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Entrepreneurship Education and Entrepreneurial Intentions: Evidence from Nigerian Business and Engineering Students

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Abstract

Unemployment, insecurity, and poverty are a few of the major obstacles preventing higher living conditions in Nigeria. Successive Nigerian governments have failed in their attempts to solve these issues. For these strategies to work, Nigerian higher institutions (NHIs) must sustain indigenous entrepreneurship. Entrepreneurship education (EE) in these institutions has been the cornerstone of the recent National Education Policy. EE was primarily designed for business students. Recently, NHIs have witnessed the institutional-wide application of EE. This study empirically assessed the efficacy of EE on entrepreneurial intentions (EI) of business and engineering undergraduates. A survey of 988 randomly selected Lagos State University of Science and Technology business and engineering students was conducted using a self-administered questionnaire. The data generated were analyzed using descriptive, correlational, and regression statistics. The study revealed the high level of exposure of Nigerian undergraduates to EE and a significant positive relationship of 0.355 between EE and EI. In addition, the regression model revealed that EE accounted for a significant 12.5 percent of the total EI. Hence, the study recommends that NHIs continue to vigorously sustain the institutional-wide adoption of EE and modify the existing curricula to make the program more practical and entrepreneurship-oriented to equip Nigerian undergraduates with the requisite entrepreneurial skills and make them compete globally.

***Keywords*:** *Entrepreneurship education, entrepreneurial intentions, higher institutions, students*

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Introduction

Nigeria's key issues include poverty, insecurity, and unemployment, all of which have maintained an upward trend over time (Lawal, 2022). With one of the highest unemployment rates in Sub-Saharan Africa, Nigeria is still the only member of the Organization of Petroleum Exporting Countries (OPEC) that is ranked among the world's poorest nations (Ayandike et al., 2012). Nigeria's unemployment crises are more serious than those of her counterparts. The statistics by the National Bureau of Statistics have put the unemployment rate in Nigeria at 33.3%, whereas the youth unemployment rate is 42.5%. (NBS, 2020). Governments at various levels in the country have failed dismally to guarantee security. This manifests in political and electoral violence, ethnic and communal crises, religious conflict, sectarian violence, kidnapping, banditry, armed robbery, bomb blasts, and so on (Salami, 2012).

To cope with the contemporary challenges, entrepreneurship education (EE) has grown rapidly and globally (Nabi et al., 2017). Today's hypercompetitive society requires employees and organizations with an "enterprise culture", innovation, creativity, and a spirit of competitiveness to operate successfully in a globalized environment (Paltasingh, 2012; Essian, 2012). As a result, EE is attracting significant attention from policymakers and educational institutions. HEI undergraduates are promising candidates for EE (Holzman et al., 2018).

Knowledge acquisition, skill development, and experiences are the three most common indicators of human capital associated with success in entrepreneurship development. Entrepreneurship education will equip people with the requisite skills, knowledge, and attitude to successfully start, organize, and manage a business venture (Paltasingh, 2012). The increasing importance of entrepreneurship education is based on the realization that successful entrepreneurship depends on the disposition, skills, and competencies of the founder of an enterprise (Maresch, 2016). More recently, EE has been one of the building blocks for advancing innovation and entrepreneurship (GEM, 2015). This development has transformed EE into a prominent field in diverse disciplines, including economics, management, education, and technical studies (Davidson, 2008).

The relevance of entrepreneurship education in higher education institutions has been a subject of debate (Wang and Kleppe 2001). Despite this controversy, many institutions have developed courses on entrepreneurship for business and non-business students. Engineering entrepreneurship is crucial because it represents the foundation for future jobs in small and medium enterprises and

venture creation (Mendelson, 2001). Engineering graduates must collaborate and work in a team, utilize creativity, and have adequate self-confidence to succeed in a contemporary environment.

Science and engineering students with entrepreneurial cultures are more likely to create new, high-quality firms and ultimately contribute to job growth. (Heitor, 2014; Astebro et al., 2014). The implication is that strengthening human capital for technology-based entrepreneurship may be vital, especially for developing nations (Astebro et al., 2014). Furthermore, technology is a crucial strategic resource for developing a competitive advantage through innovation (Kelly and Rice, 2002). The field of entrepreneurship is replete with research on EE. However, most of the research focused on business students. Literature on EE in engineering is relatively scarce (Maresch, 2016). Moreover, despite the usefulness of EE and its widespread adoption in Nigerian HEIs, very little has been reported about its effect on entrepreneurial intentions (EI). Reports on the effectiveness of EE are opinions based on little empirical evidence. In addition, promoting and implementing EE programs in HEIs involves a substantial investment of time and resources, given the significance of business and engineering in Nigeria's economic development. It is critically important to assess the outcome of EE in terms of IE.

From the foregoing, the following questions are advanced: What are the levels of exposure of Nigerian undergraduate students to entrepreneurship education? To what extent do the exposures to entrepreneurship education of business and engineering undergraduate students differ? What is the relationship between entrepreneurship education and the entrepreneurial intentions of Nigerian undergraduate students? To what extent does entrepreneurship education affect the entrepreneurial intentions of Nigerian undergraduate students? Therefore, this paper aims to assess the effect of entrepreneurship education programs on entrepreneurial intentions and the future professional practice of business and engineering students. Specifically, the study will suggest how entrepreneurship in business and engineering is organized to meet the competence requirements in a competitive environment. Finally, the rest of this paper contains six sections. First, a conceptual framework and literature review clarifying the significant concepts and reflecting on previous research underpin the study's research hypothesis and model. The second is a methodology section to explain research methods, data collection instruments, and sampling plans. After results are presented and discussed, the next step is the conclusion and recommendations. The final section discusses the limitations and provides suggestions for future studies.

