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The Influence of Entrepreneurial Education on Students' Business Innovation and Motivation

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Abstract. Addressing the high unemployment rates among graduates and the Z generation is crucial. The education business curriculum aligns students' innovation and entrepreneurship (IAE) with their personal needs and motivation to develop their own businesses. This research explores the impact of entrepreneurship education on students' personal needs and how entrepreneurship education and students' personal needs influence their motivation to develop their own businesses. Through an online survey and purposive technique sampling, 367 students and lecturers in vocational education in China were selected to complete the questionnaires. Structural equation modelling (SEM) was applied to validate the research construct and students' perspectives and views on IAE courses. This study found that students understand the goals of IAE; seeking practical knowledge and learning through experience have a positive and significant effect on personal need and motivation to become entrepreneurs. Education stakeholders such as teachers play an important role in fostering students' innovative thinking, providing real-world practice opportunities, and using diverse evaluation methods. Both teachers and students agree on the importance of problem-solving skills, satisfying learning interests, and integrating subject and entrepreneurship education. The findings suggest enhancing IAE by aligning the system with objectives, promoting a balance of practical and theoretical courses, and fostering interdisciplinary teamwork and innovation. This approach aims to enhance the quality of IAE courses and business operations.

Keywords: Education business; Personal need; Innovative thinking; Student's entrepreneurship; Business operations

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1. Introduction

The promotion of an entrepreneurial economy inherently contributes to the rapid advancement of the global economy (Ling, 2023; Wang & Wang, 2023). Globally, people recognise innovation and entrepreneurship as catalysts for economic growth and social well-being (Guo et al., 2023). Vocational education is an essential element of China's higher education system, as it contributes to the country's economic growth by ensuring a steady stream of highly skilled individuals (Xue et al., 2022). However, China's higher vocational education must improve its talent training model to fulfil the demand for competent professionals, despite its relatively brief development era. In order to expedite the swift progress of higher vocational education, the Party and the state have prioritised the advancement of vocational education and implemented a range of programmes to enhance its reform (Wang et al., 2023b; Yingying et al., 2023). The state has proactively assisted colleges and universities in promoting innovation and entrepreneurship education, thus establishing a favourable environment for fostering these skills. The notion of innovation and entrepreneurship has garnered extensive acknowledgement, and with the supervision of the development plan, education in innovation and entrepreneurship at colleges and universities has experienced unparalleled growth (Li et al., 2023).

Higher education institutions have incorporated innovation and entrepreneurship education into their talent development programmes, resulting in the establishment of specialised schools in this sector in accordance with contemporary advancements. Globally, academics are improving this educational system, elevating it as a central subject of research. The curriculum is essential in establishing an ideal education system, facilitating China's economic transition, and nurturing inventive individuals. In today's dynamic economic and technical environment, innovation serves as the primary catalyst for national development goals (Chan & Zhang, 2024). China has constantly published policy documents that highlight the significance of this education in higher education institutions and specify the standards for its curriculum system. As a result, the movement to teach innovation and entrepreneurship has quickly expanded throughout the entire country (Xin, 2023).

Since 2012, the state has implemented a series of programmes to promote vocational education, which currently play a vital role in ensuring China's economic stability (Chan & Zhang, 2024; Xin, 2023). In January 2019, the State Council introduced the National Implementation Plan for Vocational Education Reform which highlighted important system designs and policy actions, creating new chances for vocational colleges around the country to advance comprehensive education reform (Li et al., 2023). Successive policy documents and initiatives have further enhanced this reform, ensuring its seamless advancement and synchronisation with the era's developmental requirements. Incorporating innovation and entrepreneurial education into the overhaul of railway vocational colleges is crucial for improving talent development (Bhatti & Alshiha, 2023; Chernaya et al., 2023; Shamzzuzoha et al., 2022). These colleges are specialised institutions that focus on the rail transit business. They incorporate this knowledge into their training programmes in order to meet the industry's demands and produce skilled professionals for national rail transit construction.

The curriculum, acting as a proficient vehicle for this education, plays a crucial role in fostering innovative and entrepreneurial talents (Toscano-Noroña & Mishra, 2024).

Although the Chinese government has implemented a student programme that aims to foster entrepreneurial intentions and motivation (Li et al., 2023; Zhang & Liu, 2021; Zhao & Ko, 2024), only a few studies have explored the factors that influence students' motivation to become entrepreneurs. Preliminary studies aimed at developing curricular systems for nurturing skilled students are more likely in the Western context, such as the United States, United Kingdom, Australia, and Japan, (Bonoff et al., 2024; Nkambule et al., 2024). Hence, the purpose of this research is to examine the effectiveness of education sectors in developing entrepreneur courses and colleges to enhance the number of entrepreneurs in China. Our study is primarily focused on the following research issues: Does entrepreneurial education influence the students' personal needs to develop their own businesses? Is it beneficial for students' personal needs to mediate the correlation between entrepreneurial education and motivation for entrepreneurship?

