



Mediating Effect of Personality Characteristics in the Linkage between Instructional Effectiveness and Entrepreneurial Programme Viability

Usani Joseph Ofem^{1*} , Oyonnenke Joseph Ofem² , Benjamin Joseph Ofem² 

¹ Alex Ekwueme Federal University, NIGERIA

² University of Calabar, NIGERIA

* Correspondence: ofemoracle@gmail.com

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ABSTRACT

Previous studies have attempted to examine entrepreneurial programme effectiveness but none of these studies focused on instructional effectiveness through personality attributes in solving this problem. This study attempts to examine how instructional effectiveness can promote the viability of entrepreneurial programmes through the mediating effect of personality characteristics. A quantitative approach was applied, and the hypothesis was statistically estimated utilizing partial least squares structural equation modelling (PLS-SEM) based on cross-sectional data obtained through the administration of a questionnaire (n = 1678) from six universities. The result showed that instructional effectiveness has a direct impact on entrepreneurial programme viability and personality characteristics, except for consciousness. Similarly, personality characteristics such as openness to experience, agreeableness, neuroticism, and conscientiousness have a direct effect on the viability of entrepreneurial programme viability. Personality characteristics mediate positively the relationship between instructional effectiveness and entrepreneurial programme viability. These findings are important in providing insights into the literature on entrepreneurial studies and making policy decisions about the current state of the programme in universities. Educational institutions should ensure that instructional activities are approached with enthusiasm and commitment to enhance the viability of their entrepreneurial programmes.. The instructors must take into cognizance diversities in instructional strategies to cater for the needs of all to acquire the anticipated skills. The notable aspect of this finding is that personality characteristics are significant predictors of students' programme viability and can be influenced through instructional effectiveness. Thus, students' personality makeup must be partialled into entrepreneurial curriculum designs.

Keywords: instructional effectiveness, entrepreneurial programme viability, personality characteristics, SMART-PLS

INTRODUCTION

The level of unemployment in Nigeria has continued to rise at an alarming rate, posing severe social and economic challenges. In 2020, the unemployment rate stood at 33.3%, and by 2023, it had risen by 5.5%, with reports indicating that about 41% of the labour force was jobless (Punch Newspaper, 2023). Across Africa, unemployment figures have similarly climbed from 25% to 26%. Nigeria faces a daunting economic crossroads, characterised by inflation, a cash crunch, and limited job creation. Furthermore, with the rapid integration of artificial intelligence (AI) in advanced economies such as the United States, Canada, and parts of Europe, there is growing concern that automation may displace human labour in developing regions like Africa. Scholars have argued that the exponential growth of digital technology could exacerbate youth unemployment in Africa (Ahmed & Khalid, 2023). Against this backdrop, entrepreneurship education in tertiary institutions has become a vital strategy for equipping graduates with the skills and competencies necessary to create jobs and sustain livelihoods (Ghouri & Khalid, 2023; Wang et al., 2021; Juhari et al., 2023).

Entrepreneurial programmes have increasingly been recognised as key drivers of economic growth and development (Wibowo et al., 2023). They aim to impart knowledge, skills, and values that enable individuals to initiate and manage business ventures effectively. As Wibowo et al. (2023) noted, entrepreneurship provides a pathway for addressing youth unemployment and fostering innovation. However, the viability of entrepreneurship programmes in Nigeria remains uncertain, as many do not appear to be achieving their intended objectives. Ensuring that such programmes are viable is essential for meeting present and future labour market needs. Recent research has begun to examine factors influencing the effectiveness and sustainability of entrepreneurial programmes (Nabi et al., 2017; Ghouri & Khalid, 2023; Oosterbeek et al., 2010), yet there remains a gap in understanding the determinants of their long-term viability within the Nigerian context.

Concerns have been raised about whether students in tertiary institutions are truly acquiring the necessary entrepreneurial skills, whether facilities are adequate to support practical learning, and whether the curriculum meets the evolving demands of the modern economy. Scholars have questioned whether learners are developing the mindset, attitudes, and competencies essential for managing business ventures effectively. Various studies have identified several factors influencing the viability of entrepreneurship education. These include instructional design (Alhiassah et al., 2024), perceptions of entrepreneurship (Ghouri & Khalid, 2023), learners' self-confidence (Wang et al., 2021), and innovation levels (Valencia-Arias et al., 2025). Other constraints, such as inadequate funding (Nabi et al., 2017) and a persistent mismatch between theory and practice (Alhiassah et al., 2024), have also been highlighted. Although numerous studies have examined attributes required of entrepreneurship trainees, only a few have explored how instructional effectiveness contributes to the viability of entrepreneurship programmes (Khan et al., 2019; Owan et al., 2022).

Moreover, prior studies have tended to focus on the relationship between entrepreneurial education and outcomes such as entrepreneurial intention (International Journal of Management Education, 2024), nascent entrepreneurial behaviour (Juhari et al., 2023), or sustainable development (Nabi et al., 2017). In contrast, limited attention has been given to the role of instructional effectiveness in ensuring that entrepreneurship programmes remain viable, relevant, and impactful. Instructional effectiveness refers to the capacity of educational programmes to employ appropriate pedagogical approaches, materials, and assessment strategies to achieve desired learning outcomes. It encompasses the extent to which teaching facilitates students' acquisition of the knowledge, skills, and values required to function successfully as entrepreneurs. Effective instruction often integrates experiential learning, simulations, case studies, and mentorship, allowing students to apply theoretical knowledge to real-world business contexts (Wang et al., 2021; Ghouri & Khalid, 2023). This hands-on approach bridges the gap between theory and practice, thereby enhancing programme viability. Additionally, instructional effectiveness fosters creativity, collaboration, and networking—all of which are critical for entrepreneurial success. Despite its importance, the relationship between instructional

effectiveness and entrepreneurial programme viability has been underexplored. Most existing studies have focused on its effects on classroom achievement (Owan et al., 2023), assessment practices (Nabi et al., 2017), and cognitive outcomes (Ahmed et al., 2025). This limited focus underscores the need to examine how instructional effectiveness contributes specifically to the sustainability of entrepreneurship education in higher institutions.

