Putting Pedagogy in Context: Moving from 'Whether' to 'When' Compulsory Entrepreneurship Education 'Works'

Victor Udeozor[a*], Oyedele Martins Ogundana[a], Ugbede Umoru[a] and Mathew (Mat) Hughes[b]

[a]*Nottingham Business School, Nottingham Trent University, NG1 4FQ;*

[*]*Corresponding Author*

[b]*University of Leicester, School of Business, Leicester, LE2 1RQ*

Abstract

The growing interest in entrepreneurship education has sparked a debate about how pedagogy can support an intention to innovate. Drawing on the theory of planned behavior, we examine the links between experiential pedagogy, students' intention to innovate, and entrepreneurial intent. Using structural equation modeling on a survey of 361 students of compulsory entrepreneurship education across public and private universities in a developing economy, we find that compulsory entrepreneurship education alone has minimal impact on entrepreneurial intent and innovation intention. However, engaged faculty and out-of-class experiences, both elements of experiential pedagogy, positively influence attitudes and behavior towards entrepreneurship, regardless of university type. Out-of-class experiences notably boost innovation intentions, mediated by behavioral control. Our findings contribute to entrepreneurship education scholarship by highlighting the efficacy of experiential pedagogy in resource-constrained environments and informing the optimization of entrepreneurship education strategies in developing economies.

Keywords: Entrepreneurship education, entrepreneurial intent, experiential learning, innovation intention, pedagogy.

*Corresponding Author:
Victor Udeozor; victor.udeozor@ntu.ac.uk; Nottingham Business School, Nottingham Trent University, 50 Shakespeare Street, Nottingham, NG1 4FQ, UK

1. Introduction

Entrepreneurship is an important catalyst for job creation. For this reason, many emerging economies across Africa with high levels of youth unemployment have turned to policies on entrepreneurship education intended to stimulate entrepreneurship as a pathway to increased economic activity. The logic behind adopting entrepreneurship education is that it stimulates entrepreneurial intentions (Jones *et al.,* 2021; Ripollés and Blesa, 2023), which enhances proactive behaviors toward entrepreneurial opportunities (Bae *et al.,* 2014; Sanchez-Robles *et al.,* 2023). These behaviors, in turn, can catalyze the creation of new ventures and new job opportunities, contributing to overall economic growth (Greene *et al.,* 2004). In Africa, where the youth unemployment rate is three times higher than the European average, ten times higher than North America, and five times higher than Asia and the Pacific (International Labour Organisation, ILO, 2020), the logic of entrepreneurship education seems persuasive. Accordingly, some countries, for example, Nigeria, have taken substantial steps in mandating entrepreneurship education in public and private universities at the undergraduate and postgraduate levels, spanning various programs (Dakung *et al.,* 2017; Udeozor and Smith, 2020; Olutuase *et al.,* 2023).

However, despite the widespread implementation of entrepreneurship education programs, the existing body of evidence on their impact remains conflicting. Studies have reported a multitude of competing and often disappointing outcomes, including positive, negative, and even curvilinear effects when exploring the relationship between entrepreneurship education and entrepreneurial intentions. For example, some research finds that entrepreneurship education positively influences intentions by enhancing self-efficacy, and entrepreneurial mindset, encouraging students to pursue entrepreneurial paths (Vanevenhoven and Liguori, 2013; Rauch and Hulsink, 2015; Nabi *et al.,* 2017; Simba et al., 2024). However, other studies report negative effects, suggesting that exposure to entrepreneurship may lead some students to recognize the difficulties and risks involved, dampening their entrepreneurial intentions (Lyons & Zhang, 2017; Brüne and Lutz, 2020; Ripollés and Blesa, 2023). Additionally, a curvilinear effect has been proposed, whereby initial exposure might reduce intentions due to perceived challenges, but further education increases intentions as students develop confidence and experience (Smolka et al., 2023; Hoang & Luu, 2024). The conflicting findings in prior research have prompted scholars to delve into the factors contributing to this heterogeneity in the effects of entrepreneurship education (Cui and Bell, 2022). As part of this effort, many prior studies have predominantly focused on the developed world, characterized by low unemployment and effective operating environments (e.g., Phong *et al.,* 2020; Ripollés and Blesa, 2023), neglecting the contextual nuances of the developing world such as high unemployment, weak social safety net, socioeconomic disparities, resource constraints, and institutional voids (Ogundana *et al.,* 2023a; Simba *et al.,* 2022).

Based on the synthesis of a large body of empirical research on entrepreneurship education, we argue that three main issues may explain the conflicting findings regarding entrepreneurship education outcomes. First, prior studies overlook the difference between compulsory and voluntary entrepreneurship education (Karimi et al., 2014; Smolka et al., 2023). While compulsory entrepreneurship education is an integral part of a formal academic program provided by a university, voluntary entrepreneurship education is chosen freely by participants, is part of a non-formal academic offer, or is self-directed (Debarliev *et al.,* 2022). Yet, despite studies predominantly treating entrepreneurship education as a single entity (e.g., Bae *et al.,* 2014; Blenker *et al.,* 2014), some scholars have suggested that both voluntary and compulsory entrepreneurship education could impact the actions of student entrepreneurs differently (Hägg, 2021). We build on and extend existing research by focusing on compulsory entrepreneurship education, recognizing its prevalence in developing African economies where governments utilize such programs in an attempt to encourage entrepreneurial activities among students (African Union, 2020; United Nations, 2019) to remedy economic malaise.

Second, studies suggest that variance in the influences of entrepreneurship education on student entrepreneurs' behavior can be associated with different teaching activities (Lyons and Zhang, 2018). Consequently, pedagogy may vary students' intentions after exposure to entrepreneurship education. The role of experiential pedagogical approaches in entrepreneurship education and its link to innovative outcomes is especially under-explored (Nabi *et al.,* 2017; Udeozor and Smith, 2020; Dakung *et al.,* 2017). Experiential pedagogy involves teaching practices, both within and outside the classroom, that engage students in active learning through action and reflection (Udeozor, 2020). These teaching practices emphasize real-world projects that give opportunities for experience and reflection to bridge the gap between theoretical knowledge and practical application. Scholars suggest that irrespective of the context, experiential pedagogy may be linked to innovative outcomes and may support nurturing innovative entrepreneurs —individuals engaged in creative processes leading to new products, processes, or services (Baumol *et al.,* 2009; Neck and Greene, 2011). Investigating this link between experiential pedagogy and innovative outcomes is vital for strengthening entrepreneurship education theory on how innovative entrepreneurs can be nurtured.

Third, it remains unclear whether entrepreneurship education outcomes are intricately linked to the nature of the university, a factor frequently disregarded by contemporary scholars (Canever *et al.,* 2017; Perim, 2015). Notably, Pihie *et al*. (2013) revealed a significant disparity in entrepreneurial intentions between private and public university students in their cross-sectional study. Their findings suggest private university students tend to exhibit higher entrepreneurial intentions than their counterparts in public institutions. This observation underscores the need to delve into the contextual nuances associated with the type of university (Thomassen *et al.,* 2020), emphasizing its pivotal role in shaping students' entrepreneurial mindset and aspirations. As such, the dichotomy between private and public universities emerges as a crucial consideration, deserving thoughtful exploration to comprehend its implications for entrepreneurship education outcomes.