Research in this area is driving the need for vocational education reform, with a global emphasis on innovation and entrepreneurial education (Zhao & Ko, 2020). In China's context, particularly, the drive is to support the manufacturing industry and promote entrepreneurship in the vocational colleges in the railway sector to develop skills in the rail industry and leverage industrial expertise. Today, these colleges develop international collaboration and increase the development potential of the pan-Asia rail industry. The country's support for vocational education reform enables these colleges to refine the curriculum framework for innovation and entrepreneurship education (Muding, 2023; Zhuang & Zhu, 2024). This study focuses on three main aspects: firstly, it examines the viewpoints of higher vocational teachers and students regarding the innovation and entrepreneurship curriculum reform. It highlights both positive perspectives and concerns raised by these individuals. Secondly, it delves into the students' cognitive understanding of entrepreneurial motivation. The aims of this study are to enhance our understanding of the reform's impact and to facilitate the development of effective teaching strategies. Finally, this study focuses on enhancing the innovation and entrepreneurship curriculum system in both developed and developing countries within an Eastern context.

2. Literature review and hypotheses development

Trainee instructors must engage in various placements to acquire skills in managing pupils from diverse ethnic, racial, gender, and socioeconomic backgrounds, thereby enhancing their entrepreneurial capabilities and fostering the development of their own enterprises. This requirement is especially important for China-based pre-service teachers because China classrooms have highly diverse students, and therefore, their behaviours cannot be categorised into one group. Personal needs, for example, information-seeking exchange, social interaction, and skills, are three categories of basic requirements among students.

2.1 Entrepreneurial education

Entrepreneurship education, which began in the United States, has earned worldwide acclaim for its ability to cultivate insight and knowledge by offering learners the chance to discover missed concepts such as E-Commerce and Digital marketing (Wang et al., 2023b). This educational approach fosters entrepreneurial skills by empowering students to generate novel knowledge, efficiently allocate resources, and translate knowledge into tangible value. Described as a technique similar to "encoding the genetic structure of entrepreneurship," it promotes economic progress by instilling entrepreneurial awareness and skill in students. Entrepreneurship education ultimately fosters students' understanding of entrepreneurship, helps them recognise and take advantage of opportunities, promotes the practical application of acquired knowledge, and contributes to societal development (Wang et al., 2023a; Wang & Endrano, 2023; Wei et al., 2023). In higher education systems, innovation and entrepreneurship education has become a fundamental aspect that is in accordance with society's economic needs and national development strategy. This signifies a change towards the development of quality and discipline (Zeng et al., 2023).

Educators meticulously craft and devise the curriculum to encompass the ongoing educational experiences that students acquire under the school's leadership, with the specific goal of fulfilling educational objectives. Harvard University introduced its inaugural innovation and entrepreneurship course in 1947 with the objective of fostering the entrepreneurial aptitude and innovative mindset of students. Harvard University tailors the curriculum to meet the individualised needs of students, emphasizing practicality, student engagement, system development, innovative teaching methods, comprehensive design, and the application of massive open online courses (MOOCs) (Asmawi et al., 2024; Lv et al., 2022). The design of this education aims to foster students' innovative mindset, attitude, and ability. As a teaching endeavour, it spreads knowledge about innovation and entrepreneurship, which is essential for personal and professional growth. Scholars in China – and globally – primarily focus on the practical application of theories, conducting research on educational models, and addressing challenges related to entrepreneurial education. They explore a wide range of theories from many disciplines. Universities like Ningbo University, Jiangnan University, and Wenzhou University (Wang et al., 2023b; Xu, 2024) provide practical experiences that inform academic research on entrepreneurship education styles.

H1. Entrepreneurial education has a positive and significant effect on students' personal needs.

2.2 Personal need

American universities have a highly advanced system for educating students in innovation and entrepreneurship, which encompasses both undergraduate and graduate levels of study (Zhao & Ko, 2024). The specialised training programmes specifically designed for entrepreneurship have made substantial progress in overhauling their curricula and restructuring their entrepreneurial courses (Xiong et al., 2023). The prevalence of education motivates young individuals to initiate enterprises, hence augmenting their awareness and proficiency in

entrepreneurship. Furthermore, entrepreneurship-specific certificate programmes significantly impact students' personal aspirations to establish their own businesses, catering to their unique needs (Jardim & Sousa, 2023). There is a strong emphasis on the importance of having thorough and extensive course content in innovation and entrepreneurship, including specialist courses for entrepreneurial elites and elective courses that promote practical involvement (Qiu et al., 2023; Zhang et al., 2023). The 4S (Stimulate, Support, Search, Share) concept course serves as an example of a teaching approach that prioritises meeting individual requirements, prioritises fundamental theoretical knowledge, and maintains a balance between theory and practice (Singh et al., 2024).

