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MODERATED MEDIATION OF ENTREPRENEURSHIP EDUCATION, SATISFACTION WITH ENTREPRENEURSHIP EDUCATION AND ENTREPRENEURIAL INTENTIONS IN VOCATIONAL EDUCATION AND TRAINING

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Abstract
Career, vocational, and higher education literature have relatively established that entrepreneurship education (EE) has direct link with entrepreneurial intentions (EIs) and has also considered the role of attitude in link, yet scholars rarely take into account the nomological network of the link with specific attention on the role of student satisfaction with EE. Supported with the theory of planned behaviour (TPB), this study explored the sequential roles of satisfaction with entrepreneurship education (SWEE) and personal attitude (PAT) in the link between EE and EI among higher education students (HES). The study further explored the moderating role of gender in the nomology. To cover HES with varieties of specialties who have been engaged in EE in more than one academic semester, the participants (N = 165) were drawn from technology and business education programmes in a university in Nigeria. By employing structural equation modelling, the findings of the study revealed direct association of EE with EIs, with no sequential indirect effects of SWEE and PAT. The result showed that PAT mediated the pathway from EE to EIs. However, gender moderated how EE influences EIs. Implications are therefore discussed.
Keywords: Entrepreneurship, entrepreneurial intention, entrepreneurial education, satisfaction with entrepreneurship education, vocational educational and training

Introduction

Economic uncertainty and fresh graduate unemployment syndrome have become a concern to higher education and career scholars across the globe. As graduate unemployment in persistently rises (Twumasi, 2013) even in Nigeria (National Bureau of Statistics, NBS, 2023), despite the enormous natural and academic endowment of the country, career thwarted behaviours may arise which may in turn lead to a dark side for potential entrepreneurs. Hence, finding graduates of universities across the globe who not able to either secure jobs or become entrepreneurs several years after graduation has become a common phenomenon. For instance, In Nigeria, the alarming rate of unemployment rose marginally (4.10% to 4.20%) from the first quarter of 2023 to the second quarter of that year (NBS, 2023). These concerns are indication that higher education and career scholars need to devise appropriate interventions to help fresh graduates to be gainfully employed.

While higher education institutions (HEIs) are obliged to inculcate right knowledge, attitude, and skills to the learners as required for smooth school-to-work transition (Chukwuedo

& Ementa, 2022; Neumark & Rothstein, 2006), fresh graduates are often faced with challenges of gainful employment. To address such a challenge, entrepreneurship education (EE) was integrated in several disciplines in HEIs (Otache et al., 2024). Over the years, EE has been taught in the HEIs to stimulate students' entrepreneurial intentions (EIs) and behaviours upon graduation. Yet, there are still records of graduate unemployment all over the globe. The persistency of this unemployment syndrome calls for further research investigations that may look at the mechanisms for address EE in higher education.

In Nigerian universities, however, higher education students (HES) are compulsorily exposed to entrepreneurship education to help them face the challenges of rising unemployment. As a compulsory course which has been included in the higher education curriculum (Bae et al., 2014; Otache 2019b), EE is often taken by Nigerian HES at their penultimate years of study. It is aimed at introducing the potential graduates to the world of entrepreneurship in order to get acquainted to the rudiments of running personal businesses. Since entrepreneurship has become a widely accepted strategic needs of every nation to revolutionize economic development, EE aimed at stimulating students' interest to become entrepreneurs because higher education students have been perceived as one of the human resources that can contribute significantly to a country's economic advancement (Listyaningsih, et al., 2023). Nevertheless, in the Nigerian HEIs, EE is often taught in a semester of the students' penultimate year. We see this as a concern to the level of satisfaction students may derive from their exposure to entrepreneurship education. Although technology and business education students in the Nigerian HEIs relatively offer some aspects of EE after the general and compulsory EE, there seem to be less emphasis on field exposure about EE to stimulate more interest in becoming entrepreneurs among HES. Thus, we considered it necessary to explore satisfaction with EE (SWEE) among HES after their exposure to entrepreneurship education.

The concept and introduction of EE in HEIs has generated a lot interest among researchers, entrepreneurs and other higher education practitioners. The evidence from extant literature suggests that EE contributes positively towards fostering EIs among students of higher education (e.g., Hoang et al., 2021; Otache et al., 2024). In a similar vein, literature has also shown that EE is associated with the antecedents of the theory of planned behaviour - TPB (viz., subjective norm, attitude, and behavioural control - e.g., Abdullahi et al., 2021; Wardana et al., 2020). Higher education literature has relatively established that entrepreneurship education exhibits a direct and meaningful relationship with entrepreneurial career aspirations (EIs). Literature has also considered the role of attitude in the link, yet we have insufficient insights on how EE is associated with students' satisfaction, attitude and intentions. For instance, one fundamental question that its answers seem to be neglected in entrepreneurship literature (c.f., Hoang et al., 2021; Abdullahi et al., 2021; Otache et al., 2024; Tung-Liang, 2018) in higher education is. are higher education students really satisfied with the teaching-learning processes in entrepreneurship education in their institutions such that it could drive their intentions to become entrepreneurs? In other words, literature has scarcely addressed concerns about satisfaction with entrepreneurship education (SWEE) among HES. Similarly, scholar rarely take into account the nomological network of the link with specific attention on the role SWEE play in students EIs. These suggest vital theoretical and empirical gaps that should be explored methodically.

The present study seeks to fill these gaps in the literature, looking at the mechanism through which EE might influence EIs among HES by exploring the role of SWEE in the model. While satisfaction refers to the level of fulfilment of one's wishes or expectations, SWEE is herein charactered as a measure of the pleasure HES derived from their exposure in EE. Consequently, for students to exhibit attitude towards EE as well as become intentional about

becoming an entrepreneur, we theorize that they should first derive some level of satisfaction in EE. Thus, we presume that SWEE should influence students' personal attitude (PAT) towards EE which will in turn influence their entrepreneurial intentions (EIs). Thus, our goal is to determine whether EE will improve students EIs via fostering SWEE and PAT of students. Hence, as present in previous literature, we looked at how EE is associated with EIs. We further explored the mechanism of EE-EIs relation via SWEE and PAT. We, therefore, explored the nature of the mechanism, focusing on investigating how students' satisfaction with the teaching of EE in the Nigerian HEIs might determine their attitude towards entrepreneurship as well as their intention to become entrepreneurs upon graduation.