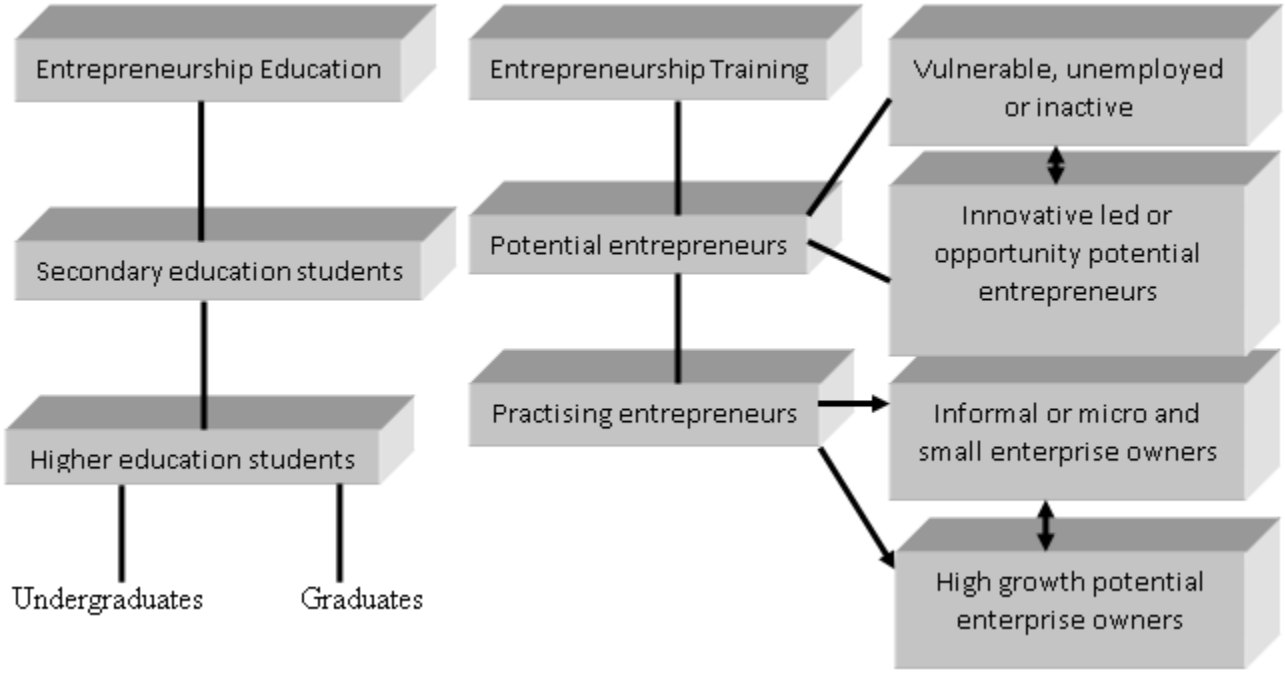
Conceptual Framework and Literature Review

EE refers to education for entrepreneurial attitudes and skills (Bae et al., 2014). It deals with establishing competencies in identifying new business opportunities and addressing ambiguous decision-making (Martins et al., 2015). In conceptualizing EE, it is essential to distinguish between education about entrepreneurship and education for entrepreneurship. The former focuses primarily on raising awareness about entrepreneurship, while the latter deals with preparation for setting up a business for potential entrepreneurs and usually focuses on practice and action-oriented learning philosophy (Rauch and Hulsink, 2015).

Education and training programs stimulate entrepreneurs, who may be independent small business owners or opportunity-seeking managers within companies. Entrepreneurship education is the extent to which entrepreneurship training can lead to creating or managing small and medium enterprises (SMEs) and is incorporated into the education and training system at all levels (Amoros and Bosma, 2014). Entrepreneurship education is different from business education. While the former prepares students for starting their own businesses, the latter equips students with the knowledge to work for others. Entrepreneurship education and training (EET) encompass various interventions, including formal academic and standalone training programs (Valerio et al., 2014). The programs are divided into two related but distinct categories: education and training programs, both of which aim to stimulate entrepreneurship. However, they have a variety of programs, objectives, outcomes, and target audiences, as depicted in Figure I.

Figure 1

Classifications of Entrepreneurship Education and Training Programs



Source: Valerio, A., Parton, B and Robb, A (2014). Entrepreneurship education and training programs around the world. Dimensions for success. The World Bank Washington DC.

As shown in Figure I, EE programs tend to focus on building knowledge and skills about or for entrepreneurship. ET programs, by contrast, tend to focus on building knowledge and skills, explicitly in preparation for starting and operating an enterprise. EE targets secondary and postsecondary students. ET, by contrast, targets a range of potential and practicing entrepreneurs who may not be part of a formal degree-granting program. Potential entrepreneurs may include vulnerable, unemployed, inactive individuals, necessity-driven, and opportunistic potential entrepreneurs.

Approaches to EE can be classified as traditional or innovative (Maritz et al., 2014). Traditional methods are teacher-centered and comprise regular lectures, seminars, readings, business plans, case studies, and project work. Innovative methods are student-centered and more action-based. They include business simulation games, guest speakers, business visits, counseling, mentoring, and practical training (Tasnim, 2012). Lackeus (2013) expanded these classifications into three main approaches: teaching about entrepreneurship—a content-laden and theoretical approach—teaching for entrepreneurship—an occupationally oriented approach—a process-based and often experimental approach.

Each teaching method complements the overall purpose of EE, and its application will require clearly defined objectives, a learning approach, and an entrepreneurial stage. Entrepreneurship educators will therefore need to have a wide repertoire of teaching strategies, the ability to combine approaches, and the knowledge of how and when to use specific methods and strategies (Ahmad, 2018). Since the first entrepreneurship course at Harvard Business School in 1947, EE programs in higher educational institutions (HEIs) have grown rapidly across the globe (Nabi et al., 2017). EE is offered in HEIs under different titles such as entrepreneurship, small business management, enterprise growth, new venture creation, new venture management, and so on (Ahmad et al., 2018). The field has continued to experience unprecedented levels of scholarly and practitioner attention (Liguor et al., 2018) due to its efficacy in fostering entrepreneurial intentions (EI). EE improves EI by inspiring students' attraction toward entrepreneurship.

By immersing them actively in learning activities, drafting business ideas, and managing a simulated or very small business, EE helps students build their entrepreneurship skills by giving them mastery experience, role models, social persuasion, and support. Moreover, EE effects positively the potential entrepreneur's perception and conviction, knowledge and abilities in entrepreneurship, and intention to become an entrepreneur (Martins et al., 2014).

Katz (1992) defined entrepreneurial intentions (EI) as "the vocational decisions to enter an occupation as salaried individuals or as self-employed. In this sense, the intention is "a conscious state of mind that directs attention (and therefore experience and actions) toward a specific objective (goal) or pathway to achieve it" (Bird, 1989).

Intention is the cognitive representation of actions implemented by individuals. Entrepreneurial intention is the self-acknowledged conviction of a person who intends to establish a new business venture and consciously plans to manage it at some point in the future. EI has been described as the best predictor of planned behavior, mainly when the behavior is rare, hard to observe, and involves an unpredictable time lag. According to Maresel et al. (2016), EE is a strong antecedent of EI based on human capital theory and entrepreneurial efficacy.

Entrepreneurship Education in Developed and Developing Countries

Entrepreneurship education and training (EET) are vital in solving poverty and unemployment problems. In addition, it is helpful for the development of new businesses and sustaining existing

business ventures. Globally, EET has received considerable attention to the extent that educational institutions and entrepreneurship research centers are developing programs for stimulating and sustaining entrepreneurship spirit and culture (Adejinola and Olufunmilayo, 2009).