These three interrelated research issues constitute the foundation for our study of the impact of entrepreneurship education. Our aim is to investigate the impacts of compulsory entrepreneurship education in both public and private universities and unravel the influence of experiential pedagogy on students' intention to innovate—the motivation to exploit new entrepreneurial opportunities (Mayhew *et al.,* 2012)—and entrepreneurial intention. Impact indicators such as intention to innovate can provide new insights that advance the conversation on the impact of entrepreneurship education (Nabi *et al.,* 2017). Therefore, it is essential to study the intention to innovate as an additional impact indicator for assessing the impact of compulsory entrepreneurship education courses. Thus, we pose three research questions:

1. What is the impact of compulsory entrepreneurship education on students' intention to innovate and entrepreneurial intent?
2. What is the impact of attitude towards entrepreneurship, perceived behavioral control and experiential pedagogy on students' intention to innovate and entrepreneurial intent?
3. Does the impact of compulsory entrepreneurship education differ between public and private universities?

Our study contributes to the theory and practice of entrepreneurial intentions by introducing an integrated theoretical framework and empirically validated strategy that dissects contextual factors, experiential pedagogy, and mediators, enabling positive changes in intention to innovate and entrepreneurial intent. These mediators are especially valuable as they unveil the mechanisms influencing innovative entrepreneurship in a developing economy region (Bergner *et al.,* 2021; Gielnik *et al*., 2015). By addressing these issues in our study, we (1) contribute by providing three new perspectives on the conflicting evidence regarding the nuanced effects of compulsory entrepreneurship education, (2) enrich entrepreneurship education theory, and (3) offer policy implications that can empower educators and policymakers with insights to foster innovative entrepreneurs in the African developing economy region.

A further contribution of our work is the use of a novel research context to scrutinize entrepreneurship intention theories. Critics have called for more management research in Africa to challenge or reshape existing theories on entrepreneurship education (George et al., 2016; Nabi *et al*., 2017; Nkomo, 2015; Nowiński *et al.,* 2017). In response to Blenker *et al.'s* (2014) suggestion to adopt more powerful statistical tools for examining the role of entrepreneurship education, our study employs structural equation modeling for the path analysis of a sample comprising 361 Nigerian university students. Owing to resource constraints, weak institutions and policies to support innovation compared to developed countries, Nigeria's university context provides ample opportunity to unpack the relationships between entrepreneurship education pedagogy and innovative entrepreneurship. First, with over 30% youth unemployment, many students may consider self-employment as a career option after graduation. In response to its economic situation, Nigeria has taken substantial steps in mandating compulsory entrepreneurship education in both public and private universities at the undergraduate and postgraduate levels, spanning various disciplines. Second, recent economic challenges in Nigeria have led to budget cuts and funding constraints for public universities compared to private universities (Udeozor and Smith, 2020). The relative underfunding of public universities may have implications for the nature of pedagogy that can be applied in entrepreneurship education. Given this blanket policy of compulsory entrepreneurship education and the nuances of private versus public university settings, we expect some variation in the delivery of entrepreneurship education and, subsequently, variance in the influences of entrepreneurship education on behavioral intention. The difference between public and private universities and the policy of compulsory entrepreneurship education provides the opportunity to simultaneously explore contextual issues (such as compulsory education and university type) and pedagogical methods that may influence entrepreneurship education outcomes in a single study. In short, the Nigerian University context is an interesting empirical setting to unpack the links between entrepreneurship education and the intention to innovate.

2. Theoretical background and hypotheses development

2.1. Entrepreneurial intention vs intention to innovate

In general, a distinction can be made between two key concepts: the general inclination to pursue an entrepreneurial career, referred to as "entrepreneurial intention," and a more specific desire to explore and capitalize on new entrepreneurial opportunities, termed "intention to innovate" (Al-Mamary and Alshallaqi, 2022; Massiu *et al.,* 2018; Taghizadeh *et al.,* 2022; Yusof, 2018). Entrepreneurial intention represents an individual's conviction to establish a new business venture, with a conscious plan to do so at some point in the future (Ripollés and Blesa, 2023). Building upon Block et al.'s (2016)) definition of innovative entrepreneurship, we define "intention to innovate" as a deliberate plan to engage in and support novel ideas, experimentation, and creative processes that may lead to developing new products, services, or processes. Intention to innovate may involve plans to enhance existing goods and services or encompass plans to identify and exploit entirely new entrepreneurial opportunities, ultimately resulting in the creation of fresh products and services within a particular domain or context (Al-Mamary and Alshallaqi, 2022; Taghizadeh et al., 2022). In both instances, the intention to innovate signifies an individual's intention to depart from existing practices and explore new frontiers.

As Krueger argues, "intentions are the single best predictor of any planned behavior" (Krueger et al., 2000, p. 412). In other words, the intention to engage in experimentation and creative processes that may lead to developing new products, services, or processes is a precursor to the actual behavior. From a research perspective, it is often impractical to wait for several years to examine how many students eventually embark on entrepreneurial ventures and the nature of these ventures. Given that intention is the most reliable predictor of behavior, assessing intention as an outcome of entrepreneurship education is a practical means to forecast the likelihood of entrepreneurial actions (Ripollés and Blesa, 2023; Taghizadeh et al., 2022). Consequently, intention to innovate emerges as a fitting and comprehensive metric for predicting innovative entrepreneurship (Al-Mamary and Alshallaqi, 2022; Taghizadeh et al., 2022). We argue that both types of intentions share common antecedents and serve as robust predictors of actual behaviors. Hence, we adopt Ajzen's influential Theory of Planned Behavior (Ajzen, 1985) as a framework for scrutinizing these intentions.

We adopt the Theory of Planned Behavior because it has been empirically validated as a robust model for predicting entrepreneurial intentions across diverse contexts (Krueger et al., 2000). The strength of the framework lies in its ability to decompose intention into well-defined components—attitude, subjective norms, and perceived behavioral control—allowing for a nuanced examination of the factors driving entrepreneurial behavior. However, we acknowledge that alternative models also offer valuable perspectives. For instance, models such as the Entrepreneurial Event Model (Shapero and Sokol, 1982) and the Social Cognitive Theory (Bandura, 1986) provide different lenses through which entrepreneurial intent can be understood. The Entrepreneurial Event Model emphasizes perceived desirability, perceived feasibility, and propensity to act, while Social Cognitive Theory focuses on the role of self-efficacy and observational learning. Because of its focus on the issue of new business creation and not on the evolution towards the adoption of entrepreneurial behavior in general, the entrepreneurial event mode is not suitable as a theoretical framework for the research questions we seek to address. In short, the Theory of Planned Behavior is the best fit for our study due to its comprehensive nature, widespread acceptance in the literature, and ability to capture the interplay between individual attitudes and perceived control in a structured and measurable way.