Some universities, such as Harvard, MIT, and the University of Birmingham, emphasise experiential learning and practical entrepreneurial skills in their innovation and entrepreneurship courses (Chen, 2023; Yiyin, 2024). The MIT's master's degree features a "Silicon Valley Tour" and entrepreneurial projects, whereas Stanford provides extensive entrepreneurial activities. In Singapore, educational programmes promote the development of entrepreneurial skills and a sense of social responsibility, and provide a range of degree programmes in this area (Qiu et al., 2023; Yiyin, 2024). There is a need for teaching approaches that incorporate MOOCs and flipped classrooms in conjunction with enterprises. Additionally, curriculum reform and the integration of majors into these courses are necessary. This study examines the feasibility, growth, and creativity of implementing these courses in higher vocational institutions focused on railways. Academics have broadened the scope of innovation and entrepreneurship courses in higher vocational institutions, providing guidance for the advancement of this type of education (Chen, 2023; Zhao & Ko, 2024).

The research focuses on course design and student engagement, aiming to enhance students' entrepreneurial awareness and skills. However, the study conducted in higher vocational institutions in railroads lacks comprehensiveness and depth (Hejun, 2018; Xu, 2021), and the innovation and entrepreneurship education in China is fragmented and lacks a coherent curricular system. Vocational education encounters difficulties in effectively combining professional education with innovation and entrepreneurial education (Qiu et al., 2023; Zhang et al., 2023). Research on the perspective of instructors and students in the field of innovation and entrepreneurship is currently weak, despite continuous reform efforts. The innovation and entrepreneurship course cultivates students' awareness of creativity, their ability to start businesses, their entrepreneurial mindset, and it is characterised by its strong relevance to the present day. Nevertheless, the research on the cognitive disparities among students in relation to the reformation of these courses lacks thoroughness. Hence, it is imperative to revise the curriculum consistently, taking into account the cognitive disparities across students (Yingying et al., 2023).

H2. Personal need has a positive and significant effect on students’ motivation for entrepreneurship.

Education in entrepreneurship has the ability to alleviate resource and economic inequality by boosting production and generating jobs (Chakrabarty, 2021). The

identification, assessment, and use of opportunities are all included in entrepreneurship education. Moreover, entrepreneurship education has a critical role in combating unemployment and poverty by instilling in pupils a commitment to serve others (Block et al., 2020). As a catalyst for social change, certain entrepreneurial courses and programmes have been inspired to train students' enthusiasm for entrepreneurship with an incorporated social drive (Amini Sedeh et al., 2021). As a result, it is essential to integrate diverse points of view to provide students with a comprehensive and impartial understanding of the events that motivate them to launch their own firms. A company's ability to raise cash and leverage market resources to improve performance is critical to its success (Asmawi et al., 2024). Businesses can always be effectively managed as a resource when viewed through the lens of relationship business (Junaidi et al., 2023). Students who are motivated to start a business do so for entrepreneurial education reasons. In addition, the motivation of students influences their choice to become entrepreneurs as well as how they seek opportunities, gather resources, and execute the entrepreneurial process (Zhao & Ko, 2024). This suggests that a person's incentive for making business decisions and their desire for a peaceful life are closely related.

H3. Entrepreneurial education has a positive effect on students' motivation for entrepreneurship.

H4. Personal need has a positive role in mediating the relationship between entrepreneurial education and students' motivation for entrepreneurship.

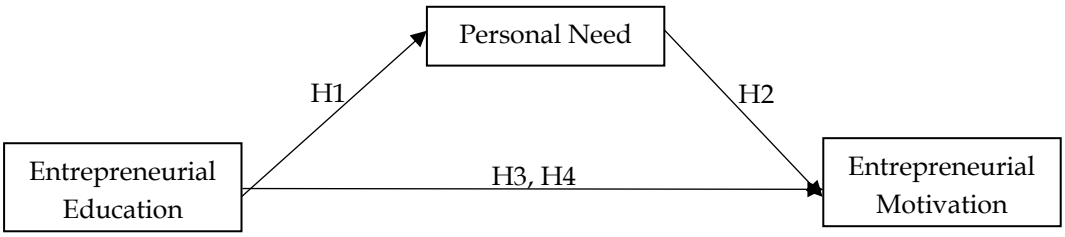

Figure 1. Research framework

3. Methodology

The methodology adopted in this study is structural equation modelling (SEM) which involves control and participant observation processes. Each step is assessed using a different method as presented in Figure 1 such as research design, data collection and analysis, measurement result until structural model result.