The contemporary labor markets have stimulated self-employment, starting a business, or working for an SME, a development that has encouraged the development of entrepreneurship education (Ndofirepi, 2020). America has the tradition of having the most entrepreneurial, dynamic, and flexible economy, which has enabled its economy to adapt to economic circumstances and recover from the recession robustly (Decker et al., 2014). The nation has witnessed tremendous entrepreneurship education and training growth, ranking third behind France and Australia. In fact, about 1600 US higher education institutions promoted entrepreneurship development programs, and 2200 offered entrepreneurship-related courses in 2006 (Pittaway& Edwards, 2012). Japan ranks poorly among the G20 in entrepreneurship education training, as most business education is designed toward long-term employment. However, recent reports have revealed that top Japanese universities are developing curricula geared toward business startups (Fadder, 2013).

The unprecedented development of hi-tech technology in Europe has resulted in increasing numbers of techno-entrepreneurs playing an essential role in the growth and commercialization of technologies worldwide (Kropp and Zolin, 2005). The UK and Switzerland have established themselves as world leaders in several fields known for their technological sophistication. However, entrepreneurship support in these countries is mixed. In Switzerland, an enabling environment for new ventures, a favorable tax system, a strong and stable economy, and an increase in awards for small and medium enterprises (SMEs) and enterprise startups are positive developments in entrepreneurship. On the negative side, weakened innovation and individual risk aversion affect entrepreneurship development (Tejeddini and Muller, 2008). The UK government's Incapacity Benefit Back to Work program is a unique entrepreneurship program, although potential self-employed are discouraged by perceived risks of losing income and status (Kautopen et al., 2008).

The challenges of unemployment, poverty, and insecurity faced by some sub-Saharan African countries have increased the popularity of entrepreneurship education in these developing countries. For example, Malebana (2015) reported that at least 23 South African public universities offer entrepreneurship-related courses at the undergraduate and postgraduate levels.

Entrepreneurship education and training programs are either mandatory or optional in Zimbabwe's state universities and vocational training institutions (Ndofirepi, 2016).

Entrepreneurship: A Science or an Art

A long-standing question is whether the entrepreneurial mindset and skills can be cultivated, taught, or transmitted. A body of literature indicates the possibility of cultivating, teaching, or transmitting entrepreneurship (Isaac et al., 2007). However, Haase and Lautenschlager (2011) underscore a series of arguments to the contrary, suggesting that entrepreneurship is not learned. It is beyond the capabilities of business schools or universities to teach individuals to be more entrepreneurial (Mukta, 2018). In resolving the controversy, Akola and Heinonen (2011) maintain that the art of entrepreneurship (e.g., creativity and innovative thinking) is not reachable except through practical experience, while the science aspects such as business and management skills can be taught. The implication is that entrepreneurship can be promoted through entrepreneurship education and training.

Entrepreneurship in Nigeria: Historical Perspective

Entrepreneurship in Nigeria has come a long way. Nigerians' exposure to entrepreneurship began before creating a geographical entity known as Nigeria. Some of the developments that stimulate entrepreneurship development in Nigeria are summarized in Table 1 below.

Table 1

Entrepreneurship Development in Nigeria

Period	Major Developments	Implications for Entrepreneurship Development
Pre-colonial era	The era of domestic farming, trading, and artisanship. Nigeria enjoyed social and economic prosperity and self-sufficiency in the food supply.	Development of indigenous entrepreneurship. North (tanning and dying), East (Business and inventory management), West (Fishing, farming, wood carving, and bronze casting)
Colonial-era 1884 – 1960	Nigeria became fertile land for raw materials and consumers of finished goods from European countries. The arrival of foreign companies like UAC, GBO, PZ, and CFAO. Economy structured for the betterment of colonial masters Ad-hoc programs toward improving agricultural productivity	Nigerians had little access to higher education, thus, limiting the business and entrepreneurship culture of Nigerians.
Post-independence era. The 1960s – 1980s	The era of fixed development planned aimed at providing adequate infrastructure for economic growth and development Indigenization of the Nigerian economy through Indigenization Decrees of 1972 and 1977 Establishment of secondary industries to provide employment opportunities Crude oil is emerging as a significant source of government revenue Establishment of Industrial Development Centers (IDCs)	Over-dependence on oil Mismanagement of the oil boom Decreasing employment level Provision of opportunities for Nigerians to participate and shape the Nigerian economy
Structural Adjustment Program (SAP) era, – the 1990s	Fundamental structural changes aimed at diversifying the economy through SFEM, Privatization, Commercialization etc.	Massive retrenchment in public and private sectors Increase in the level of unemployment and poverty
Post-SAP era From the 1990s till the date	Attempts to reduce the level of unemployment and poverty through the establishment of Entrepreneurship Support Agencies such as the National Directorate of Employment (NDE), Small and Medium Enterprise Development Agency (SMEDAN), Bank of Industry (BOI), Youth Enterprise with Innovation in Nigeria (YOUWIN), Subsidy Re-investment Program (SURE-P) to mention just a few Making entrepreneurship education mandatory in higher institutions and the National Youth Service Corps Program	Increasing entrepreneurship potentials and facilitating the growth and development of small and medium enterprises subsector

Source: Developed by the Author

Impact of Entrepreneurship Education (EE) on Entrepreneurial Intentions (EI)

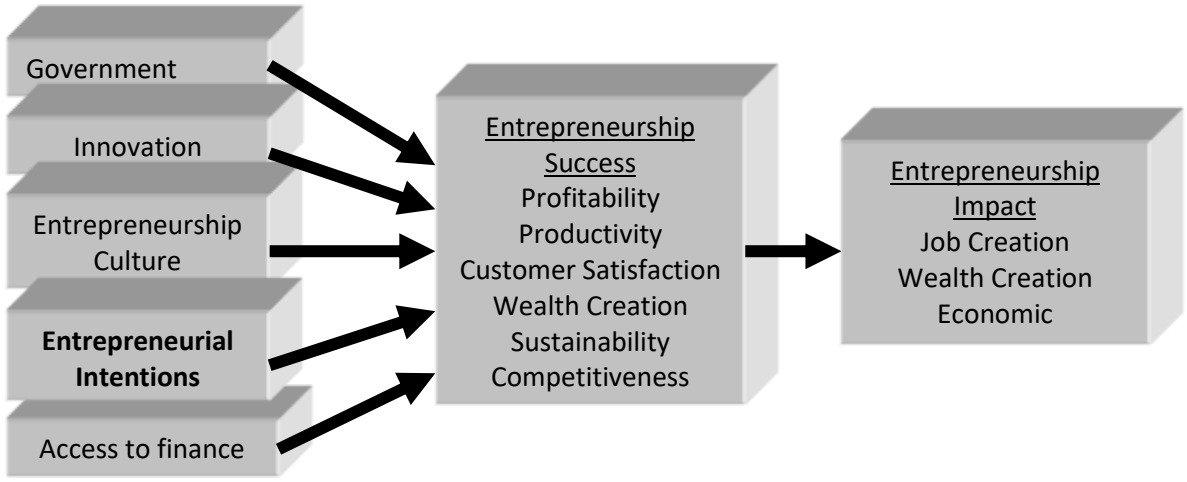
Studies on entrepreneurship have identified many internal and external factors responsible for ES, including effective decision-making (Say 1971), fulfillment of the need for achievement (Mc Clennard 1961), creativity (Schumpeter 1934), institutional support (Tajeddini and Muller, 2009), education and training (Fajolle et al., 2006), and the willingness to become self-employed (Muhammad, 2015), to mention just a few. However, EE and EI have remained dominant in the entrepreneurship literature.