2.2. Compulsory education, attitude towards entrepreneurship and Perceived behavioral control

Under the Theory of Planned Behavior (TPB), intention is intricately shaped by three components: one's attitude towards entrepreneurship, subjective norms, and perceived behavioral control (Ajzen, 1985). Attitude toward entrepreneurship gauges the desirability of a specific behavior based on expectations and beliefs concerning the personal impact of outcomes resulting from that behavior. Subjective norms encompass the social and cultural pressures to become an entrepreneur. Perceived behavioral control aligns with the concept of self-efficacy, measuring an individual's perceived ease or difficulty in becoming an entrepreneur (Kautonen et al., 2015; Krueger *et al.,* 2000). These components can be summarized with the following questions: How desirable is performing this behavior? How desirable do people close to the individual in question think it is to perform this behavior? Do I believe in my ability to perform this behavior? (Lorz, 2011). However, as depicted in Figure 1, our theoretical model omits subjective norms for several factors. First, subjective norms traditionally play a marginal role in influencing entrepreneurial intentions compared to attitudes and perceived behavioral control (Peterman and Kennedy, 2003; Phong et al., 2020; Krueger et al., 2000). Another factor is the limited capacity of formal entrepreneurship education programs to directly influence students' pre-existing social networks such as friends and family (Rauch and Hulsink, 2015). While universities can foster a supportive environment for entrepreneurship, the influence of friends and family—core components of subjective norms—typically develops over a much longer period and is shaped by broader cultural and social contexts. Since our study focused on the immediate effects of a compulsory entrepreneurship course, we anticipated that changes in subjective norms would be minimal and difficult to attribute directly to the educational intervention. Besides, our study focused on individual behavioral changes, such as attitudes and perceived behavioral control, which are more directly influenced by educational interventions than subjective norms.

In contrast, subjective norms involve external social pressures, which may be less responsive to short-term educational interventions and more dependent on long-term socialization processes. Moreover, measuring subjective norms can be methodologically challenging in the context of entrepreneurship education research due to the complexity of capturing the influence of various social actors, including family, friends, and university environment supportive of entrepreneurship. Finally, in developing economies such as Nigeria, our research context, personal attitudes, and perceived capabilities may have a greater impact than social approval on entrepreneurial intentions due to the pressing need for self-employment, making subjective norms less relevant in this context.

Insert Figure 1 here

Compulsory entrepreneurship education can enhance awareness, knowledge, and skills related to entrepreneurship (Dakung *et al.,* 2017; Martinez *et al.,* 2010; Ripollés and Blesa, 2023). Studies consistently show that individuals with higher levels of knowledge and skills tend to achieve higher entrepreneurial outcomes than those with lower levels (Martin *et al.,* 2013; Ratzinger *et al.,* 2018). Consequently, it can be inferred that compulsory entrepreneurship education can induce changes in entrepreneurial intentions. Although some studies on compulsory entrepreneurship education indicate a negative impact on intention (Oosterbeek *et al.,* 2010; von Graevenitz *et al.,* 2010; Ripollés and Blesa, 2023), overall, those studies are offset by the numerous studies that show positive impacts of entrepreneurship education (Arranz *et al.,* 2017; Hägg, 2021; Martinez *et al.,* 2010; Nabi *et al.,* 2018; Rauch and Hulsink, 2015). Regardless of the direction of the outcome, the implicit consensus is that compulsory entrepreneurship education impacts intention.

Several empirical studies broadly affirm that attitudes toward entrepreneurship and perceived behavioral control mediate the effects of compulsory entrepreneurship education on intentions (Arranz *et al.,* 2017; Rauch and Hulsink, 2015). For example, a study by Vamvaka *et al*. (2020) find that attitude and perceived behavioral control strongly predict intention. As argued earlier, attitude and behavioral control may also predict the intention to innovate. A study by Soomro and Shah (2015) find a correlation of attitude with innovation. Moreover, meta-analytical studies have corroborated the relationship between attitude towards entrepreneurship and intention to innovate (Rauch and Hulsink, 2015). These studies point to the association between attitude and behavioral control and intentions to innovate, suggesting that individuals who hold positive attitudes towards entrepreneurship and perceived ease of becoming an entrepreneur are more inclined to embrace innovation as part of their entrepreneurial endeavors. Accordingly, we argue that attitudes toward entrepreneurship and perceived behavioral control will be associated with the intention to innovate and entrepreneurial intent. Thus, we postulate that within the context of compulsory entrepreneurship education:

H1a. Attitude toward entrepreneurship positively relates to the intention to innovate.

H1b. Attitude toward entrepreneurship positively relates to entrepreneurial intent.

H2a. Perceived behavioral control positively relates to the intention to innovate.

H2b. Perceived behavioral control positively relates to entrepreneurial intent.

2.3. Experiential pedagogy: out-of-class experience and engaging faculty

Experiential learning-based teaching practices, often referred to as experiential pedagogy, have garnered increasing attention as effective approaches for fostering innovative outcomes. Scholars have extensively discussed various teaching practices under this umbrella term, including active learning, collaborative learning, and engaged learning (Mayhew *et al.,* 2012; Arranz *et al.,* 2017; Rauch & Frese, 2007). "Experiential pedagogy" aligns with Kolb's (1984) experiential learning theory, emphasizing engagement, action, and reflection as essential components. Experiential pedagogy affords students opportunities to (a) actively participate in learning, (b) undertake concrete actions constituting hands-on experiences, and (c) reflect on these actions.

The implicit consensus among scholars is that there exists a direct and positive relationship between experiential pedagogy and innovative outcomes (Rauch & Frese, 2007). However, this relationship remains under-explored, particularly concerning the specific types of experiential pedagogy that foster innovation. While some studies, such as those by Strauss and Terenzini (2007) and Souitaris et al. (2007), indicate that out-of-class activities and engagement with dynamic faculty members may be effective, empirical evidence supporting these claims is still limited.

Experiential pedagogy give effect to out-of-class experiences and engaging faculty. Both out-of-class experiences and engaging faculty arguably play a pivotal role in cultivating innovative thinking and entrepreneurial intentions. Out-of-class experiences entail co-curricular and extra-curricular activities in which students participate outside the traditional classroom environment concurrent with their primary program of study (Mayhew *et al.,* 2012). Examples of out-of-class experiences include internships, field trips, and extra-curricular activities. These experiences offer students opportunities to apply theoretical knowledge in real-world contexts and engage in meaningful interactions with diverse stakeholders. In this way, out-of-class experiences may not only enhance cognitive and self-management skills (Lackéus, 2020) but also stimulate knowledge pertinent to becoming a confident businessperson (Arranz *et al*., 2017), ultimately influencing attitudes towards entrepreneurship, behavioral control, intentions to innovate, and entrepreneurial intent. Therefore, we hypothesize:

H3a: Out-of-class experiences have a positive effect on attitude toward entrepreneurship.

H3b: Out-of-class experiences have a positive effect on perceived behavioral control.

H3c: Out-of-class experiences have a positive effect on the intention to innovate.

H3d: Out-of-class experiences have a positive effect on entrepreneurial intent.

Furthermore, engaging faculty, characterized by educators who create dynamic and challenging learning environments, also plays a crucial role in fostering innovative mindsets among students (Mayhew *et al.,* 2012). For instance, a practicing entrepreneur who shares real-world experiences in the classroom can significantly enhance the learning experience by bridging the gap between theoretical knowledge and practical application. This approach not only inspires students to think creatively but is likely to influence their attitude toward entrepreneurship and perceived behavioral control (Mayhew *et al.,* 2012; Souitaris *et al.,* 2007).

Engaging faculty is particularly significant in developing countries where universities often face challenges such as large class sizes, high student-to-staff ratios, and limited financial resources (WENR, 2017). In these contexts, engaging faculty offers a more expedient and cost-effective alternative to out-of-class experiences, which can be resource-intensive (NSSE, 2014). By fostering a learning environment that integrates real-world perspectives and encourages active participation, engaging faculty can break down barriers between the academic setting and the external world (Arranz *et al.,* 2017).