3.1 Research Design

To achieve the objectives of the research, a random sample was drawn to survey the individuals participating in vocational education in China. The research developed a questionnaire in the Chinese language that was translated into English and reviewed by a language specialist to ensure its reliability. The questionnaire was prepared according to the five-point Likert scale, where the scores ranged between 1 (significantly disagree) and 5 (strongly agree). The study used a random sampling technique to conduct the survey, choosing a sample that accurately represented the entire population. Prior to conducting the survey, the pre-survey preparation entailed selecting the appropriate route and ensuring that

the essential equipment for data collection was ready. This involved creating the survey in alignment with its intended goal and making sure that the required tools were prepared. The representativity of the sample guaranteed the dependability and precision of the findings. The study administered a randomised questionnaire to second-year students and conducted interviews with four categories of instructors involved in innovation and entrepreneurship courses to understand the instruments during the pre-test and pilot test.

The researcher relied on the validity of internal consistency and did not conduct content validity or apparent validity. We implemented this measure to ensure the participants fully understood the questionnaire items (Podsakoff et al., 2003). As part of the quantitative study phase, a cross-sectional survey and a customised implicit association test (IAT) were developed. The survey and the IAT were sent to departments of the Ministry of Defence selected during the previous workshops.

This study conducted a cross-sectional online survey that included participants' demographics and comprised six main research items of intraorganizational knowledge sharing evaluated (see Table 1). Cognitive science widely uses various implicit measures (Nosek et al., 2011); in this study, a customised, web-based IAT was developed to additionally measure implicit attitudes toward employees' knowledge-sharing behaviours, where two categories ("sharing knowledge" and "hoarding knowledge") and the corresponding items were elicited from transdisciplinary workshops (Steineret al., 2018), and two categories ("good" and "bad") and the corresponding items were adopted from IATs that were previously empirically tested (Nosek et al., 2002, 2007). The assumption that participants can assign words more quickly to congruent and closely associated categories, rather than incongruent categories or categories closely associated with a given word, guides the concept of IATs (Greenwald et al., 2009). Specifically, we displayed the categories "share knowledge" and "good" as well as "hoard knowledge" and "bad" during the congruent phase, assuming these categories to be congruent. During the incongruent phase, the categories "share knowledge" and "bad," as well as "hoard knowledge" and "good,"). The online cross-sectional survey and the IAT were sent to 116 civil servants in selected departments of the ministry.

3.2 Population and Samples

The study selected a prominent vocational college in Guangxi with an enrolment of 4000 students, based on its exceptional innovation and entrepreneurial programmes. The survey respondents were second-year students who had successfully finished these courses, guaranteeing the genuineness and precision of the data. However, the authors contacted the respective university offices and obtained their responses prior to data collection. The focus of this study was to target a maximum number of students and lecturers to enhance the generalizability of the research. The lecturers selected in the current study were those who actively teach and oversee these courses, providing comprehensive and detailed perspectives. This study encompassed 357 participants, which contributes to its comprehensive nature as an examination into the curriculum of

innovation and entrepreneurship. The study also applied a critical selection technique, part of the purposive sampling strategy, in the absence of a complete list of China vocational colleges. A pre-test and a pilot test before the formal test were applied to make sure that the research instruments made sense to the Chinese education field. The filter questions verified that respondents were in school and had taken an entrepreneurial course. This study also utilised common method variance (CMV) to mitigate potential bias issues in anonymous questionnaire distribution, and randomly arranged the measurement items (Podsakoff et al., 2003). The structural equation model (SEM) was also used to examine the correlation of research constructs using AMOS and SPSS software.

3.3 Data Analysis

The data obtained via the online survey underwent a thorough screening process, during which any invalid samples were eliminated. An exploratory factor analysis was performed on the four components of the innovation and entrepreneurship course, and Cronbach's alpha coefficient was utilised to assess the reliability of the questionnaire. Descriptive statistics were employed to gain insight into students' perspectives on the curriculum revision and the innovation and entrepreneurship course. An experienced students scrutinised the teacher interview data to confirm its accuracy and improve the research. AMOS and SPSS software examined the student data using structural equation modelling (SEM). The study employed variance and factor analysis to examine notable disparities in innovation and entrepreneurship courses across student groups based on gender, race, speciality, and area. A common method variance (CMV) test was used to find and prevent bias. Finally, the Hayes bootstrapping process was utilized to investigate the mediating and indirect effects of the mediators' variables.