Our study, therefore, enriches the literature in several remarkable ways. it extends and support existing literature that explored and found that EE is associated with students' EIs, bringing to light the importance of entrepreneurship education in HEIs. In line with existing literature, we know that supportive student's development such as EE fosters smooth school-to-work transition. It further suggests that there is continual need to enrich the EE curriculum in HEIs as appropriate. Our study provides basis for researchers to further explore how the teaching of entrepreneurship education could foster or limit students SWEE. Additionally, this study shed some lights on how satisfaction with EE as well as attitude toward EE could intermediately bring about intention.

Theoretical Underpinning

Drawing from theoretical inclinations, our study is supported by the tenets of the theory of planned behavior (TPB – Ajzen, 1991). The TPB proposes that three important constructs (viz., subjective norm, attitude toward the behavior, and perceived behavioral control) shape an individual's behavioral intention in a given context. According to Ajzen's TPB, behavioral intention is characterized by the relative strength person exerts towards a behaviour, and their willingness to perform that behavior (Ajzen, 1991, 2011). It may refer to the motivation or effort of an individual to perform a certain behavior in the near future. Thus, the more determined an individual is to engage in a behavior, the more the tendency they are to actually performing that behavior and vice versa. TPB posits that the antecedents to intention (i.e., subjective norm, attitude, and behavioral control) will substantially predict the intention as this will eventually lead to the actual behavior. However, drawing insights from the TPB's model, there are certain factors or variables that might bring to light these antecedents to behavioral intention (Ajzen, 2011; Linan & Chen, 2009). Consequently, in this study, we theorized how such factors (e.g., entrepreneurship education and satisfaction with EE) will predict an antecedent (PAT only) to intention. Given that learning leads to relative change in behavior, we expect that EE and SWEE will influence PAT. Therefore, this theory is relevant to our study as it suggests that an individual's experience (eg. SWEE and EE), could forecast their precursor to intention (PAT). As a result, we drew insights from the TPB's model to represent the conceptual framework of this study.

Conceptual Model and Hypotheses

Our conceptual model represents moderated mediation analyses (see Figure 1). In this model, we first presumed direct relations such that EE and SWEE are the predictor variables; while PAT and EI are the outcome variables. Next, we theorize the possibility of SWEE being predicted by EE, bearing in mind that it is necessary that satisfaction with EE may set in after the students' exposure to EE. Since we presume that EE may lead to SWEE, we further presume that SWEE will likely influence the students PAT. Hence, we considered SWEE and PAT as

sequential mediators. In all, our conceptual model reflects a serial multiple mediation. Finally, we theorize possibilities where gender could moderate the mediation. Hence, we explore moderated mediation model.

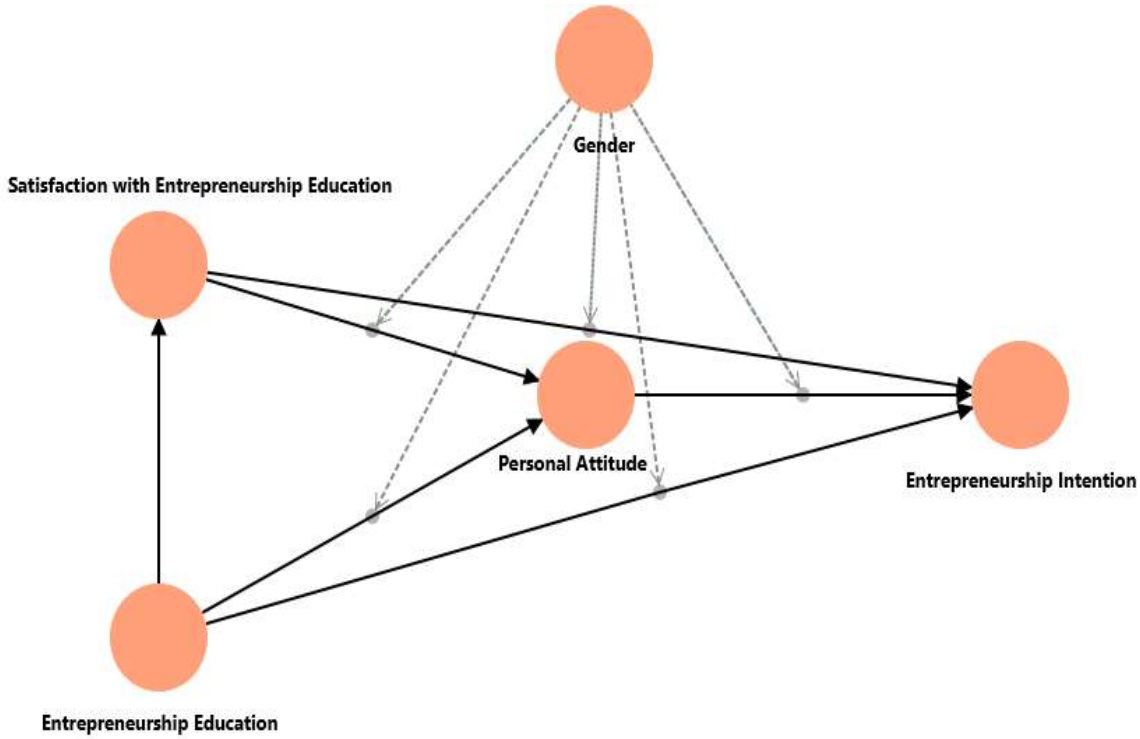

Figure 1: Conceptual model showing moderated mediation pathways. Source: Authors

Entrepreneurship Education and Entrepreneurship Intentions

An imperative aspect of education is exposures that enable the students acquire skills for easy transition to the world of work. Such exposures help the students to recognize opportunities and maximize them. Entrepreneurship education is that form of education targeted to give the students these exposures. As a pragmatic educational approach, entrepreneurship education helps to develop numerous innovative talents in the educational sector, inculcating in them the basic entrepreneurial literacy skills, and therefore empower them with the innovation and entrepreneurship competencies needed for career development and transition (Ndofirepi, 2020: Pham et al., 2023). By gaining deeper knowledge, attitude, and skills via entrepreneurship education, there is the tendency that the entrepreneurial self-efficacy of students can also be enhanced. Hence, they could also be able to recognize business opportunities, and therefore influence their intentions and willingness to establish their businesses upon graduation (Hoang et al., 2021; Nowiński et al., 2019; Zhao et al., 2005).