Generally, EE is a factor that significantly influences entrepreneurial intention and cognitive career choice. (Vukovic et al., 2015). Fayolle and Gailly (2015) proved the relationship between EE and EI by demonstrating that students exposed to entrepreneurship courses have intrinsic values and entrepreneurial characteristics that will increase their interest in and love for entrepreneurship. Business students that are usually exposed to EE will exhibit a higher rate of EI and self-efficacy in comparison with students who hold a degree in other disciplines. EE contributes to various potential outcomes, like venture creation, entrepreneurship, skills, knowledge, and attitude enhancement, startup, and job creation, ultimately contributing to sustainable economic growth (Rauch and Holsink, 2015; Nub et al., 2017).

As presented in Model 1, entrepreneurs' success is influenced by several formal and informal supports like financial resources, technology, strategic partnerships, and personal and community networks (Makhbul, 2011). Entrepreneurial success is described in different ways. The most convenient method is to measure the concept through tangible elements such as revenue, wealth, profitability, sustainability, and turnover (Parren, 1999; Amit et al., 2000). Entrepreneurship is a remarkable force that hugely affects job creation, wealth creation, and economic and social progress (Paltasingh, 2012). Meanwhile, EE is an important determinant of EI. We, therefore, propose a model depicting EE programs such as business plans, guest lectures, lecture modules, industrial visits, and seminars as independent variables affecting the dependent variables of EE, as illustrated in Model II.

Figure 2

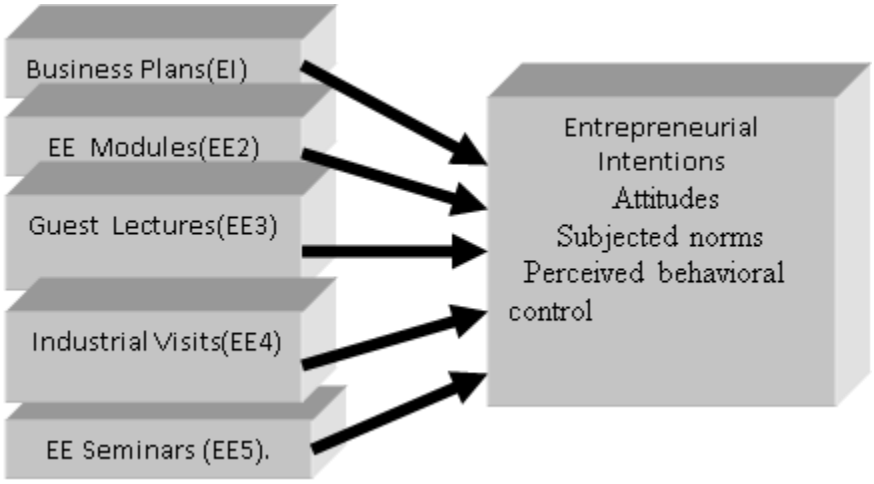
Model I: Determinants of Entrepreneurship Success



Source: Model explored by the Authors

Figure 3

Model II. Entrepreneurship Education and Entrepreneurial Intentions Interface



Source: Model explored by the Authors

Theoretical background and Hypotheses:

Three dominant theoretical models relating to the study are human capital (Fayolle, 2006), entrepreneurial events (Sharper and Sokol, 1982), and theory of planned behavior (TPB) (Ajzen, 2002). The human capital theory emphasizes training outcomes like knowledge, skills, and attitudes (Fayolle, 2006). Entrepreneurial events perceive the entrepreneurial event as a manifestation of the interaction between conceptual factors and the social value system. This model presumes that critical life events induce changes in EI and subsequent events. Thus, EI depends on an individual's perception of the venture's desirability and feasibility.

The theory of planned behavior (TPB) is standard in retail but applicable in entrepreneurship theory. It is undoubtedly one of the most extensive intention models because of its preferred applicability, which forms the basis for understanding intentions in social and personal elements (Bhat, 2018). Moreover, TPB has three independent constructs: attitudes, subjected norms, and perceived behavioral control (Ajzen, 2002).

Attitudes are determined by the belief that a specific behavior will lead to a favorable outcome. Subjective norms are determined by the beliefs of important others (family, friends) about the degree to which one tends to comply with these beliefs. The perception of controlling entrepreneurial attitudes is reflected in perceived behavioral control behavior.

Theoretically, education and training programs can improve entrepreneurial intentions and help entrepreneurs succeed. Students exposed to EE usually desire to venture into a successful business. However, empirical results on the impact of EE on EI are mixed. Some studies have demonstrated that EE significantly influences students' intention to start their own businesses (e.g., Wu and Wu, 2008; Fayolle et al., 2006; Block et al., 2013; Walter and Dolise, 2012). Others found the impact statistically insignificant or even negative (e.g., Von-Graeventiz, Harhoff, and Webber, 2010). Situational factors like gender, age, and time are also essential sources of contradictory findings. (Wilson et al., 2007). A meta-analysis of 42 independent samples by Ranch and Hulsink (2015) revealed that EE is useful in EI but does not always result in entrepreneurial behavior.

Entrepreneurial intentions are strongly influenced by an individual's characteristics. This is because they are the agents of decisions and actions (Baum, Frese, Baron, and Katz 2007). The individual characteristics identified by Gerry, Marques, and Nogueira (2008) include the need for self-achievement, initiative, creativity, self-confidence, the 'locus of control,' the propensity for risk-taking, the desire for independence and autonomy, and persistence.

Contemporary higher education institutions are increasingly involved in stimulating, supporting, and sustaining entrepreneurship development in order to promote the spirit of entrepreneurial intentions among undergraduates. Studies conducted by Ribeiro, Gonçalves, and Sousa (2014) have demonstrated education as a strong predictor of entrepreneurial intentions. Therefore, the increasing involvement of NHIs needs to be justified by assessing the ability of EE to foster and develop an entrepreneurial mindset among undergraduates (Mónico et al., 2021).