Empirical evidence supports the positive impact of engaging faculty on students' entrepreneurial attitudes and intentions. Souitaris *et al.* (2007) found that students who are inspired by their instructors are more likely to develop positive attitudes toward entrepreneurship and perceive greater control over entrepreneurial activities. This inspiration often translates into a higher likelihood of pursuing entrepreneurial careers. Similarly, Dakung *et al.* (2017) observed that the more instructors inspire students in entrepreneurship education, the more likely students are to engage in entrepreneurial actions. Based on these insights, we propose the following hypotheses:

H4a: Engaging faculty has a positive effect on attitude toward entrepreneurship.

H4b: Engaging faculty has a positive effect on perceived behavioral control.

H4c: Engaging faculty has a positive effect on the intention to innovate.

H4d: Engaging faculty has a positive effect on entrepreneurial intent.

2.4. University type: public vs private university?

Extant research has documented mixed evidence regarding the impact of university type on entrepreneurial intention. On the one hand, Pihie et al. (2013) suggest that students in private universities exhibited higher entrepreneurial intentions than those in public universities.

On the other hand, Canever et al. (2017) study from Brazil suggests that while public and private university environments may not be conducive to entrepreneurial intention, public university environments seem to be less conducive. However, this latter finding may be context-dependent and could benefit from further qualification. In particular, public universities that incorporate experiential pedagogy and employ faculty with entrepreneurial experience may, in fact, foster strong entrepreneurial intentions among students.

This disparity in findings suggests that other contextual factors may influence the relationship between university type and entrepreneurial intention. One plausible explanation is the extent to which experiential pedagogy is implemented. Private universities tend to employ more hands-on, practical approaches due to smaller class sizes, closer ties to industry, and fewer financial constraints (Nkomo, 2015; George et al., 2016). For example, in Brazil, private universities reportedly provide more opportunities for practical entrepreneurship training than public universities (Perim, 2015). However, it is essential to note that some public universities actively foster entrepreneurial intention by employing serial entrepreneurs and incorporating experiential learning into their programs. Therefore, the effect of university type on entrepreneurial intention may vary based on how effectively each institution leverages experiential pedagogy and industry engagement. All things being equal, we anticipate that changes in entrepreneurial attitudes, perceived behavioral control, entrepreneurial intention, and innovation intentions following mandatory entrepreneurship courses will be more pronounced in private universities compared to public universities (Arranz et al., 2017; Dakung et al., 2017; Mayhew et al., 2012). Consequently, we posit the following hypotheses:

H5a. Students in private universities will experience a greater change in attitude toward entrepreneurship after compulsory entrepreneurship education than students in public universities.

H5b. Students in private universities will experience a greater change in perceived behavioral control after compulsory entrepreneurship education than students in public universities.

H5c. Students in private universities will experience a greater change in intention to innovate after compulsory entrepreneurship education than students in public universities.

H5d. Students in private universities will experience a greater change in entrepreneurial intent after compulsory entrepreneurship education than students in public universities.

Previous studies that employed TPB suggest that attitude towards entrepreneurship and perceived behavioral control mediate the effect of entrepreneurship education on entrepreneurial intention and that perceived behavioral control may have a relationship with innovation intentions (Vamvaka et al., 2020; Rauch and Helsinki, 2015). Based on previous studies, our theoretical model (Figure 1), which incorporates experiential pedagogy into the TPB, suggests that perceived behavioral control and attitude towards entrepreneurship may mediate the effects of experiential pedagogy and university type on entrepreneurial intention and intention to innovate. Thus, we postulate that:

H6a: Perceived behavioral control mediates the relationship between out-of-class experiences and entrepreneurial intention.

H6b: Perceived behavioral control mediates the relationship between out-of-class experiences and intention to innovate.

H6c: Perceived behavioral control mediates the relationship between engaged faculty and intention to innovate.

H6d: Perceived behavioral control mediates the relationship between engaged faculty and entrepreneurial intention.

H7a: Attitude towards entrepreneurship mediates the relationship between out-of-class experiences and entrepreneurial intention.

H7b: Attitude towards entrepreneurship mediates the relationship between out-of-class experiences and intention to innovate.

H7c: Attitude towards entrepreneurship mediates the relationship between engaged faculty and intention to innovate.

H7d: Attitude towards entrepreneurship mediates the relationship between engaged faculty and entrepreneurial intention.

3. Method

The mandatory implementation of entrepreneurship across the Nigerian higher education sector exposes students to a 'natural experiment.' We employ a quantitative research approach with a pretest-posttest research design to investigate changes in intention to innovate and entrepreneurial intention across private and public universities. To collect data, we use a questionnaire and employ Structural Equation Modelling for path analysis, testing hypotheses related to the relationships among variables. Three justifications underpin our chosen approach.

First, it aligns with epistemological assumptions regarding the nature of intention. Second, the research questions align with the nature of quantitative research (Creswell, 2013). Research questions one to three investigate the relationship between variables education, pedagogy, intention, and their antecedents. Third, previous studies examining intention have predominantly used quantitative research methodologies, as evidenced by hypothesis testing (see, for instance, Hägg, 2021; Ripollés and Blesa, 2023; Taghizadeh *et al.,* 2022). Furthermore, our pretest-posttest design aligns with our hypotheses regarding changes in intention to innovate and entrepreneurial intention, as well as their antecedents.

3.1 Sample description and data collection

Our sample consists of a randomly selected group of second-year students enrolled in a compulsory entrepreneurship course at three universities in Nigeria: The University of Ibadan (a public university), Pan Atlantic University, and Covenant University (both private universities). Students who were not enrolled in a compulsory entrepreneurship education course and were not in their second year were excluded from our sample.

The University of Ibadan has a student population exceeding 26,783, a student-to-staff ratio of 17:1, a female-to-male ratio of 47:53, and a 1% international student composition (THE, 2018b). The average class size for the entrepreneurship course is 650. Covenant University has a student population of 9,411, 0% international students, a student-to-staff ratio of 18:1, and a female-to-male ratio of 37:63 (THE, 2018a). The average class size for the entrepreneurship course is 1800. Pan-Atlantic University has a student population of 757 and a student-to-staff ratio of 11:1 (PAU, 2017). The class size for the entrepreneurship course is 66. Although the course, spanning one semester, does not contribute to students' GPA, successful completion is a requirement for graduation.

The selection of these universities was facilitated by the authors' contacts, enabling the negotiation of access (Saunders *et al.,* 2009). Each university has a business school and a dedicated entrepreneurship development center coordinating the course. Despite being public and private institutions, all three universities face common challenges, such as class sizes and limited resources, enhancing the generalizability of our findings beyond the selected universities. In public universities, the course is predominantly taught by academics from various disciplines, while in private universities, external and practicing entrepreneurs are invited to deliver some lectures. Assessment methods differ, with the public university employing a multiple-choice exam and private universities using an essay-type exam. Private universities also involve students in practical entrepreneurial activities, including start-up exercises and skills acquisition.