4. Result and Discussions

The research data consisted of pre-test and post-test results. The data was statistically tested to observe the impact of entrepreneurial education. In the initial stage, the data was tested for normality and reliability to determine the data distribution. The participant demograhic are displayed in Table 1; the interpretation of the data correlation and normality are shown in Tables 2 and 3. Further testing was carried out using nonparametric statistical tests, namely the structural equation modelling (SEM) test to measure the improvement of entrepreneurial education outcomes among students.

4.1 Participants demography

This study examined five demographic variables: gender, nationality, major, grade, and home location (Table 1). The findings indicated that the predominant proportion of participants was male, constituting 91.3% of the sample. The Han ethnicity was the dominant nationality, accounting for 74.8% of the respondents. When evaluating majors, there was a relatively equal split between professional and non-professional fields, with 54.3% and 45.7%, respectively. In terms of grade level, the majority of students were in their second year of high school, known as sophomores. Freshmen comprised less than 1% of the sample, a negligible proportion that warrants disregard. Regarding home location, a majority of the respondents (52.7%) resided in rural areas. Only 10.6% of the total population

came from municipalities that were directly controlled by the national government or provincial capital cities.

Table 1. Analysis of demographic variables

Variables	Options	Number	Frequency
Gender	Male	326	91.3%
	Female	31	8.7%
Nationality	Han Chinese	267	74.8%
	Ethnic minorities	90	25.2%
Major	Professional	194	54.3%
	Non-professional	163	45.7%
Grade	Freshman Year	2	0.6%
	Sophomore year	355	99.4%
Home location	Municipality	38	10.6%
	Cities and counties	73	20.4%
	Township	58	16.2%
	Rural area	188	52.7%

4.2 Correlation matrix

The results of the Pearson correlation test are displayed in Table 2. The data indicates a strong correlation between course objectives, content, practice, and evaluation. The purpose of innovation and entrepreneurship cources (IAEC), as perceived by teachers, is to cultivate creative talents rather than solely focussing on entrepreneurship project teaching. The proponents argue that the course material should cultivate a sense of purpose and awareness, provoke critical thinking among students through the examination of real-life scenarios, and cater to their social and emotional requirements. The field of study intricately links the practice of IAE, necessitating students' active engagement in IAE practice activities and acquisition of expertise in pioneering ventures. Teachers support the inclusion of a wide range of subjects, content, and methodologies in course evaluation.

Table 2. Correlation matrix for measurement scales

Constructs	Mean	SD	EE	PN	EM
EE	5.79	1.77	**0.751**		
PN	5.88	1.75	0.795**	**0.845**	
EM	5.68	0.68	0.833**	0.915**	**0.821**

Note: EE: Entrepreneurship education, PN: Personal Need, EM: Entrepreneurship motivation
SD: standard Deviation
Diagonal elements are the square roots of the AVE for each construct
Pearson correlations are shown below the diagonal
Significant at *: $p < 0.05$, **: $p < 0.01$, ***: $p < 0.001$

4.3 Reliability and Validity

Data entry was conducted for questionnaires that were completed with reasonable adherence to instructions. Any samples that exhibited severe data loss, obvious random answerswere deemed invalid and subsequently eliminated. After this procedure, we deemed a total of 357 questionnaires legitimate, leading

to a 100% recovery rate. After the data collection, the questionnaire structure was examined using SPSS. Item differentiation and internal consistency analysis were conducted to assess the questionnaire's discriminant validity, while principal component analysis was utilised to perform factor analysis. Descriptive statistical methods were employed to analyse students' perceptions of the courses, curriculum management, teachers, content and form, and assessment and evaluation, after the examination of the questionnaire's reliability and stability. We employed inferential statistics as a technique to infer characteristics of a population by analysing data from a sample. Analysing the sample data enabled us to deduce unfamiliar characteristics of a statistical population. This procedure commonly employs hypothesis testing, which uses confirmatory factor analysis (CFA). The test selection is contingent on the specific study requirements and frequently entails the examination of variation. The study used a single-factor analysis of variance to examine gender disparities in four aspects of course evaluation: curriculum objectives, content formats, curriculum practices, and assessment and evaluation.

This study employed a reliability analysis to assess the questionnaire's stability and dependability, with internal consistency reliability measured using Cronbach's alpha value greater than 0.75, which is considered acceptable. In this case, the calculated Cronbach's alpha coefficient for the full questionnaire was above 0.80, indicating a high level of stability and overall reliability (Table 3). The significant loading of all the variables' items prevented the deletion of any item. The values of Cronbach's alpha, composite reliability, and average variance extracted (AVE) are well above the threshold value, showing the inter-item reliability amongst the items of each variable in this study (Hair Jr et al., 2019).