Another important construct relevant to entrepreneurship education is personality. The Big Five Personality Traits Theory (Costa & McCrae, 1992) identifies five key dimensions: openness to experience, conscientiousness, extraversion, agreeableness, and neuroticism. Each of these traits can influence how students engage with entrepreneurship education and its outcomes (Juhari et al., 2023). For instance, neurotic individuals often exhibit emotional instability and anxiety, which can hinder their entrepreneurial performance (Ahmed et al., 2025). In contrast, extroverted individuals are generally sociable and proactive, which can foster networking and opportunity identification (Ghouri & Khalid, 2023). Agreeable individuals tend to be cooperative and empathetic, traits that promote teamwork and partnership formation (Wang et al., 2021). Conscientious individuals are typically disciplined, reliable, and goal-oriented—qualities associated with careful planning and effective business management (Juhari et al., 2023).

Research consistently links personality characteristics to entrepreneurship education outcomes (Ghouri & Khalid, 2023; Wang et al., 2021; Valencia-Arias et al., 2025). However, within the Nigerian academic context, few studies have examined how personality traits contribute to entrepreneurial programme viability (Alhiassah et al., 2024; Panda & Arumugam, 2023). Alhiassah et al. (2024) found that students' attitudes towards entrepreneurship mediated the relationship between entrepreneurial education and personality traits. Similarly, the *International Journal of Management Education* (2024) reported that energetic and extroverted individuals were more inclined towards entrepreneurship. Ahmed et al. (2025) observed that persistence and diligence enhance entrepreneurial interest, while Ghouri and Khalid (2023) concluded that personality traits alone do not fully account for entrepreneurial success.

Although some studies have examined how personality traits relate to skill acquisition, goal achievement, and entrepreneurial performance (Juhari et al., 2023; Alhiassah et al., 2024; Valencia-Arias et al., 2025), few have considered them as mediating variables. Institutional factors, including culture, funding, and policy support, may also influence entrepreneurial programme viability (Ghouri & Khalid, 2023). Individuals who are proactive, open to experience, and agreeable tend to display innovative and critical thinking, enhancing their capacity to identify and exploit opportunities (Ahmed et al., 2025). Conscientious individuals, on the other hand, are adept at time management, organization, and execution, which are essential for sustaining viable programmes (Juhari et al., 2023). These traits collectively foster an environment conducive to entrepreneurial success (Wibowo et al., 2023; Ghouri & Khalid, 2023).

Research by Ahmed et al. (2025) revealed that conscientiousness strongly predicts entrepreneurial intention, while extraversion and openness are associated with alertness and creativity. However, agreeableness and neuroticism have shown inconsistent relationships with entrepreneurial outcomes (Ghouri & Khalid, 2023). Agreeable entrepreneurs often build loyal client bases through empathy and trust (Ahmed et al., 2025), while conscientious individuals excel in managing and motivating teams (Juhari et al., 2023). Neurotic entrepreneurs, however, tend to experience frustration, insecurity, and anxiety, which can hinder innovation and risk-taking (Obschonka & Stuetzer, 2017; Wibowo et al., 2023). Conversely, openness to experience promotes innovation and adaptability, enabling entrepreneurs to navigate market complexities effectively (Ghouri & Khalid, 2023; Valencia-Arias et al., 2025).

Despite the breadth of research on personality and entrepreneurship, few studies have examined how these traits mediate the relationship between instructional effectiveness and programme viability. Most prior works treat personality traits as direct predictors of entrepreneurial intention or success, without considering their intermediary role. Yet, understanding how instructional strategies interact with personality to shape

entrepreneurial outcomes is crucial for designing sustainable education programmes. It is possible that some personality traits may enhance the impact of effective instruction on programme viability, while others may hinder it. For instance, neurotic tendencies may dampen students' engagement, whereas conscientiousness and openness may strengthen it.

Given these conceptual and empirical gaps, this study seeks to explore how instructional effectiveness influences the viability of entrepreneurial education programmes, with the big five personality traits serving as mediating variables. By examining both the direct and indirect relationships among these constructs, the study provides new insights into the mechanisms that determine whether entrepreneurship programmes in Nigerian universities can successfully equip students with the skills and dispositions necessary for job creation and sustainable enterprise development. To this end, the following questions were raised for the study

- What is the direct effect of instructional effectiveness on personality characteristics and entrepreneurial programme viability?
- How direct effect does personality characteristics have on entrepreneurial programme viability?
- What is the mediating role of personality characteristics on the nexus between instructional effectiveness and entrepreneurial programme viability?

CONCEPTUAL FRAMEWORK

This study conceptualizes instructional effectiveness in entrepreneurial programmes as the independent variable, entrepreneurial programme viability as the dependent variable, and personality traits—openness to experience, conscientiousness, extraversion, agreeableness, and neuroticism—as mediators. While effective instruction equips students with entrepreneurial skills, its ultimate influence on programme viability is shaped by individual personality characteristics. Openness supports innovation, conscientiousness fosters discipline, extraversion facilitates networking, agreeableness enhances collaboration, and low neuroticism strengthens resilience. This nexus among the variables is presented in [Figure 1](#). The Big Five Personality Traits Theory (Costa & McCrae, 1992) provides the theoretical foundation, proposing that five broad, stable traits shape how individuals perceive, respond to, and act upon opportunities. In the entrepreneurial context, these traits determine how well students can transform instructional benefits into viable, sustainable ventures. This perspective explains why equally effective instruction can yield different entrepreneurial outcomes depending on the learner's personality profile. Consequently, entrepreneurship education should integrate strategies aimed at fostering beneficial personality traits alongside delivering quality instruction. Practical measures may include activities that encourage creativity, structured opportunities for collaboration, and skill-building for emotional regulation. Such a balanced approach could enhance the viability of entrepreneurial programmes, improve graduate self-reliance, and contribute to economic growth by producing graduates who can successfully launch and sustain their ventures.