Entrepreneurial intentions can be characterized by n individual's confidence, motivation, and inspiration to initiate a business, venture, or an enterprise. According to Otache et al. (2024, p. 3), entrepreneurial intentions is "an individual's conviction, willingness, and determination to start a business in the future". Entrepreneurship education may increase entrepreneurial intention. Congruently, a comprehensive review of literature reveals a positive effect of entrepreneurship education on EIs (Otache et al., 2019; Nguyen & Nguyen, 2023).

Despite having the information, skills, knowledge, attitude, and strengths needed for industry-based occupations, many graduates are still searching for work (Adu et al., 2020). This could be because there aren't enough opportunities available for graduates to fill these positions in the labor market. Because of this, EE is essential. EE equips students for self-employment (Otache et al., 2022). It raises students' EIs by favorably influencing their attitudes toward entrepreneurship. According to Otache (2019a, 2019b), EE encourages students to get involved in business and helps them cultivate a strong entrepreneurial attitude. Within the context of career and higher education, the precept of TPB suggests that EE has a direct impact on EI (Martínez-Gregorio et al., 2021). Similarly, TPB theorizes that learning exposure such as EE has indirect influence on EI via its antecedents. This can be substantiated from prior research which showed that EE stimulates students' intentions to become entrepreneurs (e.g., Sherkat & Chenari, 2020; Otache, et al., 2019, 2024).

On the hand, some studies have also shown that the entrepreneurial intentions of higher education students remained low despite exposure to entrepreneurial education (Fitriana & Gulzhaina, 2021). This goes to say that, from extant EE literature, we do not have full understanding of the pathways leading to the connection between EE and EIs (Hoang et al., 2021; Otache et al., 2022). Also, none of these studies mentioned or any other relevant one considered gender interaction in this relationship. Thus, we hypothesize that:

H1: EE will have direct and positive association with EIs

H2: Gender will moderate the association of EE with EIs

Satisfaction with Entrepreneurship Education and Entrepreneurial Intentions

To provide comprehensive insights, it is essential to investigate both entrepreneurship education-entrepreneurial intention nexus and students' overall satisfaction with entrepreneurship progrmmes. Although there exist previous research on EE curriculum, satisfactions with entrepreneurship programmes among students of HEIs have been scarcely investigated (c.f., Adu, et al, 2020; Colombelli, et al., 2022). In a similar vein studies on the abilities and knowledge that potential entrepreneurs require to be successful still need more ttention (e.g., Nguyen, et al 2021; Otache, 2019a, 2019b; Otache et al., 2024). Thus, the degree to which students' satisfaction with EE as it relates to its influence on their intentions to pursue entrepreneurship is scarce in EE literature and ,however, not well understood. The substance of entrepreneurship education, the lecturer's level of learning satisfaction, the setting, the resources (human and materials), the teaching methods, learning techniques, and the end results are some of the parameters that can be used to assess the quality of entrepreneurship education (Tung-Liang, 2018) but cannot satisfactorily measure satisfaction with EE. From literature, effective implementation of EE in higher education institution fosters students' positive viewpoints about entrepreneurship (Muller, 2011; Peterman & Kennedy, 2003) which may strengthen their EIs. To our knowledge, studies have scarcely explored how SWEE is associated with the antecedents of intentions. Consequently, we opine that when EE is well implemented, students' SWEE will increase. Based on this, we hypothesize that:

H3: SWEE will directly and positively be associated with EIs

H4: SWEE association with EIs will be moderated by gender

Linking EE, SWEE, and PAT to behavioral intentions

The TPB model posited that behavioral control, PAT, and subjective norm are antecedents to behavioral intentions (EIs). Meanwhile, there are certain experiential factors that predict these antecedents to behavioral intention (Ajzen, 1991; Ohanu et al., 2022). In this study,

we are only interested in PAT as one of the antecedents to EIs. PAT may be estimated as the sum of products of a person's behavioral beliefs and outcome evaluation. Hence, it refers to the overall positive/favorable or negative/unfavorable valuation a person holds about a behavior (Nazirova & Borbala, 2024). This study refers to PAT as a measure of a student's favorable or unfavorable feelings about becoming an entrepreneur upon graduation. Since PAT is based on how an individual's past experience influence their feelings of a behavior's characteristics, we posit that EE and SWEE can influence it. Thus, we anticipate EE, SWEE and PAT nexuses.

Existing literature show that previous experience such as EE, and allied human capital development such as work-integrated learning (Chukwuedo, et al., 2024; Ohanu & Shodipe, 2021; Otache, 2019) influence PAT. As far as we know, despite the available literature, substantial empirical studies are lacking to authenticate how (1) SWEE influences EIs (2) EE influences EIs via SWEE and PAT, drawing from the TPB model. Also, gender as moderator variable in the relationships of these variables (PAT and EIs, SWEE and PAT, and EE and PAT) has not been fully explored. In this study, we seek to fill these gaps and add to the extant literature of EE and career development. Based on the foregoing, we hypothesize that:

H5: SWEE will have positive association with EIs through PAT

H6. EE will have positive association with EIs through (a) PAT and (b) SWEE (c) SWEE and PAT

H7: Gender will moderate EE and EIs link through (a) PAT and (b) SWEE

Methods

Participants and Procedures

In this study, we employed a cross-sectional correlation research design. Participants (*N* = 163) were purposively drawn from penultimate and final-year undergraduates of technology and vocational education (TVE) in a public university in Nigeria. Purposive sampling of TVE students was adopted because (1) only these category of students in HEIs in Nigeria that have have been exposed to at least two compulsory entrepreneurship courses (general university EE and specific departmental EE), (2) as a field of study, the TVE programmes in the Nigerian university is made of varieties of specialties (e.g., Business Education, Agricultural Education, Home Management and Hospitality Education, Technology/Engineering Trades Education, Fine and Applied Arts). The participants were made up of 104 female students and 59 male students. To carry out this study, the participants consent was sought by the researchers and ethical approval was granted. Hence, participation was voluntary such that no student was coerced or lured to respond to the scales used for data collection.