In summary, EE can shape EI in several ways. First, it can inspire and stress the reward of entrepreneurship (Bhat and Sigh, 2018). EE programs in Nigerian HEIs are therefore designed to enhance students' capabilities in knowing what, knowing why, knowing who, and knowing how, with more or less emphasis on a particular component depending on the level of EE desired. Consequently, we proposed the following hypotheses:

H_1: *There is a statistically significant difference in exposure to EE programs between business and engineering students.*

H_2: *There is a statistically significant difference in entrepreneurship intentions between business and engineering students.*

H_3: *Exposure of business and engineering students to entrepreneurship education programs and entrepreneurial intentions are significantly related.*

H_4: *Exposure of business and engineering students to entrepreneurship education programs significantly affect entrepreneurial intentions.*

Methodology

Research Method

The survey was conducted at the Lagos State University of Science and Technology, formerly known as the Lagos State Polytechnic, in Lagos, Nigeria. Participants in the study were business and engineering students at the end of their degree paths. All enrolled students were invited to participate in the study. The Global Report of GEM (GEM, 2015) has revealed that fresh graduates usually demonstrate the tendency to start a business; hence, the questionnaires were administered to the final-year students enrolled in business and engineering schools.

The selection of the institution was due to its vintage position. As the foremost polytechnic in Nigeria, the institution was one of the active members of the Commonwealth Association of African Polytechnics that promoted institution-wide adoption of EE. Business and engineering students are chosen due to their considerable role in innovation and marketing for the sustainable development of any nation.

Instruments: Given the descriptive nature of the research, existing measurement scales were adapted to gather the requisite data. The scale for measuring entrepreneurship education was adapted from Maresch et al. (2015). The EE items were measured on a 7-point Likert scale ranging from 1 to 7. The items include exposure of undergraduates to business plans, entrepreneurship lectures, guest lectures, industrial visits, and seminars. The entrepreneurial intention was measured with five-item statements similar to Sauchez (2013). The items were measured using a 7-point Likert scale (coded as 1 = total disagreement and 7 = total agreement). The seven-point Like type response style was used across the research instrument to preserve consistency and make the administration easier. Measures of EE & EI reported a high-reliability co-efficient of 0.86 and 0.88, respectively, indicating a reasonable level of reliability. Experts validated the draft instruments, and necessary adjustments were incorporated before administration.

Data Gathering Process: The empirical evidence was gathered during the 2021/2022 academic session. Initially, EE was restricted to only business students. However, the institution-wide application commenced in the 2016/2017 academic session. The questionnaire was divided into three sections: demographic (5 questions), entrepreneurship education (5 questions), and entrepreneurship intentions (5 questions). In total, 1105 questionnaires were collected, of which 988 were suitable for analysis; 338 engineering students and 649 business students. However, the 102 questionnaires were incomplete concerning the target-independent and dependent variables.

Results Analysis and Discussion of Findings

The results presentation is in three sections. The first section details the results of the descriptive comparison between engineering students and business students. The second provides the result of the correlation among all variables of the study. Finally, the third section sets out the regression analysis results factoring in the effect of EE on EI.

The descriptive statistics presented in Table 2 suggest some differences between these two groups. Regarding EE, business students exhibited a slightly high exposure to the variable. Similarly, the EI of business students is slightly higher than that of engineering students. However, the differences are not significant enough to support Hypotheses I and II.

Table 2
Entrepreneurship Education and Entrepreneurial Intentions of Engineering and Business Undergraduates

Variables	Full Sample (n = 988)		Engineering Students (n=340)		Business Diff. Students (n= 648)	
	Mean	S. D	Mean	S. D	Mean	S. D
Entrepreneurship Education (5 items)	24.30	1.747	23.48	7.47	24.53	7.32
Entrepreneurial Intentions (5 items)	31.67	5.33	30.24	4.68	31.36	5.63

Source: Survey

Table 3 reveals the means, standard deviations, and correlations between exposure to EE and EI. For the extent of exposure of undergraduate students to various EE programs, the means range from 4.59 to 5.34 and the standard deviations range from 0.054 to 0.060. This indicates that the undergraduates mean scores are close to option 5 = 'major exposure,' implying that the

undergraduates are to some extent exposed to EE. The highest exposure in the EE program was EDP seminar followed by business plans, industrial visits, and EDP module lectures, respectively.

Table 3

Correlation Analysis

S/NO	Variables	Mean (M)	Standard Deviation (Sd)	1	2	3	4	5	6	7
1	Business Plan (EE1)	4.94	0.055	1	.677**	.566**	.507**	.542**	.807**	.327**
2	EDP Lectures (EE2)	4.67	0.055		1	.663**	.511**	.540**	.825**	.272**
3	Guest Lectures (EE3)	4.59	0.055			1	.627**	.561**	.839**	.280**
4	Industrial Visits (EE4)	4.87	0.055				1	.566**	.797**	.286**
5	Seminars (EE5)	5.34	0.055					1	.785**	.265**
6	E E Total (EAT)	24.30	.055						1	.355**
7	Entrepreneurial Intentions (EIs)	31.67	0.055							1

Source: Survey

The EI index indicated the students' total entrepreneurial intentions mean score was 31.67 with a standard deviation of 0.170 implying that the individual mean was approximately 6 = 'high', indicating a high level of EI. Table III also shows the correlation matrix between the dimensions of EE and EI. The results revealed significant correlations between all the dimensions of EE and EI. Thus, Hypothesis 3 of the study is supported by the findings. The regression model of the effect of the exposure of the undergraduates to EE on EI was also developed, and the results are shown in Table 4 below.

Table 4

Regression Analysis of Entrepreneurship Education and Entrepreneurial Intentions

	Model I **B**	**Sig**
Entrepreneurship Education R R^2 Adjusted R^2 F – value T– value	 .355 .126 .125 141.735 45.50	 .000 .000
Predictor. Entrepreneurship Education Dependent variable. Entrepreneurship intentions		

Source: Survey

The findings above indicate the contribution of all the dimensions of EE to IE. The results show that the five dimensions of EE, when taken together, were to some extent effective in predicting EI. This is evidenced by an R2 of 0.126 and an adjusted value of 0.125, which implies that the five dimensions of EE when put together accounted for 12.5% of the total variance in EI. Therefore, our Hypothesis IV is also supported. Meanwhile, in social research, the low level of R2 is immaterial in view of the complex nature of human behavior. (Moksoney, 1999). The R2 indicates that EI is significant but not exclusively affected by EE; other exogenous factors not considered in this study also affect EI.