METHOD

The study adopted a cross-sectional design, which was considered appropriate because information was collected from respondents engaged in different entrepreneurial ventures at the same point in time, and no attempt was made to manipulate any of the study variables. The investigation primarily examined the interlinkage between instructional effectiveness, personality characteristics, and entrepreneurial programme viability. Participants were final-year students who had completed the *Campus CEO* programme, as well as instructors involved in delivering the programme. The *Campus CEO* initiative is an entrepreneurship training framework designed for students who have participated in various practical ventures that demonstrate the application of theoretical knowledge acquired during their academic training, while also generating income for their respective universities.

The study was conducted in six universities across three geopolitical zones in Nigeria, namely the University of Calabar, University of Uyo, University of Port Harcourt, University of Cross River, University of Benin, and Delta State University. A total of 16,573 final-year students were enrolled across these institutions at the time of the study. Students were eligible to participate if they had completed the compulsory entrepreneurship course from their first year through to the final semester of their final year, had taken part in the Campus CEO programme, and had selected a specific venture track during their training. The compulsory entrepreneurship course is a university-wide programme designed to equip students with practical skills in innovation, business management, and venture creation. It runs from the first year through the final semester of study, integrating classroom instruction with experiential learning. Through the Campus CEO initiative, students apply theoretical concepts to real-world entrepreneurial projects while selecting a specific venture track such as manufacturing, agriculture, digital enterprise, or services. The course emphasizes creativity, risk management, and sustainability, enabling students to develop viable business ideas and cultivate an entrepreneurial mindset before graduation.

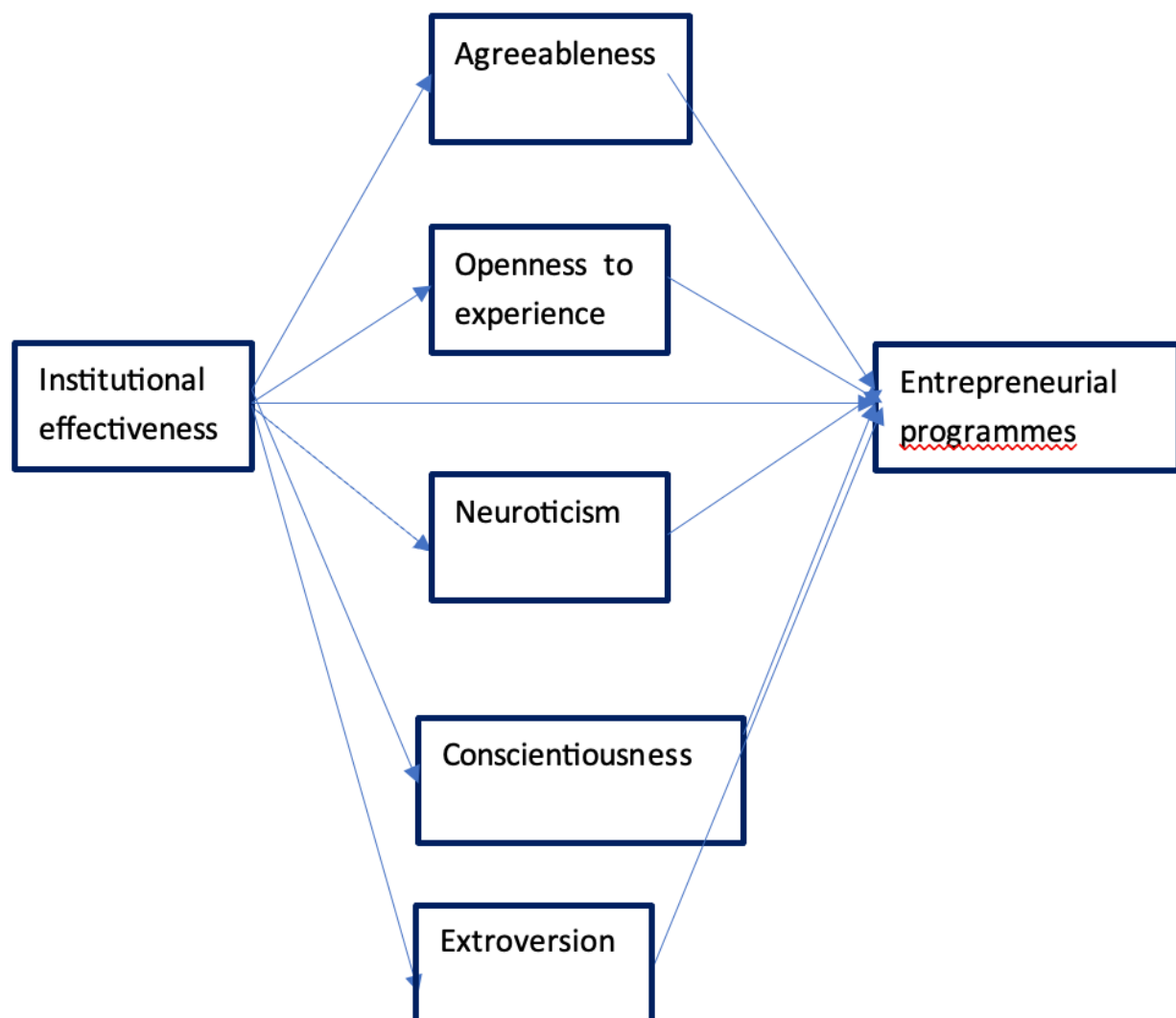


Figure 1. Conceptual framework of the nexus among the variables

The sample consisted of 3,421 students selected using a cluster sampling technique, *with the clusters defined by the specific entrepreneurial ventures chosen by students during the Campus CEO training*. Descriptive statistics revealed that 1,678 (49.05%) of the respondents were male, while 1,743 (50.95%) were female. In terms of age distribution, 567 (16.57%) were below 30 years, 1,562 (45.65%) were between 30 and 35 years, 577 (16.86%) were between 36 and 40 years, and 715 (20.90%) were above 40 years. Furthermore, 2,312 respondents (67.58%) had never engaged in any form of business activity before, whereas 1,109 (32.42%) had been involved in one form of small business or another.