Ethical Considerations

This study adhered to ethical research principles, ensuring respect, integrity, and the protection of participants' rights. Although no formal ethical approval was sought from an institutional review board or ethics committee, all participants were informed about the purpose and nature of the study. Participation was entirely voluntary, and individuals were provided with the choice to participate or decline without any coercion. Confidentiality and anonymity were maintained throughout the research process to safeguard the privacy of the participants. These measures ensured that the study complied with fundamental ethical standards in research.

Measures

We measured all the constructs in this study using already developed and validated scales from previous studies. Respondents rated the items of the scales on a five-point Likert response options ranging from (1) strongly disagree to (5) strongly agree for all iindicators of

EE, SWEE, PAT and EIs. Nonetheless, we estimated the measurement models of the scales and the results are presented in Table 1.

Entrepreneurship Education (EE). The Walter and Block (2016)'s 5-item scale (e.g. "my school education helped me develop my sense of initiative a sort of entrepreneurial attitude") was adopted to measure EE. The indicators were coded as EntrepEdu1 to EntrepEdu5. Upon carrying out the measurement model tests, EntrepEdu5 indicator was deleted since its loading was approximately below 0.7. Hence 4 indicators were retained and used for the study.

Satisfaction with EE (SWEE). To measure this construct, we cautiously applied the satisfaction with life scale (SWLS) which was originally developed by Diener et al., 1985 but has used in previous studies. With 5 indicators (e.g., I am satisfied with my entrepreneurship education experience), the SWLS measures global life satisfaction. The indicators were coded as SWEE1 to SWEE5. However, SWEE4 and 5 were deleted for not loading approximately up to 0.7.

Personal Attitude (PAT). We adopted five items (e.g., "Being an entrepreneur would entail great satisfactions for me") of the Linan and Chen, (2009) PAT scale to measure personal attitude. We coded the indicators of this construct as PAT1 to PAT5. PAT 1 and PAT5 were deleted for not loading approximately up to 0.7. Thus 3-items were retained.

Entrepreneurial Intentions (EIs): The Linan ´ and Chen (2009) Entrepreneurial Intention scale was adopted to measure EIs. There were six indicators in the scale (e.g., "I am determined to start my own business in the future"). EIs indicators were coded as EntrpInt1 to EntrepInt6.

Data Collection and Analytical Procedures

We employed online data collection using the Google forms. The participants received our Google forms either via their email addresses, individual WhatsApp number or group WhatsApp platforms (e.g., class platforms). After their responses, we converted the responses to numeric data. We therefore employed the Structural Equation Modeling (SEM) using the Smart PLS version 4.0 to test the direct relationships as well as mediation and moderation effects.

Results

Measurement Model

To authenticate the use of adopted scales, we present the results of the measurement models in Table I. From the table, we had satisfactory results for all the essential standards for evaluating reflective measurement models. For instance, the composite reliability estimates obtained for all the constructs are higher the minimum recommended value of 0.70. Precisely, the composite reliability estimates for EE, SWEE, PAT and EIs are 0.874, 0.752, 0.810 and 0.868, respectively. Hence, the indicators measuring the constructs were internally consistent (see Cheung, et al, 2023; Fornnel & Larcker, 1981; Hair et al., 2014; Ringle, et al, 2023).

Table 1.

Result of measurement models

Construct	Indicators	Loadings	Indicator reliability	Composite reliability	AVE	Discriminant reliability?
Entrepreneurship Education	EntrepEdu1	0.779	0.607	0.874	0.634	Yes
	EntrepEdu2	0.796	0.634			
	EntrepEdu3	0.869	0.755			

	EntrepEdu4	0.718	0.516			
Satisfaction with entrepreneurship education	SWEE1	0.700	0.500	0.752	0.502	Yes
	SWEE2	0.705	0.500			
	SWEE3	0.719	0.516			
Personal Attitude	PAT2	0.700	0.500	0.81	0.589	Yes
	PAT3	0.800	0.640			
	PAT4	0.806	0.650			
Entrepreneurial Intentions	EntrepInt1	0.700	0.500	0.868	0.524	Yes
	EntrepInt2	0.700	0.500			
	EntrepInt3	0.762	0.581			
	EntrepInt4	0.780	0.608			
	EntrepInt5	0.700	0.500			
	EntrepInt6	0.705	0.500			

Note. AVE = average variance extracted

Discriminant Validity

We deemed it fit to calculate the discriminant validity since it characterizes the degree to which a construct differs from other constructs (Hair et al., 2014; Otache, 2019c). To examine discriminant validity in variance-based SEM (i.e., partial least squares), we compared the heterotrait-monotrait (HTMT) ratio of correlations with a threshold value of 0.85 (Cheung, et al, 2023; Ringle, et al, 2023). The HTMT ratio is a ratio of average heterotrait hetero method inter-item correlations to the geometric mean of monotrait-hetero method inter-item correlations, in which each item is treated as a method. From Table 2, all the constructs passed discriminant validity test since the HTMT values are less than 0.85 threshold.

Table 2

HTMT of correlations construct-to-construct

Construct-to-Construct	HTMT Values
Entrepreneurship Education <-> Entrepreneurial Intention	0.258
Personal Attitude <-> Entrepreneurial Intention	0.829
Personal Attitude <-> Entrepreneurship Education	0.343
SWEE <-> Entrepreneurial Intention	0.496
SWEE <-> Entrepreneurship Education	0.412
SWEE <-> Personal Attitude	0.411

Note. HTMT = Hetorotrait-Monotrait Ratio of correlation

Structural Model and Hypotheses Testing

Table 3 and Figure 2 show details of bootstrapping results of the structural relationships between the constructs. While the results of the structural model showed a positive and non-significant direct relationship between EE and EIs, $\beta = 0.159$, $t = 1.839$, $p < 0.066$, our analysis

revealed a fascinating insight. When we accounted for gender as a moderating variable, the relationship between EE and EIs, β = -0.257, t = -0.030, p < 2.116, became significant. This means that the impact of EE on EIs varies depending on gender. Our analysis also revealed a significant mediating relationship between EE and EIs through PAT, β = 0.204, t = 2.640, p = <0.008. This means that EE has a significant impact on EI, and this relationship is mediated by the development of PAT. Notably, our results showed that this mediating relationship is not moderated by gender, β = -0.159, t = 1.266, p = <0.205. In other words, the positive impact of EE on EI via PAT is consistent across both males and females. This suggests that the development of PAT through EE is an important factor in developing EIs, regardless of gender.