Table 3. Measurement results

Variables Item Scales	Factor Loadings	α	CR	AVE
Entrepreneurial Education		0.871	0.883	0.604
EE1: My school education helped me develop my sense of initiative – a sort of entrepreneurial attitude.	0.761			
EE2: My school education helped me to understand the role of entrepreneurs in society better.	0.716			
EE3: My school education made me interested in becoming an entrepreneur.	0.885			
EE4: My school education gave me skills and know-how that will enable me to run a business.	0.854			
EE5: My school education has equipped me with the necessary abilities and expertise to start my own business.	0.644			
EE6: My school provides integrated entrepreneurial practice services	0.821			
Personal Need		0.906	0.828	0.549
PN1: Entrepreneurial makes me free to do things on my own.	0.881			
PN2: Entrepreneurial makes me free to express my ideas.	0.810			
PN3: Entrepreneurial makes me free to do what interest to me.	0.827			
PN4: Most days I feel a sense of accomplishment from what I do.	0.770			
PN5: In my life I get many chances to show my abilities.	0.876			
PN6: I have been able to learn interesting new skills recently.	0.828			
PN7: I have the ability to compete with other people.	0.567			
Entreprenurial Motivation		0.900	0.931	0.659
EI1: I'm ready to do anything to be an entrepreneur.	0.785			

EI2: I will make every effort to start and run my own business.	0.776
EI3: My professional goal is to become an entrepreneur.	0.865
EI4: I'm determined to create a business in the future.	0.882
EI5: I have very seriously thought of starting a business.	0.843
EI6: I've got a firm intention to start a business some day.	0.754

Fit statistics (N = 610)
χ^2/df = 3.575, Goodness-of-Fit Index (GFI) = 0.928, Non-Normed Fit Index (NNFI) = 0.920, Comparative Fit Index (CFI) = 0.955, Incremental Fit Index (IFI) = 0.957, and Root Mean Square Error of Approximation (RMSEA) = 0.058

4.4 Structural Result

The data presented in Figure 2 suggests that both entrepreneurial education and the personal needs of students have a significant impact on their entrepreneurial motivation. Hence, all hypotheses were accepted. For instance, entrepreneurial education has a positive and significant effect on students' personal needs (γ_{11} = 0.311, p<0.001), hence supporting H1. This finding means that teachers demonstrated a profound understanding of IAEC, providing abundant material that complemented the questionnaire survey. They reached a consensus to synchronize the goals of the IAEC with those of national innovation entrepreneurship and incorporate creative entrepreneurial ideas into everyday instruction. They emphasized the importance of aligning course content with students' interests and needs, and recommended that schools should allocate resources to establish practice bases to promote IAEC. Furthermore, they emphasized the importance of IAEC assessment in improving teaching and course development, as well as the need for varied evaluation material and methodologies throughout the study. The squared multiple correlation coefficient R^2 value is 0.525 (52.5 percent) for the students' personal need, accounting for variations in the predictor variables (e.g., culture, origin and family). In other words, at 47.5 percent, the variance is unexplained or due to other factors. This is crucial for the development of students' skills and knowledge in their success as entrepreneurs. This finding is consistent with the preliminary studies carried out by Junaidi et al. (2023) and Zhang and Liu (2021). However, the results of the study contradict the findings of Bozward and Rogers-Draycott (2024) which stated that entrepreneurial education plays an important role in enhancing students' personal needs for fostering unity and mutual assistance among students.

Furthermore, personal need plays an important role in influencing students' entrepreneurial motivation (β_{21} = 0.573, p<0.001) to support H2. Interestingly, the squared multiple correlation coefficients R^2 value is 0.675 (67.5 percent) for accounting students' personal needs. Thus, 67.5 percent of the variation in the students' entrepreneurial motivation is directly due to the variation in the predictor variables. In other words, 32.5 percent of the variance is unexplained or due to other factors, implying that challenges such as a lack of accurate responses and outdated content plague the IAE teaching course system, hindering the growth of students' IAE abilities. Addressing the need to enhance students' competence and improving this system is a pressing matter. The restructuring of IAE courses and systems should prioritise the practical aspects of IAE education to enhance students' motivation to become entrepreneurs. In addition, well-defined course objectives, the development of distinctive innovative entrepreneurship course structures, and individualised assessment methods can

improve students' abilities and offer tailored support. The goals of the IAE should consider the features of business development and competitive advantage, the students' training objectives, and local economic development. When designing a course, it is important to take into account the objectives of the training, the features of the subject matter, the requirements of the profession, the demands of society and industry, and the personal development needs of the students. It is in line with preliminary studies by McIntyre et al. (2023) who revealed that communication and interaction patterns as students' personal need to develop their own business have a positive effect on personal views about career options in entrepreneurship and confidence in business performance.