To capture changes in the intention to innovate across public and private universities, we grouped the sample by university type and conducted two measurement waves (T1 & T2). Data for T1 measurements were collected between October 2016 and March 2017, while T2 data were collected between March 2017 and July 2017. A pilot study was conducted before T1 data collection with five academics and ninety non-participating students to ensure questionnaire clarity and face validity of constructs (Souitaris *et al.,* 2007). Surveyed students were informed that participation was voluntary and personal information identifying individuals would not be collected. For T1, questionnaires were distributed and collected on the same day during the second week of the course, resulting in a total sample of 379 students (235 from UI, 38 from PAU, and 106 from CU). For T2, the questionnaires were administered one month after the course's conclusion, and we collected a total of 396 responses (219 from UI, 73 from PAU, and 104 from CU). To ensure the consistency of the sample across both time points, we used email, age, and gender as identifiers to match the responses from T1 and T2. After data screening, which involved removing 24 cases with missing or unengaged responses at T2, we identified and matched 361 students who completed the questionnaire at both T1 and T2 (219 from UI, 38 from PAU, and 104 from CU). This approach ensured that we tracked the same individuals across both waves of data collection, enabling us to analyze changes in their attitudes and intentions over time. At both measurement times, the questionnaire measured intentions and their antecedents (entrepreneurial intention, intention to innovate, attitudes, perceived behavioral control) and experiential pedagogy (a function of out-of-class experiences and engaging faculty).

3.2. Measures/ Variable operationalization

We conducted reliability and validity tests on all our scales, and the data affirmed the reliability of each scale with a minimum Cronbach's alpha of 0.7 as shown in Table 1. Each scale comprised a minimum of 4 items, and all items were loaded onto a single factor in an exploratory factor analysis.

Insert Table 1 here

The two dependent variables in this study are 'intention to innovate' and 'entrepreneurial intention.' Intention to innovate was gauged by the degree to which individuals seriously contemplated identifying and pursuing new business-related opportunities, such as a novel product or service not currently available or a more efficient method of producing an existing product or service. We employed four items from Mayhew *et al*. (2012), utilizing a five-point 'Likert Scale' ranging from 'extremely ineffective' to 'extremely effective.' An example item was 'please indicate how effective you are in... identifying new opportunities (such as a new product or service, a more effective way of accomplishing tasks, or a new way to solve a common social problem).' The reliability of the scale was confirmed by our data (Cronbach's α = 0.74 at T1 and 0.84 at T2), and all items were loaded onto a single factor in the exploratory factor analysis (EFA).

We employed six items from Liñán and Chen (2009) to measure entrepreneurial intention. An example item was 'I am ready to do anything to be an entrepreneur.' Responses were recorded on a 7-point Likert scale ranging from 'absolutely disagree' to 'absolutely agree.' Our data verified the reliability of the scale (Cronbach's α = 0.90 at T1 and 0.94 at T2).

Attitude toward entrepreneurship was evaluated through five items from Liñán and Chen (2009). An illustrative question was, 'Being an entrepreneur implies more advantages than disadvantages to me.' Responses were recorded on a 7-point scale. Our data substantiated the reliability of the scale (Cronbach's α = 0.89 at T1 and 0.92 at T2). Perceived behavioral control was appraised by assessing the extent to which individuals consider a business opportunity as feasible and feel capable of influencing the outcome (Rauch and Hulsink, 2015). We utilized four 7-point items from Liñán and Chen (2009). For instance, one item was, 'I can control the creation process of a new firm.' Responses ranged from 1 to 7. Our data affirmed the reliability of the scale (Cronbach's α = 0.84 at T1 and 0.88 at T2).

Two dimensions fell under the umbrella of experiential pedagogy: engaging faculty and out-of-class experiences. These dimensions were adapted from Mayhew et al. (2012), who characterized engaging faculty as a 'Challenging Learning Environment' and out-of-class experiences as 'Connecting Experiences.' We modified their names to better encapsulate their essence. Engaging faculty was assessed using five items, and responses were provided on a 5-point scale ranging from 'strongly disagree' to 'strongly agree.' An example question is, 'Faculty challenge me to think outside of the box to create solutions to problems presented in class.' (Cronbach's α = 0.84 at T1 and 0.88 at T2). Out-of-class experiences were evaluated using four items from Mayhew et al. (2012), with responses based on a 5-point scale ranging from 1 (strongly disagree) to 5 (strongly agree). A sample item was, 'My out-of-class experiences had a positive influence on my intellectual growth and ideas.' Our data confirmed the reliability of the scale (Cronbach's α = 0.84 at T1 and 0.88 at T2).

Our measurement model incorporated various control variables to isolate the impact of our independent variables. First, we controlled for gender, as prior studies have suggested that men are more inclined to develop the intention to start a business venture than women in many developing economies (Ogundana *et al.,* 2023a; Simba *et al.,* 2022). Gender effects were captured with a dummy variable indicating being male (1 = male, 0 = female). Second, age was controlled for, as it has been linked to both intentions (Morris and Venkatesh, 2000) and entrepreneurial behavior. Older individuals are less likely to engage in entrepreneurship due to increased opportunity costs associated with it (Levesque and Minniti, 2006; Ogundana *et al.,* 2023b). Third, having entrepreneur kin can function as role models, a source of entrepreneurial know-how, and a stimulator of entrepreneurship behavior (Chlosta *et al.,* 2012). As noted by Rauch and Hulsink (2015), there are several reasons why having entrepreneur kin might heighten the likelihood that an individual turns to entrepreneurship. Entrepreneurial family members may provide informal induction in business methods, transfer business networks, offer consultancy, and contribute to reputation (Ogundana *et al.,* 2023b). Furthermore, from the child's perspective, the potential of inheriting a family business might be a motivating factor in pursuing entrepreneurship, as seen in agriculture, where parents pass on their farms to their children. Therefore, we included two distinct dummy variables for having an entrepreneur parent (1 = entrepreneur, 0 = otherwise).

Other potential control variables, such as educational background, prior work experience, and socioeconomic status, were excluded from our analysis. First, while education level can influence entrepreneurial intentions, the sample consisted predominantly of students enrolled in entrepreneurship education programs, which provided a relatively homogenous educational context. Including this variable will not significantly enhance the explanatory power of our model. Second, similar to education, prior work experience can impact entrepreneurial intentions. However, most of our sample consisted of students with limited work experience, making this variable less relevant to our specific context. Third, data on socioeconomic status were not comprehensively available, and proxies such as parental income or occupation were deemed unreliable based on participant reporting. Recent empirical studies such as Phong *et al.* (2020) and Rauch and Hulsink (2015) also exclude these variables. Thus, we decided not to include this variable to maintain data integrity. Moreover,

3.3. Common Method Variance

We investigated for Common Method Variance (CMV) using Harman's single-factor test, as suggested by Podsakoff and Organ (1986). A CMV test is necessary because the data for the independent and dependent variables in the model were obtained from a single source. Although this test has been criticized as being statistically too liberal, it is adequate for our analysis mainly because the longitudinal design used in this study is one of the procedural remedies for common method bias. The logic of Harman's approach is that if a substantial amount of common method variance is present, a factor analysis should either yield a single factor or one general factor that will account for over 50% of the variance. For this study, the factor analysis indicated six factors with eigenvalues greater than 1. The first factor accounted for 33.77% of the variance, and all six factors accounted for 62.53% of the total variance explained. Because a single factor did not emerge, it can be concluded that CMV is not a significant problem in our data or hypothesis tests (Podsakoff and Organ 1986). Separately, a selection bias test was unnecessary since the course being examined is compulsory for all its participants. Also, since there were more willing participants at T2, a non-response bias was unnecessary.