SWEE positively and non-significantly associated with (1) PAT, β = 0.224, t = 1.679, p = <0.093 and (2) via PAT with EIs, β = 0.147, t = 0.607, p = <0.108. Also, SWEE did not mediate the relationship between EE and EIs, β = 0.017, t = 0.617, p = <0.538. Notably, SWEE had non-significant relationship with EIs, β = 0.061, t = 0.682, p = <0.495 and also remained non-significant when we accounted for gender, β = 0.238, t = 1.470, p = <0.142. Our analysis also revealed no mediating relationship between SWEE and EIs through PAT, β = 0.147, t = 1.608, p = <0.108. This remained non-significant even when we accounted for gender, β = -0.071, t = 0.563, p = <0.574. In other words, the impact of SWEE on EI via PAT is independent of gender.

Table 3

Results of structural models and hypotheses testing

Hypotheses	**Structural Relationships**	Path coefficients	Std Error	T statistics	P values
H1	EE -> Eis	0.159	0.013	1.839	0.066
H2	Gender x EE -> Eis	-0.257	-0.030	2.116	0.034
H3	SWEE -> Eis	0.061	0.006	0.682	0.495
H4	Gender x SWEE -> Eis	0.238	0.038	1.470	0.142
H5	SWEE -> PAT -> Eis	0.147	0.013	1.607	0.108
H6a	EE -> PAT -> Eis	0.204	0.016	2.640	0.008
H6b	EE -> SWEE -> Eis	0.017	0.001	0.617	0.538
H6c	EE -> SWEE -> PAT -> Eis	0.041	0.001	1.345	0.179
H7a	Gender x EE -> PAT -> Eis	-0.159	-0.018	1.266	0.205
H7b	Gender x SWEE -> PAT -> Eis	-0.071	-0.009	0.563	0.574

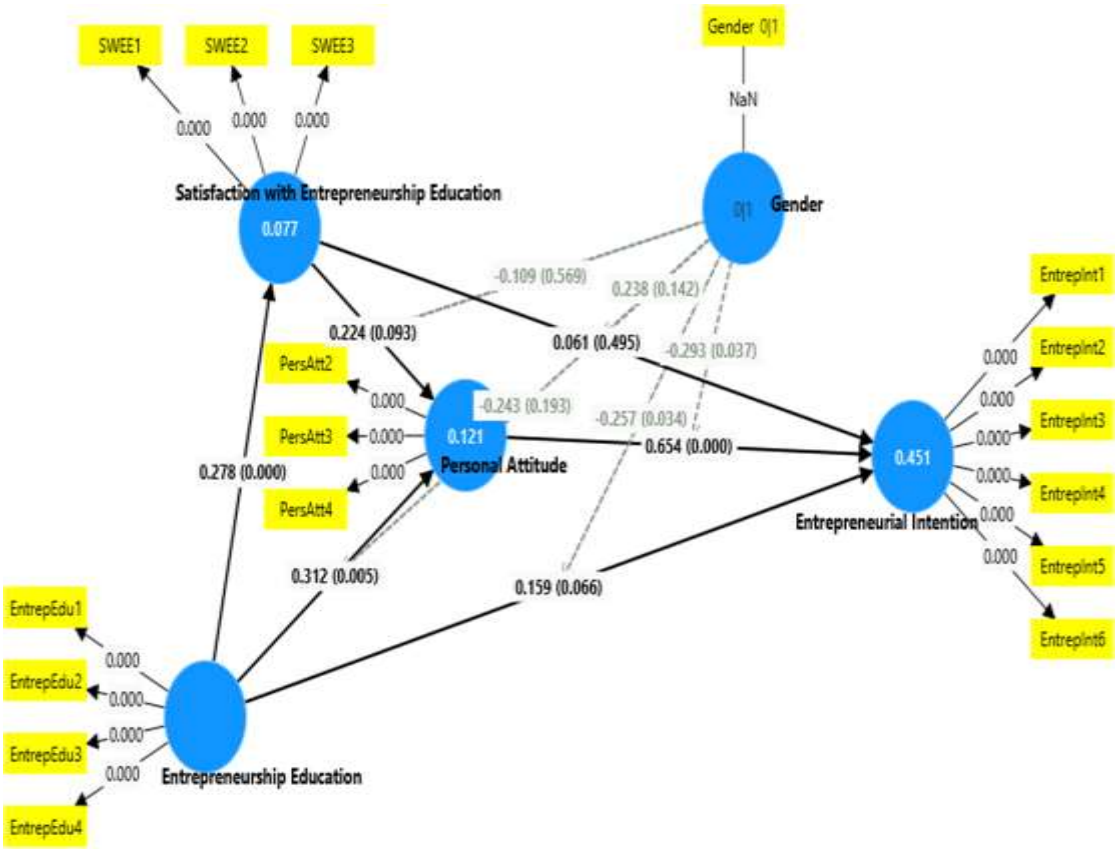

Figure 2: Bootstrapping results of the structural model

Discussion and implication

As a contribution to the body of knowledge, our study provided beneficial empirical outcomes on the interactions between EE, SWEE, PAT and EIs among students of HEIs. Drawing insights from the TPB, we explored the nomological network that could explain the mechanism between students' EE, SWEE and EIs. Therefore, we studied the roles PAT and SWEE played in the EE-EIs model. In general, we found that TPB plays a significant role in explaining and realizing the influence of EE on EIs. Specifically, we found simple mediation model (ie. EE influencing EIs via PAT) regardless of gender. The implication of these outcomes is that this mediating relationship is not moderated by gender. In other words, the positive impact of EE on EI via PAT is consistent across both males and females. In practical terms, this means that EE programs aimed at developing PAT can be effective in enhancing EI for both males and females, without needing to consider gender-specific approaches.