Instrumentation

There are three measures that were used for this study: instructional effectiveness, personality characteristics, and entrepreneurial programme viability. Instructional effectiveness measures the ability of the instructors of the programmes to deliver the content of the programme with precision, passion, and a demonstration of knowledge of the subject matter to facilitate students' appreciation of the programme. Personality characteristics are the total makeup of the individual, and they are mostly expressed in the big five: consciousness, agreeableness, neuroticism, openness to experience, and extroversion. Entrepreneurial programme viability measures the extent to which the programme is implemented as planned, and the objectives of the programmes are achieved. It also focused on the institution's ability to ensure that the programme will achieve its goals now and in the future. The instrument developed by the researchers was divided into three sections: A, B, and C. Section A was designed to elicit responses from the respondents in terms of their demographics, such as age, gender, and involvement in a small business or not. These variables were placed on a categorical scale. Section B was designed to elicit information about the independent and mediator variables, which were basically instructional effectiveness and personality characteristics.

Instructional effectiveness was developed by the researchers since there were no previous scales developed and validated for use. The researchers, after an extensive review of the literature, developed a scale made up of 10 items to measure the construct under investigation (DeVellis, 2017; Boateng et al., 2018; Worthington & Whittaker, 2006). Sample items include: 'instructors deliver their lessons appropriately'; 'instructors ensure that all individual differences are carried along in the learning process'; 'instructors match theory with practical' among others. The items were placed on a six-point Likert scale of Very Strongly Agree, Strongly Agree, Disagree, Strongly Disagree, and Very Strongly Disagree. Personality characteristics were measured using the classification of the five main attributes of agreeableness, neuroticism, extraversion, openness, experience, and conscientiousness developed by Buchanan and Hegarty (1999), which is based on a five-point rating scale of strongly agree to strongly disagree. The instrument has its own psychometric properties on the scale: openness to experience ($r = .86$), conscientiousness ($r = 0.93$), extroversion ($r = 0.90$), agreeableness ($r = 0.89$), and neuroticism ($r = 0.93$) using Cronbach's alpha to determine the reliability

Section C of the scale was programmed to elicit responses on the viability of the entrepreneurial programme using a questionnaire with 10 items. Sample items included statements such as, *"The entrepreneurship programme has equipped me with practical skills relevant to real business environments,"* *"The course content aligns with current market needs,"* and *"The training I received has increased my confidence to start a viable business venture."* Each item was developed based on the researcher's knowledge of the literature as well as experts' opinions on what should constitute measures of programme viability. The experts consulted comprised three university lecturers in entrepreneurship education, two professionals in business development and innovation management, and one psychometrician with expertise in educational measurement and evaluation. Their combined experience ensured that the items reflected both theoretical and practical dimensions of programme viability. Five-point rating scales were used to develop the scale since no scale was readily available for the researcher to adopt.

Content Validity

The items on the scale were quantitatively validated by experts in diverse fields. These experts were to assess the suitability, clarity, and representativeness of the items for the various constructs of the study. A pool of 20 items was first generated after a thorough review of relevant literature to capture the major domains of the variables under study. Following the initial screening phase, five of these items were removed. The expert reviewers based their decisions on acceptable thresholds for the Item Content Validity Index (I-CVI). The retained items showed strong validity, with suitability ratings ranging from 0.81 to 0.89, clarity between 0.80 and 0.97, and representativeness between 0.84 and 0.94. Any item that scored below 0.70 was reconsidered and revised to improve its clarity, relevance, or precision. This approach aligns with the recommendations of methodological scholars such as Zamanzadeh et al. (2015).

The Scale Content Validity Index (S-CVI) showed similarly high values, ranging from 0.95 to 0.99 for suitability, 0.91 to 0.94 for clarity, and 0.90 to 0.98 for representativeness. These evaluations enabled the research team to refine the instrument, ultimately reducing the number of items from 20 to 15, based on both the statistical analysis and detailed comments provided by the experts on the evaluation forms. To further confirm the reliability of the instrument, a pilot study was conducted using respondents from universities not included in the main study. The revised scale, now containing 15 items that measured instructional effectiveness and entrepreneurial programme viability, was administered to 400 participants. After retrieval and coding, the data were subjected to internal consistency analysis using Cronbach's alpha. The reliability coefficients were satisfactory, yielding $\alpha = .784$ for the instructional effectiveness subscale and $\alpha = .821$ for the entrepreneurial programme viability subscale.

Procedure for Data Collection

According to the *National Code for Health Research Ethics* of Nigeria, research activities involving only educational tests, survey procedures, interview procedures, or the observation of public behavior, and which present no more than minimal risk to participants, may be considered for exemption from full ethics committee review (National Health Research Ethics Committee [NHREC], 2007, p. 13). In line with this provision, the present study, which was survey-based and posed no physical, psychological, or social risk to participants, qualified for an ethical clearance waiver. Nonetheless, the principles of voluntary participation, informed consent, and confidentiality were strictly adhered to throughout the study, following the clearance from the University Ethics Committee (see ref: IRC/CAL/004/0599). The data collection was done by the researchers with some trained research assistants in various institutions in the study area. This was done after extensive engagement with the respondents for the purpose of explaining the purpose of the study to them. This forum provided an opportunity for questions to be asked and answers to be provided. A total of 3421 participants were involved in the discussion from the universities that were selected for the study. 167 students declined their consent for the study, and there was no way for them to participate in the study, while others who indicated interest were provided with a form to sign. Similarly, they were informed of how the findings would be used and that no third party would have access to the data, which was encrypted appropriately with a firewall. This was to ensure that the safe harbour standards were followed strictly. A total of 3254 respondents provided information that was utilised in the study. However, 3019 were appropriately filled out, coded, and stored in a computer system for data analysis. Data analysis was performed using Smart PLS 3.