3.4. Confirmatory Factor Analysis

Confirmatory Factor Analysis (CFA) was conducted to (a) determine the measurement model, (b) evaluate the reliability and validity (convergent and discriminant) of the constructs, (c) test the measurement invariance across groups from public and private universities, and (d) investigate methods effect. Composite Reliability (CR) was used as a measure of the internal consistency of the constructs, where values greater than .70 indicate adequate reliability (Morrison 2011). Convergent validity was calculated by assessing the Average Variance Extracted (AVE) for each construct. AVE ≥ 0.5 and lower than CR indicate convergent validity. We established discriminant validity by verifying that the Maximum Shared Variance (MSV) is less than the AVE for each construct and that the square root of AVE is greater than inter-construct correlations. As Table 2 shows, there is evidence of convergent validity, discriminant validity, and reliability for the measurement model.

Insert Table 2 here

4. Results

We conducted a t-test to determine if there were significant differences between the group of students from private and public universities at T1 and T2 (see Table 3 and Table 4). At T1, there was a significant difference in the mean scores for entrepreneurial intention ($p<.05$), attitude ($p<.01$), perceived behavioral control ($p<.001$), and intention to innovate ($p<.05$) between students from private and public universities. Notably, students from public universities exhibited higher values at the commencement of the entrepreneurship course. However, at T2, none of the t-tests yielded significance, indicating that the groups were comparable at the conclusion of the course. Also, as shown in Table 4, public university students experienced a drop in intention and its antecedents, while private university students experienced an increase in intention and its antecedents.

To further explore where significant differences were between the groups, we conducted a paired sample t-test with a focus on gender. As shown in Table 5, we found that: a) in public universities, men experienced a slight decrease in attitude PBC and intention, albeit the drop is nonsignificant the at the $p<.05$ confidence level, while women experienced no significant changes over time; b) in private universities, on the contrary, men experienced significant improvement in perceived control ($p<.05$), with other constructs remaining stable, while women experienced significant improvements in entrepreneurial intention ($p<.01$) and attitude towards entrepreneurship ($p<.05$), indicating positive growth in entrepreneurial mindset.

Table 6 provides the descriptive statistics and correlations for the study variables.

Insert Tables 3, 4 and 5 here

4.1. Test of Hypotheses

One of the benefits of Structural equation modeling (SEM) is that it allows us to simultaneously conduct factor analysis and linear regression models to test our hypothesis. Another benefit is the ability to test direct and indirect (mediating) effects in one model. In our analyses, we used difference scores to derive the changes in intention to innovate entrepreneurial intention, attitude, perceived behavioral control, out-of-class experiences, and engaging faculty influence. Our preference for difference scores aligns with Souitaris *et al*. (2007). We used the difference in attitude and behavioral control scores as mediators in the relationships between university type (private vs. public) and intention to innovate and entrepreneurial intention.

Insert Table 6 here

Our specified model allowed us to test the effects of the changes in attitude on entrepreneurial intent and intention to innovate (H1a–b), and changes in perceived behavioral control on intention to innovate and entrepreneurial intent (H2a-b). We also tested the direct effect of the perception of out-of-class experiences on attitude, perceived behavioral control, entrepreneurial intent, and intention to innovate (H3a–d); and the direct effect of perception of engaged faculty on attitude, perceived behavioral control, entrepreneurial intent and intention to innovate (H4a-d). Furthermore, we tested the direct effect of university type -private versus public- on attitude and perceived behavioral control (H5a–b) and intention to innovate and entrepreneurial intent (H5c–d). Finally, we tested the indirect effect of out-of-class experiences and engaged faculty on entrepreneurial intention and intention to innovate through perceived behavioral control (H6a-d) and through attitude towards entrepreneurship (H7a-d) as mediators. We controlled for gender, age, and entrepreneurial kin.

Insert Table 7 here

To evaluate the fit of our model, we used the root mean square error of approximation (RMSEA), the square root mean residual (SRMR), and the comparative fit index (CFI) (Hair *et al.,* 2010). A model can be considered to have a good fit if the CFI value exceeds .95, the RMSEA is below .06, and the SRMR is smaller than .08. A good configural invariance (Steenkamp and Baumgartner, 1998) was obtained as evidenced by adequate goodness of fit when private and public universities groups are tested together and freely (RMSEA = .04, SRMR =.05; and CFI = .95). Also, Chi-square (X^2) difference test between a fully constrained and unconstrained model indicates that the private and public university students' groups are invariant (p = .123).

The result of our model (see Figure 2 and Table 7) showed a good fit: $X^2(9) = 13.44$; RMSEA = .04; CFI = 1.00; SRMR = .03. We examined the path coefficients to test our hypothesis according to our theoretical model. We found significant effects that support H1b and H2a–b. Specifically, we found that change in attitude positively affects change in entrepreneurial intention (β = .41, p < .001); change in behavioral control had a positive effect on change in entrepreneurial intention (β = .36, p < .001); change in behavioral control also had a positive effect on change in intention to innovate (β = .54. p < .001). We did not find a significant effect for the relationship between change in attitude and change in intention to innovate (β = .10, ns). Hence, H1a was not supported. With regards to the effect of the change in out-of-class experience, we found significant and positive effects on change in attitude (β = .30, p < .001); change in behavioral control (β = .17, p < .001); change in intention to innovate (β = .19, p < .001). We did not find any significant effect for change in out-of-classroom on entrepreneurial intention (β = -.02, ns). Therefore H3a–c were supported but H3d was not. Change in perception of engaged-faculty significantly and positively affected the change in attitude (β = .13, p < .001) and change in behavioral control (β = .31, p < .05). Surprisingly, we did not find any direct effect of faculty-influence on change of entrepreneurial intention (β = .00, ns) and change in intention to innovate (β = -.03, ns). Thus, H4a-b were supported while H4c-d were not supported. We found evidence that students in private universities had a greater increase in attitude ($\beta = .15$, $p < .01$) as well as behavioral control ($\beta = .12$, $p < .05$) than their comparable counterparts in the public universities after undertaking compulsory entrepreneurship education. However, we did not find any evidence that students in private universities will develop higher entrepreneurial intention ($\beta = .00$, ns) and intention to innovate ($\beta = -.06$, ns) than those in public universities. Thus, the results support H5a–b but not H5c–d. Because all the paths in the structural model have a post-hoc statistical power of 1.00, we are confident that if there is a significant effect, there is a 100% chance that it would have been detected.

Insert Table 8 here

We further calculated the mediating effects of behavioral control and attitude towards entrepreneurship. We found that change in behavioral control mediates the effect of out-of-class experiences on entrepreneurial intention ($\beta = .13$, $p< .01$) and change in intention to innovate ($\beta = .08$, $p < .01$). Rather than a direct effect, the results show that behavioral control mediates the effect engaging faculty has on the intention to innovate ($\beta = .14$, $p <.01$) and entrepreneurial intention ($\beta = .23$, $p < .01$). Thus, the results support H6a-d. Furthermore, we found that attitude towards entrepreneurship mediates the effects out-of-class experiences ($\beta = .26$, $p < .01$) and engaged faculty ($\beta = .11$, $p < .05$) have on entrepreneurial intention. We did not find a mediating effect of attitude on intention to innovate. Thus, our results support H7a & d, but not H7b-c. See Table 8 for detailed results of the mediation effects.