Our study makes a notable discovery, revealing a robust and positive correlation between EE and key components of the TPB (e.g., PAT), demonstrating a direct and significant impact. Specifically, our findings explained that EE has direct and positive influence on students' PAT towards their intentions to venture into entrepreneurship. Although, from our study, we can imply a novel input to literature, the findings still concur with the results of previous studies which demonstrated that EE,allied human capitaldevelopment, economic empowerment as well as other allied resources have effects on the constructs of the TPB's antecedents to behavioral intention (Chukwuedo, et al, 2024; Linan & Chen, 2009). Our findings

also concur with previous studies who found that career and educational training interventions promote job search intentions (e.g., Ogbuanya & Chukwuedo, 2017). By implication, educational practitioners, career counsellors. Policy makers, and training experts in entrepreneurship should always put students' PAT into consideration while exploring modalities for fostering their intentions to start a business via EE programs.

We found personal attitude, a key component of TPB, as a significant mediator in our theorized simple mediation model. Hence, the findings explicitly revealed indirect effect of EE on EIs via PAT towards becoming an entrepreneur. This result indicates that a corresponding influence EE on PAT is necessary in determining the influence of students' EE on their EIs. This finding resounds the maxim of TPB, which makes PATserve as a predictor of intention towards the actual behavioral (Ajzen, 2011). Additionally, we found that gender was not a moderator of the simple mediation model. Thus, in delivering EE that is aimed at increasing the EIs of students via developing their PAT, gender-sensitive approaches is not needed. The mediation model we found aligns with existing literature, which reveal significant relation between aspects of -entrepreneurship education as human capital development and students' intentions (e.g., Linan & Chen, 2009). In the same vein, the model agrees with previous studies which showed that entrepreneurial education is associated with-employment intention among higher education students (e.g., Otache, 2019b). Our study also aligns with the findings of Chukwuedo, et al, (2024), that there exist work integrated learning-job search intention link and can be explained via PAT and personal behavioral control (PBC) individually. However, the findings that the simple mediation model and non-moderating effect of gender echo the TPB tenets and so, has added to literature.

While there is no significant direct relationship between EE and EIs, our analysis revealed a fascinating insight. When we accounted for gender as a moderating variable, the relationship between EE and EI became significant. This means that the impact of EE on EIs varies depending on gender. In other words, the effectiveness of EE in developing EI is influenced by gender. For instance, EE may have a more pronounced impact on EI for females than males, or vice versa. On the contrary, results from previous studies (e.g., Lv et al., 2021) demonstrated that the teaching of entrepreneurship education in higher education is a model to fostering entrepreneurial intention among students (see also Hahn et al., 2019;). Furthermore, entrepreneurship education provides students the avenue to develop entrepreneurial mindset. Congruently, related studies (e.g., Lu et al. 2021; Soomro and Shah, 2022) also showed that EE is a model that facilitate students' intent to tilt their career options to becoming entrepreneurs and then motivates fresh graduates to start businesses (Colombelli et al., 2022; Saptono et al. 2021). Hence, to our knowledge, this is the first study that found that gender is a critical factor in delivering EE that is aimed at developing EIs of students. This implies that gender-sensitive approaches to EE may be necessary to maximize its benefits for EIs.

Nevertheless, contrary to our expectations, EE predicted SWEE but SWEE neither mediated EE and EIs relation nor predicted PAT. This result sheds great light on the TPB tenets in that it reveals that SWEE may not be a precursor to PAT or EIs. Although, Chukwuedo, et al., (2024), Otache (2024) and Ohanu, et al., (2022) posited that these antecedents to behavioral intention can be influenced by experiential factors, our result on SWEE was on the contrary. Specifically, Tung-Liang (2018) found significant direct relationship between SWEE and EIs. However, we can explain that inherent cultural difference and varying technological advancement between societies could lead to the variations in these outcomes.

Conclusion

The results of this study suggest that it is possible to promote entrepreneurial intentions through effectively designed entrepreneurship education program that positively increases PAT. Thus, EE should be articulately and calculatedly designed to deliver its objectives. Drawing insight from our findings, it means that gender-sensitive approaches to the delivery of EE should be an important aspect in designing EE for developing strong intentions in students to venture into entrepreneurial activities. It will amount to wastage if students go through EE program and do not develop the intention to venture into entrepreneurship.

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Conflict of interest
There is no known conflict of interest among the authors

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References

Abdullahi, M. S., Hhalid, N., Ahmed, E. M., & Gumawa, A. M. (2021). Effect of entrepreneurship education on entrepreneurial intention among university students. *Journal of Technical Education and Training, 13*(3), 40-53. https://doi.org/10.30880/jtet.2021.13.005

Adu, I. N., Boakye, K. O., Suleman, A.-R., & Bingab, B. B. B. (2020). Exploring the factors that mediate the relationship between entrepreneurial education and entrepreneurial intentions among undergraduate students in Ghana. *Asia Pacific Journal of Innovation and Entrepreneurship, 14*(2), 215–228. https://doi.org/10.1108/APJIE-07-2019-0052

Ajzen, I. (1991), "The theory of planned behavior", *Organizational Behaviour and Human Decision Processes, 50*(2), 179-211, http://doi:10.1016/0749-5978(91)90020-T

Ajzen, I. (2011), Theory of planned behavior: reflections and reactions, *Psychology and Health, 9*(26), 1113-1127, http://doi:10.1080/08870446.2011.613995

Aragon-Sanchez, A., Baixauli-Soler, S., & Carrasco-Hernandez, A.J. (2017). A missing link: The behavioural mediators between resources and entrepreneurial intentions. *International Journal of Entrepreneurial Behaviour and Research, 23*(5), 752-768, https://doi:10.1108/IJEBR-06-2016-0172

Bae, T. J., Qian, S., Miao, C., & Fiet, J. O. (2014). The relationship between entrepreneurship education and entrepreneurial intentions: A meta-analytic review. *Entrepreneurship Theory and Practice, 38*(2), 217-254. https://doi.org/10.1111/etap.12095