The findings revealed a number of results that deserve some comment. First, the high exposure of business and engineering students to EE demonstrates the importance of EE in contemporary Nigerian higher education institutions. The implication is that running a small business in a professional manner is not just a good idea but also a requirement for survival in today's competitive environment. Second, the high level of EI among Nigerian undergraduates is not surprising. Indeed, the challenges of unemployment, poverty, and insecurity as well as the institutionalization of EE in Nigerian higher education institutions have encouraged Nigerian undergraduates to explore the possibility of establishing startup ventures rather than seeking paid employment. Third, the positive relationship between EE and EI confirms the results obtained by Meresch et al. (2011), Barba-Sandiez, and Atienza-Sahuquillo (2017). In this regard, it is apparent that improvement in EE will encourage students to establish their business ventures.

Conclusion and Recommendations

Conclusion

Nigeria has a number of challenges manageable through the development of innovative, well-educated, and entrepreneurial citizens who have the spirit and intuitiveness to think outside the box. The present economic challenges require graduates who are willing and able to become entrepreneurs—young people who will launch and successfully develop their business ventures or become innovators.

Education is an instrument of social change. Therefore, to transform the Nigerian economy, it is imperative that entrepreneurship education and training (EET) be incorporated into the operations of HEIs. The institutional-wide application of EE in Nigerian higher education institutions is a welcome development. EE is essential to stimulating the entrepreneurial spirit of prospective graduates and providing the skills and knowledge essential to developing an entrepreneurial culture.

Moreover, the insignificant difference in EE exposure of undergraduates is an implication that the boundaries between engineering disciplines and business professions are disappearing and that engineering practice is inherently becoming multidisciplinary, requiring professional and entrepreneurial skills to solve contemporary complex problems (Creed et al., 2002; Dabbagh and Menasce, 2006).

EE has never been more important than it is now. Reinforcing EE in schools, vocational institutions, and universities will enhance the entrepreneurship dynamism of the Nigerian economy. Indeed, besides contributing to the creation of new ventures, EE will make young people more employable and more "entrepreneurial" in their work within an existing organization across the social, public, and private sectors (EEC, 2014).

Recommendations

The implication of this study is the need for higher education institutions to continue to pay more attention to promoting and developing entrepreneurship in young people. It requires revising existing curricula to make higher education relevant to meeting the current challenges. Higher institutions need to identify potential entrepreneurs and provide appropriate tutoring for the future. In addition, the emphasis should be on intensive technical, vocational, and entrepreneurial-oriented training rather than theoretical knowledge.

Finally, teaching entrepreneurship courses is not enough to develop an entrepreneurial mindset. It is crucial to have a positive attitude and self-efficacy to believe in one's capabilities and see possibilities rather than obstacles (Makinmuito and Belt, 2015). Therefore, business and engineering curricula should be modified to incorporate skill development in negotiation, leadership, creative thinking, innovation, business planning, and small business management (Paltasingh, 2012). In addition, undergraduate students must be exposed to a new approach and paradigm of entrepreneurship education that can encourage practices and participation, reciprocity and adaptability, and rational selection of business ventures. This can be accomplished by:

- Motivating engineering students in entrepreneurship through startup exhibitions of successful entrepreneurs in the world of engineering.
- Mentoring engineering students on entrepreneurship and small business management.
- Encouraging idea generation through workshops and brainstorming.
- Organizing inter-institutional business planning competitions.
- Establishing a training environment that simultaneously encourages learning and the creation of small business ventures through teamwork will facilitate creativity and self-confidence.

Suggestions for Further Studies

The present research represents a descriptive study on the assessment of the efficacy of EE on EI with data generated only from business and engineering students of the Lagos State University of Science and Technology, Nigeria. Finally, to address the issues highlighted in this study comprehensively, additional research across all institutions of higher learning in Nigeria is necessary. This would allow for a generalization of the findings.

References

Adejinola, A. S. and Olufunmilayo, T. (2009). Spinning off an entrepreneurship culture among Nigerian university students: Prospects and challenges, *African Journal of Business Management*, 1, 3, 80-88.

Adeola, F. (2001*). Entrepreneurship Skill, job creation poverty reduction in Nigeria*. Te Comet Newspaper Publishing Company, Lagos.

Ahmad, S., Abubakar, A. and Ahmad, N. (2018). An evaluation of teaching methods of entrepreneurship in hospitality and tourism programmes, 16, 1, 14 – 25

Ajzeen, I. (2002) Perceived behavioural control, self-efficacy, locus control and the theory of planned behaviour, Journal of Applied Psychology 32(4) 665-683.

Akhuemonkhan, I. A., Raimi, I. and Sofoluwe, A. O. (2013). Entrepreneurship Education and Employment in Nigeria, *Afro Asian Journal of Social Science*, 4, 4, 1 – 22.

Akola, E. and Heinomen, J. (2006). "*How to support learning entrepreneurs? A study of training programmes for entrepreneurs in the European countries*" Papers presented at the RENTXX conference. Research in Entrepreneurship and Small Business, Brussels, November 22-24.

Amoros, J. and Bosma, N. (2014). *Global Entrepreneurship Monitor 2013.* Global Report Babson Park. M.A., Santiago, Chile, Babson College University de Desarrillo.

Asaju, K; Arome S and Anyior, F (2014). The rising rate of unemployment in Nigeria: the socio-economic and political implication, *Global Business and Economics Research Journal*, 3,2,12 – 32.

Astebro, T., Bazzaazian, N. and Braguinsky, S. (2014). Startups by recent university graduates and their facility: Implication for university entrepreneurship policy. *Research Policy*, 41, 663 – 677.

Ayandike, N; Emeh, I and Ukah, F. (2012*) Entrepreneurship development and employment generation in Nigeria.*

Bae, T. Qun, S; Miao, C and Fiel, J. (2014). The relationship between entrepreneurship education and entrepreneurial intentions: A meta-analytic review, Entrepreneurship Theory and Practice, 38 (2) 217-254.

Ball, WR and Shank, M.D (2003*). Understanding the educational needs of small business owners.* Semestral 444 ewq.htm.

C, O. A (2012). Tertiary Education in Nigeria and the challenge of corporate governance. A Paper presented at Tetfund Year 2012 Strategic Planning Workshop. NUC Auditorium 2012.

Barba-Sanchez, V. and Atienza Sahuguillo, C. (2017). Entrepreneurial intention among engineering students: The role of entrepreneurship education. *European Research Management and Business Economics*, 24, 53 – 61.

Block, J., Hoogerheide, L. and Thurik, R. (2013). Education and entrepreneurial choice: An instrumental variables analysis, *International Small Business Journal*, 3, 1, 23 – 33.

Bhat, H and Singh, S. (2018) Analysing the moderating effect of entrepreneurship education on the antecedents of entrepreneurial intentions, Journal of Entrepreneurship Education, 21(1), 1-10.