RESULTS

The data analysis was carried out using SMART PLS 3. The normality of the distribution was assessed using skewness and kurtosis, and it was confirmed that the data have a normal distribution shape. The direct and

indirect effects of the nexus were determined with a 5000-bootstrap sample in order to determine the statistical significance of the direct and indirect effects. Thus, the questions and answers were presented appropriately.

Research Question One

What is the direct effect of instructional effectiveness on the personality characteristics of the respondents? The result in **Table 1** and **Figure 2** showed that instructional effectiveness has a direct effect on agreeableness ($\beta = .307$, 95% CI [.31, .37], $t = 21.392$, $p < .001$), which is statistically evident that instructional evidence impacts agreeableness. The result also showed that instructional effectiveness has no direct effect on conscientiousness ($\beta = .04$, 95% CI [-.06, .10], $t = 0.822$, $p > .05$). More so, for instructional effectiveness, it showed that there is a direct effect on extroversion ($\beta = .258$, 95% CI [.21, 0.31], $t = 10.316$, $p < .001$), which is an indication that there is statistical evidence of instructional effectiveness impact on extraversion. For instructional effectiveness and neuroticism, the result showed that there is a direct effect ($\beta = -.098$, 95%CI [-.15, .05], $t = 3.723$, $p < .001$). More so, for instructional effectiveness on openness to experience ($\beta = 0.614$, 95% CI [.56, .65], $t = 31.941$, $p < .001$), which is an indication that the null hypothesis is rejected. For instructional effectiveness and entrepreneurship programme ($\beta = 0.100$, 95%CI [.58, .65], $t = 2.716$, $p < .001$) which is an indication that instructional effectiveness has a strong direct effect on entrepreneurial programme viability. The research question two has been answered.

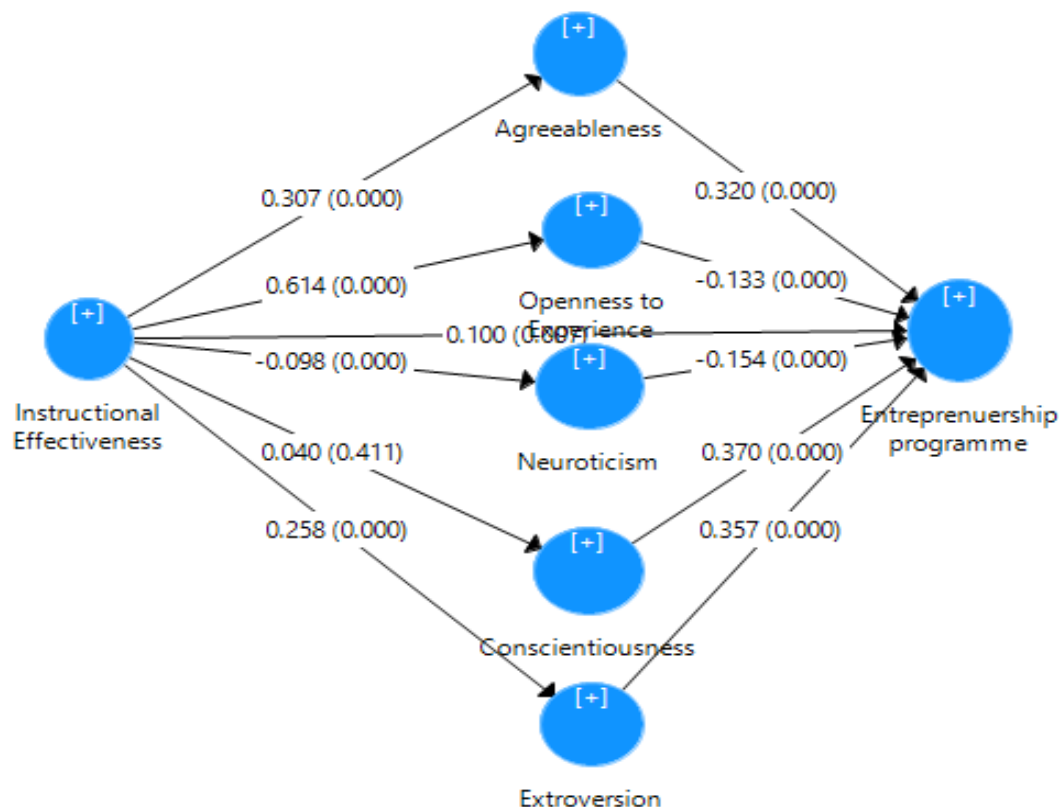


Figure 2. Structural equation modelling of the nexus among the variables

Table 1. Direct effect of instructional effectiveness on personality characteristics and entrepreneurial programme viability

Variables	β	95%CI	M	SD	t-cal	Sig	Remark
Inst Eff -> Agreeableness	0.307	{.27, .35}	0.307	0.021	14.351	.000	Significant
Inst Eff -> Conscientiousness	0.04	{-.06, .10}	0.036	0.049	0.822	.411	Not Significant
Inst Eff -> Extroversion	0.258	{0.21, 0.31}	0.259	0.025	10.316	.000	Significant
Inst Eff -> Neuroticism	-0.098	{-.15, -.05}	-0.098	0.026	3.723	.000	Significant
Inst Eff -> Openness to Experience	0.614	{.56, .65}	0.615	0.019	31.941	.000	Significant
Inst Eff -> entrepreneurship programme	0.100	{.58, 0.65}	0.099	0.037	2.716	.007	Significant