Cheung, G.W., Cooper-Thomas, H.D., Lau, R.S., & Wang, L. C. *(2023).* Reporting reliability, convergent and discriminant validity with structural equation modeling: A review and best-practice recommendations. *Asia Pacific Journal of Management*. https://doi.org/10.1007/s10490-023-09871-y

Chukwuedo, S. O., & Ementa, C. N. (2022). Students' work placement learning and employability nexus: Reflections from experiential learning and social cognitive career theories. *Industry and Higher Education*, *36*(6), 742-755, https://doi.org/10.1177/09504222221099198

Chukwuedo, S. O., Okorafor, A. O., Odogwu, I. C. & Nnajiofor, F. N. (2024). Higher technology education and industry interface: how the theory of planned behavior applies in student work-integrated learning and job search intention link. *Higher Education, Skills and Work-Based Learning*. https://doi.org/10.1108/HESWBL-06-2023-0141

Colombelli A, Loccisano S, Panelli A, Pennisi OAM, & Serraino F 2022. Entrepreneurship education: the effects of challenge-based learning on the entrepreneurial mindset of university students. *Administrative Science 12*(10), 1-12. https://doi.org/10.3390/admsci12010010

Diener, E., & Biswas-Diener, R. (2008). Happiness: Unlocking the mysteries of psychological wealth. *Journal of Chemical Information and Modeling (Vol. 53).*

Diener, E., Emmons, R. A., Larsen, R. J., & Griffin, S. (1985). The Satisfaction with life scale. *Journal of Personality Assessment*, 49(1), 71–75. https://doi:10.1207/s15327752jpa4901_13

Diener, E., Robert A. E., Randy J. L., & Sharon G. (1985). The satisfaction with life scale. *Journal of Personality Assessment 49,* 71–75.

Fitriana N. & Kassymova G.K. (2021). Subjective happiness, entrepreneurship education, and entrepreneurial intention among higher education students. *Jurnal Ilmiah Psikologi, 23* (1121), -125.

Fornnel, C. & Larcker, D.F. (1981). Evaluating structural equation models with unobservable variables and measurement error. *Journal of Marketing Research, 18* (1), pp. 39-50.

Hahn, D., Minola, T., Bosio, G., & Cassia, L. (2019). The impact of entrepreneurship education on university students' entrepreneurial skills: A family embeddedness perspective. *Small Bus. Econ. 55*, 257–282. https://doi:10.1007/s11187-019-00143-y

Hair, J.F., Hult, G.T.M., Ringle, C. M. & Sarstedt, M. (2014). *A Primer on Partial Least Squares Structural Equation Modeling (PLS-SEM)*, SAGE Publications.

Han, D., Minola, T., Bosio, G., & Cassia, L. (2019). The impact of entrepreneurship education on university students' entrepreneurial skills: a family embeddedness perspective. *Small Bus. Econ*. 55, 257–282. doi: 10.1007/s11187-019-00143.

Hayes, A. F., & Coutts, J. J. (2020). Use omega rather than Cronbach's alpha for estimating reliability. But…. *Communication Methods and Measures, 14*(1), 1–24. https://doi.org/10.1080/19312458.2020.1718629

Hoang, G., Le, T. T. T., Tran, A. K. T., & Du, T. (2021). Entrepreneurship education and entrepreneurial intentions of university students in Vietnam: The mediating roles of self-efficacy and learning orientation. *Education & Training, 63*(1), 115–133. https://doi.org/10.1108/ET-05-2020-0142

Linan, F., & Chen, Y-W. (2009). Development and cross-cultural application of a specific instrument to measure intrepreneurial Intentions. *Entrepreneurship Theory and Practice*, *13*(3), 593-617..

Linan, F., Nabi, G. & Kryeger, N. (2013). British and Spanish entrepreneurial intentions: A comparative study. *Rivista De Economia Mundial, 33,* 73-103.

Liñán, F.(2004). Intention-based models of entrepreneurship education. *Piccolla Impresa/Small Business, 3*(1), 11 35.

Liñán. F. (2004). Intention-based models of entrepreneurship education. *PiccollaImpresa/Small Business, 3*(1), 11-35.

Listyaningsih, E., Mufahamah, E., Mukminin, A., Ibarra, F. P., Santos, R. H. M., & Quicho, R. F. (2023). Entrepreneurship education, entrepreneurship intentions, and entrepreneurship motivation on students' entrepreneurship interest in entrepreneurship among higher education students. *Power and Education*, 1-17. https://doi.org/10.1177/17577438231217035

Lv, Y. J., Chen, Y. Y., Sha, Y. M., Wang, J., An, L. Y. J., Chen, T. J., et al. (2021). How entrepreneurship education at universities influences entrepreneurial intention: Mediating effect based on entrepreneurial competence. *Front. Psychol. 12*:655868. https://doi:10.3389/fpsyg.2021.655868

Martínez-Gregorio, S., Badenes-Ribera, L., & Oliver, A. (2021). Effect of entrepreneurship education on entrepreneurship intention and related outcomes in educational contexts: A meta-analysis. *International Journal of Management in Education, 19*(3), 100545. https://doi.org/10.1016/j.ijme.2021.100545

Mueller, S. L., & Thomas, A. S. (2001). Culture and entrepreneurial potential: A nine country study of locus of control and innovativeness. *Journal of Business Venturing, 16*, 51–55. https://doi.org/10.1016/S0883-9026(99)00039-7

Nazirova, Z., & Borbala, S. (2024). Values, attitudes and the behaviour paradigm: A systematic review. *Journal of Human Values, 30*(2), 214-239. https://doi.org/10.1177/09716858241236902

Ndofirepi, T. P. (2020). Relationship between entrepreneurship education and entrepreneurial goal intention: Psychological traits as mediators. *Journal of Innovation and Entrepreneurship, 9*(2), 1-20. https://doi.org/10.1186/s13713-020-0115-x

Neumark, D., & Rothstein, D. S. (2006). School-to-career programs and transitions to employment and higher education. *Economics and Education Review, 25*(4), 374-393. https://doi.org/10.1016/j.econedurev.2005.10.005