Insert Figure 2 here

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5. Discussion

This study delves into the impact of compulsory entrepreneurship education on students' intention to innovate and entrepreneurial intent. The study introduced a model based on the theory of planned behavior to address three key research questions: (1) What is the impact of compulsory entrepreneurship education on students' entrepreneurial intent and intention to innovate? (2) What is the impact of attitude towards entrepreneurship, perceived behavioral control, and experiential pedagogy on students' entrepreneurial intent and intention to innovate? (3) Does the impact of compulsory entrepreneurship education differ between public and private universities? To address the questions, we postulated that experiential pedagogy, such as out-of-classroom experiences and engaging faculty would influence the outcomes of compulsory entrepreneurship education and that the effect will be greater in private universities than in public universities, and postulated that attitude and behavioral control will mediate such effects. The key findings suggest that out-of-class experiences play a pivotal role in shaping students' entrepreneurial intent and intention to innovate, regardless of whether they attend public or private universities, and that behavioral control mediates that effect.

Our findings present mixed evidence of the effectiveness of compulsory entrepreneurship education with significant variations across public and private universities and shift the debate from questioning whether a compulsory program 'works' to 'when does a compulsory program work?'. Specifically, our results show that while compulsory entrepreneurship education significantly enhances entrepreneurial intentions in private universities, consistent with Sánchez (2013), it appears less effective in public universities, contrary to Oosterbeek *et al.* (2010) von Graevenitz *et al.* (2010) and Ripollés and Blesa (2023). This discrepancy does not imply that a public university setting dampens entrepreneurial intentions while a private university strengthens them, as Canever et al. (2017) and Perim (2015) concludes. Rather, the variations may be attributed to differences in the extent to which experiential pedagogy is implemented. Private universities, which typically have smaller class sizes and stronger connections with local business communities, are better positioned to provide personalized attention, dynamic learning environments, and experiential pedagogy (Dakung *et al.,* 2017) than public universities. These factors likely foster significant shifts in attitude and perceived behavioral control.

Contrary to our initial hypotheses, we did not observe a higher intention to innovate among students from private universities compared to their public university counterparts. However, the two groups, private and public, have notable differences in attitude and behavioral control changes. In particular, students from private universities experience a more significant shift in their attitude and behavioral control than those in public universities following entrepreneurship education, perhaps because private universities tend to utilize experiential pedagogical methods more extensively than public universities. This suggests that while private universities may excel in fostering entrepreneurial intent through enhanced attitudes and perceived control, the translation of these shifts into innovative intentions may require additional or different educational strategies.

Our study highlights the critical role of experiential pedagogy, particularly out-of-class experiences and engaging faculty, in shaping entrepreneurial intention and intention to innovate. Our evidence shows that regardless of university type, out-of-class experiences are a significant positive factor in developing the intention to innovate, suggesting that hands-on, practical engagement beyond the classroom is essential for developing the skills and mindset necessary for innovation. Beneath intention to innovate, more may be at play. Experiences gained through hands-on practical engagement beyond the classroom, as Krueger (2007) suggests, fosters significant changes in cognitive structures that guide decision-making. The experiences also support the development of a nuanced understanding of the business environment and mindset necessary for recognition of patterns and opportunities. This finding aligns with previous research (Nabi *et al*., 2017), which emphasizes the importance of integrating experiential learning methods to develop the behavioral competencies required for entrepreneurial success. As noted earlier, private universities seem to utilize experiential pedagogical methods more extensively than public universities, which might also explain the observed differences in attitude and behavioral control (Dakung *et al.,* 2017). In short, incorporating additional experiential pedagogies could yield more significant impacts by developing behavioral competencies to solve real-life entrepreneurial problems.

Furthermore, we find that engaging faculty directly inspires changes in attitude and indirectly stimulates intention to innovate by enhancing students' perceived behavioral control, a feature of entrepreneurial mindset. This highlights the importance of faculty who can bridge the gap between theory and practice, providing students with real-world insights and mentorship that foster a deeper understanding of entrepreneurial processes. In this way, our study enriches the theory of planned behavior by establishing behavioral control as a mediator in the impact of compulsory entrepreneurship education on changes in entrepreneurial intention and intention to innovate. While these findings align with Phong *et al.*'s (2020) emphasis on the strong relationship between perceived behavioral control and entrepreneurial intentions, they differ from Rauch and Hulsink's (2015) findings regarding the mediator effects of perceived behavioral control.

These results have several theoretical and practical implications, which will be discussed next.

5.1 Theoretical and practical implications

This study extends entrepreneurship education theory by providing new explanation and accompanying empirical evidence for when compulsory entrepreneurship education works, namely, whether experiential pedagogy is used.

The mixed evidence regarding the impact of compulsory entrepreneurship education in our study, particularly the lack of significant positive effects in public universities, suggests that mandatory programs alone may not be sufficient to drive entrepreneurial outcomes. This finding calls for a re-evaluation of how such programs are implemented, particularly in resource-constrained environments. It may be necessary to tailor these programs to better fit the specific contexts of different universities, possibly by increasing the focus on experiential learning and providing more opportunities for practical engagement. In other words, compulsory entrepreneurship education is more likely to yield desired entrepreneurial outcomes when experiential pedagogical methods are utilized. One implication of the mixed evidence we present that is consistent with some previous studies is the need to shift the debate on the effectiveness of compulsory entrepreneurship education whether it ‘works or not’ to when does it ‘work?’ We argue that our evidence suggests that compulsory entrepreneurship education works when there is a higher focus on experiential learning, in particular providing more opportunities for that hands-on, practical engagement beyond the classroom. Viewed this way, our study, therefore, provides new insights into the broader entrepreneurship education ecosystem in developing countries and fosters a more nuanced understanding of the factors influencing entrepreneurial intentions.

We also contribute to the ongoing discourse on entrepreneurship education by highlighting the significant role of context, particularly the differences between public and private universities, in assessing the effectiveness of compulsory entrepreneurship education and the effect of experiential pedagogy in fostering the intention to innovate. Existing literature consistently shows that forms of experiential learning approaches, such as active learning and engaged learning, promote higher entrepreneurial outcomes (Arranz *et al.*, 2017; Gielnik *et al.*, 2015). However, the antecedents of innovative behavior are unclear. By incorporating experiential pedagogy into the TPB framework, we provide a more comprehensive understanding of how educational interventions can influence not only entrepreneurial intentions but also the deeper cognitive changes necessary for innovation. Specifically, we demonstrate that out-of-class experiences, a core component of experiential pedagogy, enhance students’ perceived behavioral control, which is critical for developing their intentions to innovate. Unlike Arranz *et al.* (2017), our study shows that out-of-class experiences specifically enhance the intention to innovate, even though these experiences do not directly impact general entrepreneurial intention. These insights provide for more fine-grained theorizing about the role of pedagogy in shaping forms of entrepreneurial intent—innovative versus general—to better predict when and how entrepreneurship dictation may yield its intended benefits. For developing economies increasingly using entrepreneurship education programs as a policy measure to spur economic activity, our theoretical framework and results set a basis on which to sharpen education and economic policies.