Research Question Two

What is the direct effect of personality characteristics on entrepreneurial programme viability? The result in **Table 2** showed that agreeableness has a direct effect on entrepreneurship programme viability ($\beta=.320$, 95%CI[.18,.44], $t=4.867$, $p<.001$), which is statistical evidence that agreeableness impacts entrepreneurship programme viability. Thus, the alternate hypothesis is supported. The result also showed that conscientiousness has a direct effect on the viability of entrepreneurship programmes ($\beta = 0.37$, 95%CI [-.26,.45], $t = 6.704$, $p<.001$). Hypothesis 2 is retained. More so, hypothesis 3 that extroversion has no direct effect on entrepreneurship programme viability was rejected .35, 95, 95% CI [.28, 0.41], $t = 10.393$, $p<.001$), which is an indication that there is statistical evidence that extroversion has an impact on entrepreneurship programme viability. For hypothesis 4, neuroticism has a direct effect on the viability of entrepreneurship programmes ($\beta = -0.154$, 95%CI[-.21,-.08], $t=4.522$, $p.001$), indicating that neuroticism has an impact on the viability of entrepreneurship programmes. Thus, the hypothesis was rejected. More so, for hypothesis 5, which is on the direct effect of openness to experience on the viability of entrepreneurship programmes ($\beta = -0.133$, 95% CI [-.20, -.06], $t = 3.714$, $p<.001$), this is an indication that the null hypothesis is rejected for hypothesis 5.

Table 2. Direct effect of personality characteristics on entrepreneurial programme viability

Variables	β	95%CI	M	SD	t-cal	Sig.	Remark
Agreeableness -> Entre Programme	0.32	{.18, .44}	0.317	0.066	4.867	.000	Significant
Conscientiousness -> Entre Programme	0.37	{-.26, .45}	0.367	0.055	6.704	.000	significant
Extroversion -> Entre Programme	0.357	{0.28, 0.41}	0.353	0.034	10.393	.000	Significant
Neuroticism -> Entre Programme	-0.154	{-.21, -.08}	-0.151	0.034	4.522	.000	Significant
Openness to Experience -> Programme	-0.133	{-.20, -.06}	-0.131	0.036	3.714	.000	Significant

Research Question Three

How do personality characteristics mediate the relationship between instructional effectiveness and entrepreneurial programme viability? Mediation analysis was performed to assess the nexus between instructional effectiveness and entrepreneurial programme viability using personality characteristics. The result in **Table 3** showed multiple mediations of variables of personality characteristics and their mediating effect on the nexus between the independent variable and dependent variable. The result showed that a significant indirect effect exists between instructional effectiveness and entrepreneurial programme viability through agreeableness ($B = 0.098$, 95% CI [.05,.14], $t = 4.189$, $p < .001$). The total effect of instructional effectiveness and entrepreneurial programme viability was significant ($B = 0.239$, 95% CI [.171,.295], $t = 7.899$, $p < .001$). With the inclusion of agreeableness, the direct effect of instructional effectiveness on entrepreneurial programme viability ($\beta = 0.100$, 95% CI [.58,.65], $t = 4.189$, $p < .001$) was significant. This showed that a partial mediation effect exists between instructional effectiveness and entrepreneurial programme viability through agreeableness. Similarly, the mediating effect of conscientiousness on the nexus between instructional effectiveness and entrepreneurial programme viability was not significant ($\beta = 0.015$, 95% CI [-.02,.04], $t = 1.039$, $p > 0.05$). The mediating role of extroversion on the relationship between instructional effectiveness and entrepreneurial programme viability was significant ($\beta = 0.092$, 95% CI [.06,.11], $t = 7.671$, $p < .001$). Neuroticism, when taken as a mediating variable between instructional effectiveness and entrepreneurial programme viability, was not significant ($\beta = 0.015$, 95% CI [-.01,.03], $t = 2.839$, $p < .001$) was significant. More so, the relationship between instructional effectiveness and entrepreneurial programme viability when openness to experience was taken as a mediating variable showed statistical significance ($\beta = -0.082$, 95%CI [-.01,.03], $t = 2.839$, $p < .001$). The summary of the findings is that the relationship between instructional effectiveness and entrepreneurial programme viability, when mediated by personality characteristics, showed a relationship, even though conscientiousness was not significant in its mediating role between instructional effectiveness and entrepreneurial programme viability.

Table 3. Mediating effect of personality characteristics on the relationship between instructional effectiveness and entrepreneurial programme viability

Variables	B	95%CI	M	SD	T	P	Remark
Inst Eff -> Agreeableness -> Entre programme	0.098	{.05, .14}	0.098	0.02 3	4.189	.000	Significant
Inst Eff -> Conscientiousness -> Entre programme	0.015	{-.02, .04}	0.014	0.01 4	1.039	.299	Not Significant
Inst Eff -> Extroversion -> Entre programme	0.092	{0.06, .11}	0.091	0.01 2	7.671	.000	Significant
Inst Eff -> Neuroticism -> Entre programme	0.015	{-.01, .03}	0.015	0.00 5	2.839	.005	Significant
Inst Eff -> Openness to Experience -> Entre programme	-0.082	{-.12, -.04}	-0.081	0.02 2	3.781	.000	Significant

Table 4. Convergent validity and reliability measures

Variables	α	rho_A	CR	AVE
Agreeableness	0.955	0.958	0.966	0.850
Conscientiousness	0.834	0.845	0.884	0.605
Entrepreneursip_programme	0.728	0.713	0.791	0.552
Extroversion	0.764	0.787	0.858	0.668
Instructional Effectiveness	0.966	0.98	0.971	0.874
Neuroticism	0.952	0.957	0.965	0.738
Openness to Experience	0.908	0.981	0.931	0.771

α =Cronbach alpha, CR=composite Reliability, AVE=Average Variance Extracted

Table 5. Discriminant validity measures

Variables	AVE	1	2	3	4	5	6	7
Agreeableness	0.850	0.922						
Conscientiousness	0.605	-0.247	0.778					
Entrepreneursip_programme	0.552	0.348	0.305	0.742				
Extroversion	0.668	0.155	0.033	0.459	0.817			
Instructional Effectiveness	0.874	0.307	0.041	0.239	0.258	0.934		
Neuroticism	0.738	-0.261	0.079	-0.301	-0.248	-0.098	0.859	
Openness to Experience	0.771	0.054	-0.079	-0.013	0.178	0.614	-0.041	0.878

Note: The bolded values in the principal diagonal are discriminant validity values; the values below the principal diagonal are correlation coefficients.