Using the Hayes (2018) approach, this study examined the impact of students' personal need as a second-order construct on entrepreneurial motivation directly and indirectly. Figure 2 and Table 4 show that personal need impacted students' entrepreneurial motivation directly (β_{31}=0.615, p<0.001) and indirectly towards personal need (β=0.511, p<0.001). The results from this research also confirm that personal needs play a greater role in influencing students' motivation on entrepreneurship as a career option. Hence, H3 and H4 are supported. However, the educational role is inevitable in this context. In order to foster students' practical and innovative aptitudes, the training course in schools offered by IAE should prioritize practicality (Cuiping, 2023; Guo et al., 2023; Zhao & Ko, 2020; Xu, 2024), and the course curriculum should encompass case studies, project planning, and hands-on operational activities (Chernaya et al., 2023; Cuiping, 2023; Guo et al., 2023; Hou, 2024; Xu, 2024). The integration of subject education with entrepreneurship education should encompass entrepreneurial social knowledge, professional knowledge, skills, operation and management knowledge, living knowledge, and learning knowledge. The course design should consider the specific attributes and requirements of the business, as well as the interests of the students. The importance of innovation in IAE courses and practice cannot be overstated since it involves teaching courses through hands-on projects and real-world operations (Wang et al., 2023b). Universities should consider gradients in IAEC development and maintain consistency in teaching content and methods (Chen, 2023; Mingdong et al., 2023). Railway colleges have implemented a teaching approach that integrates competition, aiming to boost students' interest and active involvement by blending competitive elements with traditional teaching methods. Implementing a diverse range of evaluation methods, including self-evaluation, peer evaluation, and evaluation by authorised experts, is crucial. Educators believe that this approach provides a thorough understanding of students' performance and development in IAE.

Figure 2. Structural model result

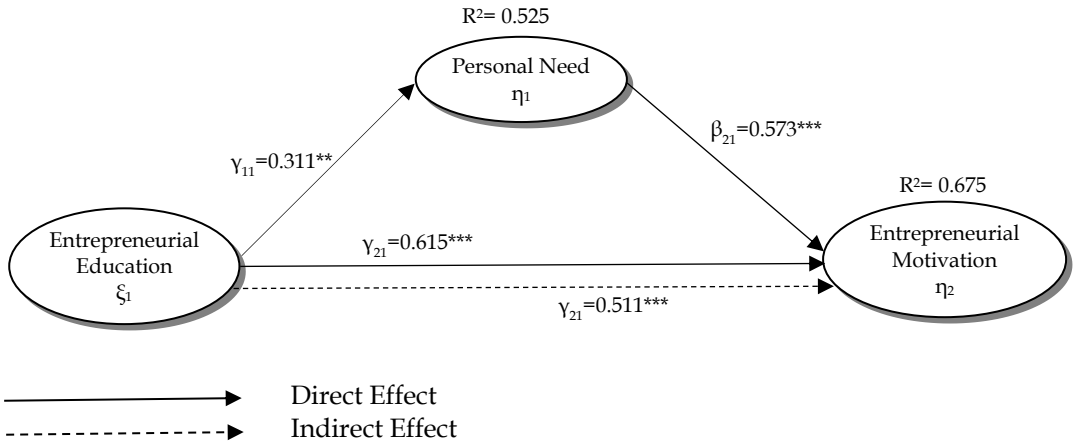

Table 4. Proposed model results

Hypothe	Symbol	Path			Coefficien	Test
H1	γ_{11}	Entrepreneurial	→	Personal Need	0.311**	Supported
H2	γ_{21}	Personal Need	→	Entrepreneurial	0.573***	Supported
H3	γ_{31}	Entrepreneurial	→	Entrepreneurial	0.615***	Supported
H4	β_{21}	Entrepreneurial Education → Personal Need →			0.511***	Supported

Note: Significant at *: $p < 0.05$, **: $p < 0.01$, ***: $p < 0.001$

5. Discussion

Education development and entrepreneurial courses have evolved into inspiring ideas and desires that aim to enhance social networks and support, to encourage better attitudes and behaviours among students, and ultimately to promote and build their own businesses. The objective of entrepreneurship education is to improve student acquisition of knowledge, skills, emotional preparedness, and practical abilities, with a primary emphasis on fostering an entrepreneurial mindset, capability, and application. These objectives serve as the foundation for establishing and assessing IAE courses, informing the choice of teaching materials, approaches, and enhancements. Students prioritise course content that is congruent with their interests and needs. Therefore, creating students' awareness makes the entrepreneurship programme more attractive in terms of economic and social value. To determine the feasibility of government and university programmes and goals, both the lecturer and students must evaluate and discuss the factors that influence students' communication and interaction patterns. Similarly, enlightening students by incorporating entrepreneurship education tends to strengthen their capacity and confidence in business. The belief is that innovative thinking is the fundamental and essential element for developing students' ability to innovate. Therefore, during the educational process, we should place greater emphasis on nurturing and honing students' innovative thinking skills (Li et al., 2023; Nkambule et al., 2024; Zhang et al., 2023).