Nguyen, T. T., Nguyen L. T. P., Phan, H. T. T., & Vu, A. T. (2021). Impact of entrepreneurship extracurricular activities and inspiration on entrepreneurial intention: mediator and moderator effect. *SAGE Open* 11. https://doi.org/10.1177/21582440211032174

Nowiński, W., Haddoud, M. Y., Lančarič, D., Egerová, D., & Czeglédi, C. (2019). The impact of entrepreneurship education, entrepreneurial self-efficacy and gender on entrepreneurial intentions of university students in the visegrad countries. *Studies in High Education 44*, 361–379. https://doi.org/10.1080/03075079.2017.1365359

Ogbuanya, T. C. & Chukwuedo, S.O. (2017). Career-training mentorship intervention via the Dreyfusmodel: Implication for career behaviors and practical skills acquisition in vocational electronic technology. *Journal of Vocational Behaviour, 103*, 88-105, https://doi.org/10.1016/j.jvb.2017.09.002

Ohanu, I. B. & Shodipe, T. O. (2021). Influence of the link between resources and behavioural factors on the entrepreneurial intention of electrical installation and maintenance work students. *Journal of Innovation and Entrepreneurship, 10*(13), 1-15. https://doi:10.1186/s13731-021-00153-8

Ohanu, I.B., Shodipe, T., Ohanu, C.M.-G. & Anene-Okeakwa, J.E. (2022). System quality, technology acceptance model and theory of planned behaviour models: agents for adopting blended learning tools. *E-learning and Digital Media, 20*(3), 1-27. https://doi:10.1177/20427530221108031

Otache I., Edopkolor J. E., Sani I. A., & Umar K. (2024). Entrepreneurship education and entrepreneurial intentions: Do entrepreneurial self-efficacy, alertness and opportunity recognition matter? *The International Journal of Management Education, 22*(1), 100917. https://doi.org/10.1016/j.ijme.2023.100917

Otache, I. (2019a). Enhancing the effectiveness of entrepreneurship education: The role of entrepreneurial lecturers. *Education + Training, 61*(7/8), 918–939. https://doi.org/10.1108/ET-06-2018-0127

Otache, I. (2019b). Entrepreneurship education and undergraduate students' self- and paid-employment intentions: A conceptual framework. *Education + Training, 61* (1), 46–64. https://doi.org/10.1108/ET-10-2017-0148

Otache, I. (2019c). The mediating effect of teamwork on the relationship between strategic orientation and performance of Nigerian banks. *European Business Review, 31* (5), pp 744-760. https://doi.org/10.1108/EBR-10-2017-0183

Otache, I., Edomwonyi, J., & Kadiri, U. (2022). A serial mediation model of the relationship between entrepreneurial education, orientation, motivation and intentions. *International Journal of Management in Education, 20*(2), Article 100645. https://doi.org/10.1016/j.ijme.2022.100645

Otache, I., Oluwade, D. O., & Idoko, E. J. (2020). Entrepreneurship education and undergraduate students self-employment intentions: Do paid employment intentions matter? *Education + Training, 62*(7/8), 741–757. https://doi.org/10.1108/ET-02-2020-0032

Otache, I., Umar, K., Audu, Y. & Onalo, U. (2021). The effects of entrepreneurship education on students' entrepreneurial intentions: a longitudinal approach. *Education + Training, 63* (7/8), pp. 967-991, https://doi:10.1108/ET-02-2020-003

Otache, I., Umar, K., Audu, Y., & Onalo, U. (2019). The effects of entrepreneurship education on students' entrepreneurial intentions: A longitudinal study. *Education + Training, 63*(7/8), 967–991. https://doi.org/10.1108/ET-01-2019-0005

Peterman, N. E., & Kennedy, J. (2003). Enterprise education influencing students' perceptions of entrepreneurship. *Entrepreneurship Theory and Practice, 28*(2), 129-144.

Pham, M., Nguyen, A. T. T., Tran, D. T., Mai, T. T., & Nguyen, V., T. (2023). The impact of entrepreneurship knowledge on students' e-entrepreneurial intention formation and

the moderating role of technological innovativeness. *Journal of Innovation and Entrepreneurship, 12*(80), 1-30. https://doi.org/10.1186/s13713-023-00351-7

Pittaway, L. & Cope, J., (2007b), Entrepreneurship education – *a systematic review of the evidence*, *International Small Business Journal, 25*(5): 477–506

Ringle, M. C, Sarstedt, M., Sinkovics, N., & Sinkovics, R. R., (2023). A perspective on using partial least squares structural equation modelling in data articles. *Data in Brief, 48*. https://doi.org/10.1016/j.dib.2023.109074

Saadat, S., Aliakbari, A., & Bell, R. (2021). The effect of entrepreneurship education on graduate students' entrepreneurial alertness and the mediating role of entrepreneurial mindset. *Education + Training, 64*(7), 892–909. https://doi.org/10.1108/ET-06-2021-0231

Sherkat, A., & Chenari, A. (2020). Assessing the effective-ness of entrepreneurship education in the universities of Tehran province based on an entrepreneurial intention model. *Studies in Higher Education, 47*(1), 1–19. https://doi.org/10.1080/03075079.2020.1732906

Tung-Liang H. (2018). Satisfaction with entrepreneurial education and entrepreneurial intention: The moderating role of internal locus of control. *International Journal of Education and Research, 6* (4).

Twumasi, (2013). *International-Journal of Education and Knowledge Management, 5*(1):1- 10.

Walter, S. G., & Block, J. H. (2016). Outcomes of entrepreneurship education: An institutional perspective. *Journal of Business Venturing, 31*(2), 216–233. https://doi.org/10.1016/j.jbusvent.2015.10.003

Wardana, L. W., Narmaditya, B. S., Wibowo, A., Mahendra, M., Wilbowo, N. A., Harwida, G., & Rohman, A. N. (2020). The impact of entrepreneurship education and students' entrepreneurial mindset: The mediating role of attitude and self-efficacy. *Heliyon, 6*, e04922. https://doi.org/10.1016/j.heliyon.2020.e04922

Zhao, H., Hills, G. E., & Seibert, S. (2005). The mediating role of self-efficacy in the development of entrepreneurial intentions. *Journal of Applied Psychology, 90*(6), 1265-1272. https://doi.org/10.1037/0021-9010.90.6.1265