Assessment of the Outer Model

Figure 2 provides the model that carries information about the factor loadings of the model. The item loading for the model ranged from 0.78 to 0.89 for all the variables, which is an indication that they loaded well in each of the constructs. Convergent viability was established using the Fornell-Larcker criterion of average variance extracted (AVE) greater than 0.50. The result, as presented in **Table 4**, showed that all the variables had an AVE greater than 0.50, which is enough evidence to show that convergent validity has been achieved. Similarly, the square root of AVE provides the score for discriminant validity. The criterion, according to Fornal Larcker, is that for discriminant validity to be achieved, the value must be greater than the coefficients of the inter-construct correlations. Thus, the result presented in **Table 5** showed that discriminant validity has been achieved for the constructs. The index of reliability of Cronbach's alpha and composite reliability also showed that the measures are dependable.

DISCUSSION

This study examined the mediating effect of personality characteristics on the relationship between instructional effectiveness and the viability of entrepreneurship programmes in universities. The results revealed that instructional effectiveness has a direct and significant influence on entrepreneurial programme viability. This finding underscores the importance of quality instruction as a foundation for developing functional and sustainable entrepreneurship education. Effective instructional delivery, through well-structured pedagogy, use of relevant materials, and appropriate assessment practices, ensures that students

gain the knowledge, skills, and competencies required to function as successful entrepreneurs. When instruction is designed to promote engagement, collaboration, and problem-solving, it enables students to develop the creativity, adaptability, and risk-taking dispositions necessary to navigate real-world business challenges. This aligns with the positions of Alderotti et al. (2023), Cao et al. (2022), and Khalaf (2024), who emphasized the centrality of effective teaching in stimulating entrepreneurial competence.

Furthermore, the study found that instructional effectiveness significantly influences students' personality characteristics, particularly openness to experience, agreeableness, neuroticism, extraversion, and conscientiousness. This relationship suggests that teaching quality does not only transfer knowledge but also shapes learners' behavioral and attitudinal dispositions. Effective instruction enhances students' self-confidence, motivation, and willingness to take calculated risks, while also encouraging reflective practices that help them identify personal strengths and regulate their emotions during entrepreneurial engagements. These results support the work of Owan et al. (2022), who identified personality and instructional delivery as critical tools for entrepreneurial success, and of Ofem et al. (2021), who found that instruction and assessment strategies influence students' academic and professional outcomes.

Students with agreeable traits thrive better under clear, structured, and encouraging instructional environments. They are inclined toward collaboration, teamwork, and positive interactions—elements that facilitate successful group projects and venture development. When instructions are ambiguous or inconsistent, however, frustration and disengagement may arise. This observation supports Jaap (2004), who argued that the effectiveness of agreeable students is contingent on clarity and consistency in instructional delivery. Similarly, openness to experience was found to be positively related to instructional effectiveness. Students high in openness are lifelong learners who seek novelty, creativity, and diverse perspectives. Effective instruction stimulates their curiosity and critical thinking by providing thought-provoking activities, interactive lessons, and opportunities to explore real-world challenges. Such environments promote experimentation and innovation, enabling students to expand their intellectual and entrepreneurial horizons. This agrees with Ofem et al. (2017), who concluded that instructional effectiveness fosters positive personality development and encourages independent exploration.

Contrary to expectations, the study revealed that instructional effectiveness did not have a direct impact on conscientiousness. While conscientious individuals are typically diligent, organized, and goal-oriented, other contextual or environmental factors may have mitigated the influence of instruction in this sample. It is also possible that these traits manifest differently across academic programmes. Tan-Abrenica (2025), however, reported contrasting evidence, noting that effective instruction strengthens conscientious behaviors. Thus, future longitudinal research could explore this relationship further to determine whether time, exposure, or institutional context influences these outcomes.

Instructional effectiveness was found to positively relate to extraversion, as extroverted students thrive in interactive and participatory classroom environments. Instructional methods such as workshops, group discussions, and experiential learning activities provide platforms for social engagement, communication, and collaboration—all of which are essential for developing entrepreneurial skills. This aligns with Ofem et al. (2017) and Owan et al. (2022), who highlighted the role of dynamic instruction in nurturing socially competent entrepreneurs.

The relationship between instructional effectiveness and neuroticism was also significant. Neurotic students are often anxious or emotionally unstable, and they benefit from structured learning environments that provide reassurance, clarity, and emotional support. Effective instruction helps mitigate anxiety by defining clear expectations, offering constructive feedback, and integrating stress-management components into the learning process. This aligns with Juhari et al (2023), who found that positive instructional experiences reduce neurotic tendencies and enhance emotional regulation among students.

The study further established that personality characteristics directly influence entrepreneurship programme viability. This suggests that students' individual attributes play a critical role in determining the success of entrepreneurial education. Entrepreneurship inherently requires risk-taking, adaptability, and resilience—traits that are closely tied to personality. For instance, individuals high in openness are creative, flexible, and innovative, while conscientious individuals display perseverance, dependability, and task orientation—all of which are essential for viable entrepreneurial ventures. These results are consistent with Khan et al. (2019) and Khalaf (2024), who linked personality attributes to entrepreneurial achievement and sustainability.

Extroverted students also contribute to programme viability by leveraging social networks and interpersonal skills to form partnerships, attract collaborators, and engage customers effectively. Their ability to lead, communicate, and adapt to changing market conditions fosters business growth and continuity. This supports the findings of Wang et al. (2021) and Panda and Arumugam (2023), who emphasized the importance of social adaptability and communication in entrepreneurial success.