Charney, A. and Libecap, C. (2000). Impart of Entrepreneurship Education: Insight. *A Kaufman Research Services for Entrepreneurship Leadership.*

Commission of the European Communities (2006). Fostering Entrepreneurship Education in Europe. http//european.eur.ex.

Creed, J., Sunberg, E. M. and Crawford, G. P (2002). Engineering entrepreneurship: An example of a paradigm shift in engineering education. *Journal of Engineering Education,* 1, 2, 185 – 195.

Dabbagh, N. and Menasce, D. (2006). Students' perception of engineering entrepreneurship: An exploratory study. *Journal of Engineering Education,* 5, 2, 153 – 164.

Dafna, K. (2008). Managerial performance and business success: Gender differences in Canada and Israeli entrepreneurs, *Journal of Enterprising Communities, People and Places in the Global Economy,* 2, 4, 330 – 351.

Davidson, P. (2008). The entrepreneurship research challenge. *Edward Elgar Chattenham*

Decker, R., Haltiwanger, J., Jarma, R. and Miranda, J. (2014). The role of entrepreneurs in US job creation and economic dynamism. *Journal of Economic Perspectives,* 28,3, 3-20.

Essian, U. (2012). Entrepreneurship culture of formal education programmes in Nigeria, *Journal of Sustainable Society,* 1, 2, 52 – 62.

European Economic Commission (2014). *Entrepreneurship education: A guide for educators.* European Union 1049, Brussels.

Fackler, M. (2013). *Start-up spirit emerges in Japan*. The New York Times. Retrieved from http://www.nytimes.com.2013.

Fayolle, A., Gailly, B. and Lassas Clerk, N. (2006). Assessing the impact of entrepreneurship education programmes: A new methodology, *Journal of European Industrial Training,* 30, 9, 701 – 720.

Fayolle, A &Gailly, B. (2015). The impact of entrepreneurship education on entrepreneurial attitude and intentions: Hysteresis and persistence, Journal of Small Business Management, 53(1), 75-93.

Garavan, T.N. and O'Cinneide, B. (1994). Entrepreneurship education and training programme: A review and evaluation – Part 2, *Journal of European Industrial Training*, 18,11, 13-22.

Global Entrepreneurship Monitor (2015). GEM 2015 Reports USA, Babson Publishing Company.

Haase, H.L. (2011). The "teachability dilemma of entrepreneurship"*International Entrepreneurship and Management Journal*, 2,2, 145-162.

Heitor, M., Harta, H. and Mendonca, J. (2014). Developing human capital and research capacity: Science policies promoting brain gain. *Technological and Social Change,* 82, 6 – 22.

Hussain, J, and Matlay H, (2012) Entrepreneurship education training of family operating in India's agricultural sector*, Education and Training*, 54,1, 8 – 14.

Jones, C. (2002). Entrepreneurship in a world idea. *American Economic Review*, 9, 1, 220 – 239.

Kautonen, T., Down, S. South, L. (2008). Enterprise support for older entrepreneurs: The case of PRIME in the UK, *International Journal of Entrepreneurship Behavioural Research,* 14, 85 – 101.

Kegel, P. (2016). A comparison of startup entrepreneurial activity between the US and Japan, *Journal of Management Policy,* 1, 2, 15 – 21.

Kelly, D. J. and Rice, M. P. (2002). Advantage beyond founding the strategic use of technologies, *Journal of Business Venturing,* 17, 41 – 57.

Kirzer, L.M. (1973*). Competition and entrepreneurship*.The USA. University of Chicago Press.

Kropp, F. and Zolin, R. (2005). Technological entrepreneurship and small business innovation research programs: *Academy of Marketing Science Review,* 7, 11 – 15.

Kuratko, D. (2005). The emergence of entrepreneurship education: Development, Trend and Challenges, *Entrepreneurship Training Practice*, 29, 5, 577 – 599.

Lackeus, M. (2013). Developing entrepreneurs by competencies: An action-based approach and classification in entrepreneurial education. A thesis submitted for the degree of Licentiate

of Engineering. Department of Technology, Management and Economics. The Chalmers University of Technology.

Lawal, A.A. (2022). Technical and Vocational Education Training (TVET) as a Panacea to Economic and Security Challenges in Nigeria. Lead Paper Delivered at the 13th National Conference of School of Management Studies, The Federal Polytechnic, Ilaro, Ogun State Nigeria

Lawal, A. A., Akingbade, W. A. and Williams, B. A. (2017). The status of entrepreneurship support agencies (ESAs) in Lagos State, Nigeria. *Iranian Journal of Management Studies*, 10, 4, pp 853 – 881.

Lignor, E., Winkler, C., Winkel, M., Marrel, J., Keds, K., Gel, Ivan, M. and Noyes (2018). The entrepreneurship education imperative: Introducing entrepreneurship education. *Entrepreneurship Education and Pedagogy*, 1, 1, 5 – 7.

Mafe, O. T. (2005). Reinforcing engineering curricula for endogenous technological development and entrepreneurship. *WestIndian Journal of Engineering,* 28, 1, 1 – 12.

Makhbul, Z. (2011). Entrepreneurship success: An exploratory study among entrepreneurs, 6, 1, 116 – 126.

Makinmuito, S. and Belt, K. (2015). About, for, in or through entrepreneurship in engineering education, *European Journal of Engineering Education,* 1, 1, 1 – 19.

Malebana, M. J., &Swanepoel, E. (2015). Graduate entrepreneurial intentions in the rural provinces of South Africa. Southern African Business Review, 19(1), 89–111

Maresch, D., Harms, R., Kailer, N. and Wimmer-Wurm, B. (2016). The impact of entrepreneurship education on students' entrepreneurial intention in science and engineering versus business studies university programs, *Technological forecasting and Social Change*, 104, 172 -179.

Maritz, A., Jones, C. and Schwetzer, C. (2014). The states of entrepreneurship education in Australian universities, *Education + Training,* 57, 8 & 9, pp 1020 – 1035.

Marton, B; Mc Nally, J. J. and Kay, M.J. (2015). Examining the formation of human capital in entrepreneurship: A meta-analysis of entrepreneurship education outcomes. Journal of Business Venturing, 28, 211-224.

Mc Clennard, D. C. (1961). The achieving society Free Press, New York

Mc. Stay, D. (2008). An investigation of undergraduates, self-employment, intention and impact of entrepreneurship education and previous entrepreneurial education. Doctoral dissertation. Australian School of Business, Australia.

Mendelson, M. (2001). Entrepreneurship in a graduate engineering programme, *Journal of Entrepreneurship Education,* 1, 1, 601 – 607.

