducive to business success.

Overall, although the direct impact of individual characteristics on entrepreneurial intention is not statistically significant within this model, entrepreneurial intention continues to serve as a robust mediating variable connecting individual attributes to the success of business startups. Individual characteristics serve as a fundamental basis for the development of entrepreneurial intention, which subsequently plays a vital role in the formation of startups. Vocational education institutions can enhance the development of entrepreneurial characteristics via curriculum and training, thereby supporting students' entrepreneurial intentions and opportunities for business initiation, as indicated by Zhang & Chen (2024).

4.4. The effect of motivational giving on business stratup through entrepreneurial intention

Providing students with motivation has a big impact on raising their intents to start their own businesses, which in turn may contribute to the establishment of new businesses to begin with. The provision of motivation from lecturers, mentors, and the campus environment can enhance students' enthusiasm and confidence in initiating and developing independent businesses. Solesvik (2013) demonstrates that external motivation provided to students significantly enhances their interest in entrepreneurship, as it fosters greater confidence and motivation to confront business challenges.

The analysis indicates that motivation exerts a positive and significant effect on entrepreneurial intention, evidenced by a path coefficient of 0.609, a T-Statistic of 6.266, and P-Values of 0.000. This figure demonstrates that motivation plays a significant role in fostering entrepreneurial intention among students. This finding aligns with the research conducted by Omar et al. (2019), which highlights the significance of environmental support and motivation in fostering students' entrepreneurial intentions. The study's results indicate that students receiving motivational support exhibited higher entrepreneurial intentions and were more likely to implement their business plans as startups.

Additionally, entrepreneurial intention demonstrated a significant impact on the establishment of business startups, evidenced by a coefficient value of 0.494, a T-Statistic of 7.068, and P-Values of 0.000. The findings suggest that entrepreneurial intention plays a crucial role in linking motivation to the success of business startups. The motivation provided to students enhances their confidence and mental preparedness for initiating a business, culminating in the establishment of a tangible startup. Farzana's (2018) research indicates that entrepreneurial intention, bolstered by external motivation, is essential for students to transform their business ideas into tangible ventures.

Providing motivation was effective in establishing strong entrepreneurial intentions, which subsequently facilitated the formation of business startups. In this context, entrepreneurial intention functions as a mediating variable linking motivational giving to the success of student startups. Therefore, ensuring consistent motivation from multiple stakeholders within the higher education context is a crucial strategy to promote increased student engagement in entrepreneurship. Solesvik's research (2013) emphasizes the significance of ongoing motivation in fostering a campus ecosystem conducive to innovation and entrepreneurship.

5. Final Considerations

This study concludes that learning culture, individual characteristics, and motivation collectively play a role in molding students' entrepreneurial intentions, which in turn impact the success of their business ventures. While cultural learning and individual traits may not have a substantial direct impact on entrepreneurial intention, they are still crucial underlying components that facilitate the development of an entrepreneurial mentality. Motivation is the most potent predictor, demonstrating a large and considerable influence on entrepreneurial intention, and acting as a crucial mediating variable in

the model. Moreover, entrepreneurial intention greatly impacts the establishment and growth of student company startups, underscoring its crucial role in converting psychological and environmental elements into entrepreneurial activity. These findings highlight the necessity of implementing a comprehensive approach in entrepreneurship education—one that amalgamates motivational reinforcement, conducive learning environments, and personal capacity enhancement—to cultivate students' preparedness, confidence, and ability to initiate and sustain entrepreneurial endeavors. This research enhances the existing literature on student entrepreneurship and provides actionable insights for educational institutions and governments aiming to fortify entrepreneurial ecosystems for youth.

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6. Declarations

6.1. Ethical considerations

This study was conducted in compliance with recognized ethical standards for research involving human subjects. All participants were informed about the study's purpose, the voluntary nature of their involvement, and their right to withdraw at any time without consequences. Prior to the initiation of data collection, participants granted informed consent, and all responses were managed with strict confidentiality and used solely for academic purposes. No personally identifiable information was recorded, thus preserving anonymity during the research process. The study utilized survey-based data, which posed minimal risk to participants.

6.2. Use of artificial intelligence (AI)

The authors declare that no generative artificial intelligence (AI) tools were used in the preparation, analysis, or writing of this manuscript.

6.3. Conflict of interest

All authors declare no conflicts of interest.

6.4. Funding

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