Most importantly, the study demonstrated that personality characteristics significantly mediate the relationship between instructional effectiveness and entrepreneurship programme viability. This finding is particularly novel and constitutes the main contribution of this research. It suggests that while effective instruction directly enhances programme outcomes, its impact is significantly strengthened when students' personality traits are developed alongside. For example, agreeableness facilitates teamwork and conflict management; extraversion enhances collaboration and networking; conscientiousness promotes discipline and accountability; and openness stimulates creativity and innovation. Conversely, neurotic tendencies, when unaddressed, can impede progress by fostering anxiety and fear of failure.

By highlighting the mediating role of personality, this study provides new empirical evidence that personality development serves as a bridge through which instruction translates into entrepreneurial effectiveness. This insight expands existing models of entrepreneurship education, which have typically treated instruction and personality as separate determinants. The findings therefore enrich the theoretical understanding of how personality traits can be shaped through pedagogy to enhance the viability of entrepreneurship programmes.

The implications for educational practice are significant. Universities must prioritize instructional designs that are experiential, participatory, and psychologically supportive. Such designs will not only strengthen entrepreneurial competence but also foster the personality traits necessary for long-term success. Instruction should encourage critical thinking, problem-solving, and real-world application of business concepts, while creating emotionally safe environments that allow students to express ideas and learn from failure.

Limitations of the Study

There are some challenges that are associated with this study, like any other study in the behavioural sciences. First, the use of only public universities in Nigeria without including polytechnics and colleges of education, where these programmes are also introduced, places limitations on the generalisation of the findings to other tertiary institutions. Secondly, the study was a cross-sectional survey that involved a one-shot study on constructs and programmes. The responses obtained from this study may be full of bias since they are more self-reported. A longitudinal study might also be very important in that trends about the programme can be studied and robust information about the programme obtained. This will provide an opportunity for information that can facilitate policy decisions that can enhance the viability of the programme in the institutions. Although the study revealed several limitations, its outcomes remain valuable. The results can inform the development of more effective policies and guide the design of strategies that will strengthen the programme, whose primary aim is to equip learners with the practical skills, knowledge, and technological awareness needed to function meaningfully in society. The findings also draw attention to the personal qualities that learners must cultivate such as attentiveness, self-management, and the ability to process instruction efficiently so that they can fully engage with the programme. There is still room for additional research, especially in addressing the challenges

uncovered in this study. Future investigations can build on these insights to offer deeper clarification and broaden understanding of the programme's overall outcomes.

CONCLUSION

The conclusion from the study is that instructional effectiveness has a direct impact on entrepreneurial programme viability. Similarly, personality characteristics such as openness to experience, agreeableness, neuroticism, and conscientiousness have a direct effect on the viability of entrepreneurial programmes. The results also showed that these characteristics positively mediate the relationship between instructional effectiveness and entrepreneurial programme viability. The findings are very important in that they provide deeper insight into what could be done in universities to ensure that programmes designed to assist students in acquiring employable skills as well as entrepreneurial abilities are functional within the school system.

The instructional aspect of the programme should be carefully arranged so as to match theory with practice. There is a need to ensure that instruction builds self-confidence, creates a network of relationships, and exposes learners to the world of opportunities so that they can identify gaps and business prospects and build capacity around them. Neurotic individuals should be guided to understand that entrepreneurship thrives where risks are taken, enabling them to take calculated risks. Furthermore, a social environment that facilitates interaction should be created so that proactive individuals can explore the programme and achieve its intended outcomes.

The new knowledge contributed by this study lies in establishing that personality traits do not merely influence entrepreneurial behaviour independently but serve as significant mediators between instructional effectiveness and programme viability. This mediating role of personality traits in the context of entrepreneurship education has not been sufficiently explored in previous literature, especially within the Nigerian higher education system. The study therefore advances understanding of how instructional strategies can be optimized through personality-aware teaching approaches to enhance the sustainability and impact of entrepreneurial programmes.

The study's findings further contribute to existing literature by demonstrating that students who may not have developed an initial interest in the entrepreneurship programme; possibly due to its implementation gaps; can be re-engaged through improved instructional practices that align with their personal dispositions, thereby promoting meaningful learning and job creation outcomes.

RECOMMENDATIONS

Based on the findings of the study. The following recommendations were made

- University entrepreneurial curricula should integrate experiential learning activities such as case studies, simulations, and fieldwork to bridge the gap between theory and practice.
- Teaching strategies should be tailored to address varying personality traits, ensuring that openness, agreeableness, conscientiousness, and risk management are nurtured.
- Institutions should establish mentorship programmes and networking forums that connect students with experienced entrepreneurs and industry experts.
- Provide targeted coaching and counselling to help risk-averse individuals, particularly those high in neuroticism, develop resilience and decision-making confidence.
- Create collaborative spaces and innovation hubs that encourage teamwork, creativity, and entrepreneurial experimentation.
- Regularly assess entrepreneurial programmes to ensure they remain relevant, engaging, and aligned with market demands.

Suggestions for Further Research

In light of the present findings, additional investigations are needed to broaden the understanding of how instructional effectiveness and personality attributes jointly influence the viability of entrepreneurship programmes.

- i. Future scholars may consider examining how gender and field of study moderate the connection between effective instruction and students' perception of programme viability, to reveal possible group-based differences in entrepreneurial learning outcomes.
- ii. There is also a need for longitudinal studies that follow graduates over time to determine how exposure to effective instructional methods eventually translates into real entrepreneurial ventures and sustainable employment.
- iii. Subsequent inquiries could extend the current model by including other personality dimensions, such as extraversion, openness to change, or locus of control, to better capture the psychological factors influencing entrepreneurial learning.
- iv. Mixed-method studies that combine quantitative and qualitative approaches would provide deeper insight into students' lived experiences, highlighting the emotional and cognitive processes that shape their perceptions of programme usefulness.
- v. Comparative studies conducted across different institutions, states, or countries could further illuminate contextual variations in how instruction and personality characteristics interact to determine the success and long-term sustainability of entrepreneurship education.

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