Third, our research contributes to entrepreneurship education theorizing by identifying the mechanisms behind the intention to innovate and potentially entrepreneurial mindset. It reveals that perceived behavioral control is a crucial mechanism influencing intention to innovate, which predict innovative entrepreneurship. This insight helps clarify how educational strategies can nurture entrepreneurs who, as Baumol *et al.* (2009) argue, create economic disruptions through new products and methods. Our study's findings support the argument that experiential pedagogy, particularly through out-of-class experiences and engaging faculty, is instrumental in fostering students' intention to innovate. In particular, and consistent with Souitaris et al. (2007), the study reaffirms that engaging faculty, particularly practicing entrepreneurs, inspires students to change their attitude towards entrepreneurship and improve their behavioral control. Because they bring practical experience into the classroom, practicing entrepreneurs further enrich students' learning process by bridging the gap between theory and practice. Recognizing the emotional element of inspiration, we echo Arranz *et al.*'s (2017) assertion that entrepreneurship educators should embody an entrepreneurial spirit. Such educators draw from real-life experiences when teaching. Students perceive this teaching method as highly inspiring because it breaks the boundaries between the university and the outside world. Suppose one assumes that faculty plays a master–leader role in a student group. In that case, some cues can be drawn from the well-established master-apprentice pedagogy model (Sveiby 2001) to illustrate the significance of practicing entrepreneurs in the classroom. In the master-apprentice pedagogy model, the apprentice acquires tacit knowledge by observation and interaction. The knowledge acquired changes their perception of the ease or difficulty of a particular behavior over time. In other words, the master influences the behavioral control of the apprentice. To the same extent, faculty who are practicing entrepreneurs influence students' behavioral control and self-efficacy, thereby indirectly fostering intention to innovate and entrepreneurial mindset.

Together, engaging faculty and out-of-class experiences can do more than just influence intent—they foster an entrepreneurial mindset. Entrepreneurial mindset is more than just an intention to start a business (Krueger, 2007); it encompasses a set of cognitive and behavioral competencies such as self-efficacy and emotional changes like inspiration that prepare individuals to recognize opportunities, take calculated risks, and persist in the face of adversity (Nowiński *et al.,* 2017). Out-of-class experiences enhance the cultivation of an entrepreneurial mindset by exposing students to real-world entrepreneurial challenges, encouraging experimentation, and fostering a culture of innovation. They also have the ability to affect the student emotionally and spiritually to reinforce that cultivation. Through these experiences, students develop self-efficacy, tolerance for ambiguity, an openness to learning from failure, and the ability to pivot when necessary—all critical components of an entrepreneurial mindset that go beyond the formation of intent (Nabi *et al.*, 2017). In this way, the research underscores the decisive role of experiential pedagogy in cultivating future innovative entrepreneurs. These findings are particularly valuable for shaping strategies for curriculum and pedagogy adjustments necessary for cultivating innovative entrepreneurship, as Baumol *et al.* (2009) emphasized.

Fourth, this study enriches the theory of planned behavior by extending its applicability in explaining the intention to innovate within contexts characterized by unique socioeconomic challenges. Consistent with prior research (Rauch and Hulsink, 2015; Fayolle and Gailly, 2015), it shows that changes in attitude and behavioral control mediate the effects of compulsory entrepreneurship education on entrepreneurial intention. Specifically, it identifies behavioral control as a mediator between entrepreneurship education and intention to innovate, providing a deeper understanding of how educational interventions can shape entrepreneurial behaviors. However, we argue that by adding experiential pedagogy, we strengthen the ability of the theory of planned behavior (Ajzen, 1985) to predict intention in the context of developing nations, considering factors such as socioeconomic disparities and resource constraints.

The theoretical implications extend beyond education, offering insights into the broader entrepreneurship ecosystem in developing countries and fostering a more nuanced understanding of the factors influencing innovative entrepreneurial aspirations and actions. Insights from this study can also inform the adaptation of educational policies and programs to align with the socioeconomic realities of the developing world. For instance, drawing from the observed impact of out-of-class activities, educators should prioritize initiatives that extend learning beyond traditional classrooms to foster intention to innovate. Entrepreneurship courses, for instance, can incorporate diverse experiential elements such as field trips, student start-up projects, business plan competitions, computer simulations, cooperative group work, and collaborative learning beyond the confines of classrooms. Additionally, cost-effective approaches for large student populations, including online chat forums, the utilization of video and films, and the establishment of student entrepreneurship clubs, may be employed (Solomon, 2007). These strategies enable students to bridge the gap between theoretical knowledge and practical application, fostering the stimulation of innovative ideas and the robust development of intentions to innovate (Arranz *et al.,* 2017).

It is crucial to acknowledge that mandatory entrepreneurship courses may clash with the requirements of core courses, potentially deterring active student participation. To address this challenge, we propose incentivizing student engagement in these courses by introducing practical application and knowledge implementation opportunities through various entrepreneurship competitions. Given the resource-intensive nature of implementing experiential pedagogy, policymakers aiming to cultivate innovative entrepreneurship should consider investing in the promotion of out-of-class experiences and faculty training to enhance student engagement within the classroom setting.

6. Conclusions, Research Limitations, and Recommendations

Our study in the Nigerian context suggests that out-of-class experiences have a universal impact transcending course and university types to enhance the intentions to innovate among all students. Policymakers in similar regions aiming to boost intention to innovate should prioritize promoting out-of-class activities. Furthermore, our findings indicate that engaging faculty contributes to increased changes in attitudes toward entrepreneurship and perceived behavioral control. Thus, entrepreneurship educators should actively involve students in the learning process to maximize impact. Lastly, our study found evidence that compulsory entrepreneurship courses enhance the intentions of students in private universities but not those in public universities, adding to the ongoing debate on the relative efficacy of pedagogy versus resources in impactful entrepreneurship education.

While our results are insightful within the specific Nigerian context, it is essential to consider that the study participants belong to a single context. Intention models have shown regional and cross-country variations (Bae *et al.,* 2014; Nowiński *et al.,* 2017). Although the policy of compulsory courses in entrepreneurship creates a natural experiment, pretest-posttest design with a randomized control group is still considered the *sin qua non* of evaluation studies (Martin, McNally, and Kay 2013). Future studies should consider including a control group and identifying a comparable university in a comparable country where there is no compulsory course in entrepreneurship education. Also, while our use of a quantitative pretest-posttest research design enhances generalizability, future studies should replicate our research in other developing country contexts to validate or challenge our findings. Relatedly, while we examine for differences between public and private universities to provide a rounded analysis of the context of entrepreneurship education in Nigeria, we accept that there are differences in class sizes that may alter the nature and content of some pedagogical approaches. A combination of quantitative (examining class size as a variable) and qualitative (exploring the content of pedagogical approaches used) studies may help shed further light on the relationships among experiential pedagogy, students' intention to innovate, and entrepreneurial intent.

Additionally, our focus on the intention to innovate, which may translate to innovative entrepreneurship, warrants further exploration. Future research should dig deeper by exploring alternative theoretical models that account for the cognitive and emotional processes underlying entrepreneurial intent, such as the entrepreneurial mindset theory. Future longitudinal studies over an extended period can investigate whether intention to innovate leads to innovative entrepreneurship.

Furthermore, given the evidence of experiential pedagogy's positive effects from a broader perspective, future research can delve into deeper investigation of the links between graduate entrepreneurial outcomes and different specific pedagogical interventions.

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