Mohammad, D. A., Aliyu, S., Ahmad, S. (2015). Entrepreneurial intention among Nigerian University Students. *American Journal of Business Education,* 8, 4, 239 – 248

Moksony, F (1999). Small is beautiful. The use and interpretation of R2 in social research, Sociological Science, Special Issue, 130 138

Morris, M., Liguori, E. and Preface, E. (2016). Teaching reasons and the unreasonable, *Annals of Entrepreneurship Education and Pedagogy, 2, 1.*

Mukta, M. (2018). Entrepreneurship education: A student perspective. *India Jaypee Institute of Technology*, 526 – 540.

Muske, G. and Standforth, N. (2000). The educational needs of small business owners: a look into the future. *Journal of Extension*, 38, 6, 1-9.

Nabi, C., Linen, F., Fayolle, A., Kruege, N. and Walinsley, A. (2017). The impact of entrepreneurship education in higher education: A systematic view. *Academy of Management, Learning and Education,* 1, 16, 277 – 299.

Naude, W. (2008*). Entrepreneurship in economic development*, Research Paper, UNU-WIDER, United Nations University, No 2008/20.

NBS. (2020). Nigerian gross domestic product report (Q1 2020). Abuja, Nigeria: National Bureau of Statistics. www.nigeranstat.gov.ng

Ndofirepi, T. M. (2016). The impact of technological creativity and entrepreneurship education on the entrepreneurship intentions of students at particular tertiary institutions in Zimbabwe and South Africa. Doctoral dissertation, Bloemfontein: Central University of Technology, Free State.

Ndofirepi,T.M.(2020) Relationship between entrepreneurship education and entrepreneurial Goalintentions: psychological traits as mediators. Journal of Innovation and Entrepreneurship,9:2,2,20

Nigerian Investment Promotion Commission (2004): *Report on the Overview of Small and Medium Enterprises in Nigeria.*

Olajide, B. S., Adeniyi-Egbeola, F. O. (2014). Enhancing literacy in higher education for increased graduate employability in Nigeria, 2, 1, 82 – 88.

Palagashvil, L. (2014). *What does America's decline in economic freedom mean for entrepreneurship and prosperity?*Fraiser Institute Mercanter Center 3.

Palmer, A. and Bosch, A. (2017). What makes the representation of executive women in business happen*? Equality, Diversity and Inclusion*: *An International Journal,* 36, 4, 306 – 320.

Paltasingh, T. (2012). Entrepreneurship education and culture of enterprise: Relevance and policy issue, *The Indian Journal of Industrial Relations,* 48, 2, 233 – 246.

Pittaway, L., & Edwards, C. (2012). Assessment: Examining practice in entrepreneurship education. Education + Training, 54(8/ 9), 778–800.

Rae, D. (2003). Opportunity-centred learning: An innovation in enterprise education. *Education and Training,* 45, 8, 542 – 549.

Rauch, A and Hulsink, W. (2015). Putting entrepreneurship education where intentions to lie: An investigation into the impact of entrepreneurship education on entrepreneurship, Academy of Management Learning and Education, 14(2), 187-204.

Salami, A.O. (2012). National Security and Economic Development for democratic consolidation. A paper presented at the 1st Conference on National Security and Economic Development for Democratic Consolidation, Lagos

Sandiez, J. C. (2013). The impact of an entrepreneurship education program on entrepreneurship competencies and intentions, Journal of Small Business Management, 51, 3, 447 – 465.

Say, J. B. (1971*). Treatise on the political economy of the production, distribution and consumption with wealth*. New York Kelly Publishers

Schumpeter, J. A. (1934*). The theory of economic development*. Harvard University Press Cambridge.

Saunders, M., Lewis, P., & Thornhill, A. (2014). *Research methods for business students* (6th ed). UK: Pearson Education Limited.

Schumpter, J.A. (1950). *Capitalism, socialism and democracy*.The USA. Harper and Brothers.

Shane, S., and Venkataraman, S. (2000). The promise of entrepreneurship as a field of research. *Academy of Management Review*, 25(1), 217-226.

Shapero, A. and Sokol, L. (1992) Social dimensions of entrepreneurship. Encyclopedia of entrepreneurship pp 72-90. Englewood Cliff, New Jersey, Prentice-Hall.

Shri, M. and Raj, V. (2015). Impact of gender on entrepreneurship intention and motivation among MBA students. *Global Management Review,* 129 – 141.

Tajeddini, K. and Mueller, S. (2009). Entrepreneurship characteristics in Switzerland and UK: A comparative study of techno-entrepreneurs, *Journal of International Entrepreneurship,* 7, 1 – 25.

Taks, M., Tyjala, P., Kukenelk, H. and Venesaar, U. (2014). Engineering students' experiences in studying entrepreneurship, *Journal of Engineering Education,* 103, 4, 573 – 598.

Tasmi, N. (2012). Playing entrepreneurship: Can a game make a difference? *Entrepreneurship Practice Review,* 2, 4, 4 – 18.

United Kingdom Quality Assurance for Higher Education Training (2012).

Valerio, A., Partan, B. and Robb, A. (2014). *Entrepreneurship education and training programmes around the world: Dimensions for success.* The World Bank: Washington DC.

Vijayalakshmi P.S (2014) Beneficiaries perception towards entrepreneurship development programme, *Indian Journal of Applied Research,* 4, 10, 24-30.

Visser, K., Eredicta, C., and Brijal, P. (2007). Entrepreneurship Education and Training of further education and technical level in South Africa, *South Africa Journal Education,* 27, 613-629.

Von-Graeventiz., Harhoff, D. and Webber, R. (2010). The effects of entrepreneurship education. *Journal of Economic Behaviour and Organization,* 76, 1, 90 – 112.

Vuckovic, K; Kedmenec, K and Korent, D. (2015) the impact of exposure to entrepreneurship education on students' entrepreneurial intention, creation journal of education, 17(4), 1009-1036.

Walter, S. C. and Dohse, D. (2012). Why mode and regional context matter for entrepreneurship education, *Entrepreneurship and Regional Development: An International Journal,* 24, 9 – 10, 807 – 835.

Wang, E. and Kleppe, J. (2001). Teaching invention, innovation and entrepreneurship in engineering. *Journal of Engineering Education,* 9, 4, 565 – 570.

Wilson, K and Marlino, D. (2007). Gender, entrepreneurship, self-efficacy and entrepreneurial career: Implication for entrepreneurship education, Entrepreneurship Theory and Practice, 3(3) 387-466.

Wu, S and Wu, L. (2008). The impact of higher education on entrepreneurial intentions of university students in China, *Journal of Small Business and Enterprise Development,* 15, 47, 52 – 77.

Yamane, T. (1967). *Statistics: An introductory analysis.* New York: Happer and row.

Yin, R. K. (2012*). Applications of case study researc*h. 3rd Sage Publications, Thousand Oaks, C. A.