The participants recognised the allocation and quality of entrepreneur courses positively enhancing students' skills towards practical learning, course evaluation, and material procedures (Ling, 2023; Muding, 2023; Wang & Wang,

2023; Zhao & Ko, 2024). These diverse assessment approaches provide reflective information about students' entrepreneurial learning and motivation. Teachers also emphasised the importance of promoting students' innovative thinking in IAEC objectives, which is critical for cultivating creativity. Furthermore, the college should allocate more resources to off-campus practice sites to enhance students' practical experience and foster collaboration both within and across the university, such as acquiring entrepreneurial experience and improving labour market competitiveness (Wang & Endrano, 2023; Zhuang & Zhu, 2024). This underscores the importance of striking a balance between the curriculum, current issues, and company needs (Lv et al., 2022; Sowe, 2023). In addition, colleges need to offer varied learning opportunities by using a variety of instructional techniques. There is a strong correlation to competition and platform strategy, as well as the notion of alternating between theory and practice in course delivery.

Interestingly, entrepreneurial education has a positive and significant effect on students' motivation for entrepreneurship directly and indirectly in the context of IAE, including course objectives, material, practice, and evaluation. Although a family's location does not have a significant impact on course objectives, content, and practice, it does have an influence on assessment, as students from cities and counties tend to be active in collaborating entrepreneurially and applying skills in company towards industrial practice (Bhatti & Alshiha, 2023; Bozward & Rogers-Draycott, 2024). These provide a strong foundation for examining discrepancies in students' comprehension of IAEC reform. It proves that entrepreneurial education and students' basic needs have a close relationship with intense communication and interaction during the study and business learning process (Guo et al., 2023; Li et al., 2023; Mingdong et al., 2023). The study also demonstrates the causal effects of entrepreneurial education on students' personal needs and motivation to develop their own businesses.

6. Conclusion

The research results confirm the acceptance of all hypotheses. This study provides findings about vocational educators and students' perspectives on IAE course reform, cognitive disparities, and improving the IAE system. Lecturers and students should collaborate with professors, prioritising pragmatism and application with regard to IAE courses and business education reform. Teachers can improve learning outcomes by tailoring teaching approaches to each student's specific needs. Hence, students' interchange of information, trust, and knowledge, as well as their passions and visions, play a crucial role in building their own businesses. These factors also confirm that education and university organisations play a crucial role in uncovering the relationship between education and unemployment. Students' trust and awareness of positive communication and interaction also influence their motivation for entrepreneurship. The study suggests that the primary outcome of entrepreneurial education is to improve students' basic needs for entrepreneurship decisions. The course curriculum combines elements from industry and the IAE, as well as a variety of course activities and assessments.

Recommendations

Within the IAE courses and business education reform, it is commonplace for railway instructors and students to hold divergent perspectives. In course design and teaching, teachers primarily emphasize information and methodology, whereas students stress practicality and application. These disparities should be employed to enhance collaboration and correspondence, establishing a favourable educational environment. By acknowledging and honouring these variations in cognitive abilities, we can effectively shape and execute reforms in the field of entrepreneurial education. This will enable us to establish specific goals and develop relevant educational material. The establishment of a shared understanding facilitates the process of acquiring knowledge and investigating, thereby enhancing the effectiveness of entrepreneurial education reform. Future enhancements to the IAE reform and system should align with course objectives and standards, facilitating seamless integration into the subject course system. The course curriculum should encompass both practical and theoretical aspects, with a focus on promoting collaboration and creativity through interdisciplinary instruction. Course practice should be diverse, incorporating entrepreneurial education into professional courses and practical teaching. Finally, business schools should implement a variety of course evaluation measures and enhance teacher training for entrepreneurial education.

Students can showcase their talents and share information and knowledge through entrepreneurial education which serves as an effective technique to meet their basic needs for developing their own business. Students who are willing to discuss issues related to business and regional social issues such as the unemployment rate, must be aware of and actively work to identify their objective and rational characteristics. The university leaders should develop student confidence in business and entrepreneurial motivation. In addition, colleges and lecturers should promote long-lasting relationships; value proposition creation and the use of an innovative, flexible, and creative mind to launch a business are both important. Hence, businesses, universities, and the government should work together to combat unemployment, enhance students' views on entrepreneurship, and improve students' skills and knowledge in business. Stakeholders in education could consider taking actions that foster students' information and knowledge sharing in entrepreneurship, while also promoting business principles. These links could also encourage students to support communities or other resources to foster connections among students with similar desires to support an initiative that aids in promoting entrepreneurship through education and government programmes.

7. References

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