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Model for stimulating entrepreneurial skills through entrepreneurship education in an African context

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ABSTRACT

The need to stimulate entrepreneurial skills in graduates as a strategy for tackling graduate unemployment has spurred the introduction of entrepreneurship education programs. The effectiveness of such entrepreneurship education programs from an African context is the focus of this paper. A modified model for evaluating the effectiveness of entrepreneurship education was derived from Fayolle, Gaily, and Lassa-Clerc; and was tested via structural equation modeling. Data were collected from randomly selected 750 participants who had undergone at least one compulsory entrepreneurship module at the university level. It was found that entrepreneurship education which is not well aligned with contextual peculiarities may not optimally yield the desired outcome. This paper, therefore, underscores the need for a thoroughly contextualized curriculum that encapsulates national, local, and very importantly, institutional factors.

RÉSUMÉ

La nécessité de stimuler les compétences entrepreneuriales parmi les diplômés, en tant que stratégie pour aborder le chômage des diplômés, a stimulé l'introduction de programmes de formation à l'entrepreneuriat. Cet article se concentre sur l'efficacité de tels programmes dans un contexte africain. Un modèle modifié d'évaluation de l'efficacité de l'éducation à l'entrepreneuriat a été dérivé des travaux de Fayolle, Gaily et Lassa-Clerc; et a été testé par modélisation d'équation structurelle. Les données ont été collectées auprès de 750 participants sélectionnés au hasard qui avaient suivi au moins un module obligatoire sur l'entrepreneuriat au niveau universitaire. L'étude montre que la formation à l'entrepreneuriat qui n'est pas bien adaptée aux particularités contextuelles peut ne pas complètement donner le résultat escompté. Par conséquent, cet article souligne la nécessité d'un programme d'études contextualisé qui englobe les facteurs nationaux, locaux et, non moins importants, institutionnels.

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1. Introduction

Since 2000, African universities have sporadically introduced entrepreneurship programs in their curricula. In Nigeria, for example, entrepreneurship education is made compulsory in all universities, at both undergraduate and postgraduate levels and across disciplines (Olotuase et al. 2018). As noted by Yin and Liang (2018), Mwasalwiba (2010), Hytti and O’Gorman (2004), and Kariv, Cisneros, and Ibanescu (2019), fostering entrepreneurial skills is a major objective for entrepreneurship programs. For African countries, the emphasis on entrepreneurial skills is borne out of the need to: (a) tackle growing graduate unemployment (Mohamedbhai 2015; Jones et al. 2018a); and (b) generate entrepreneurial capital required for sustainable economic growth which human, social, physical, or knowledge capital models have failed to guarantee (Audretsch 2007). Concerning tackling growing graduate unemployment, policymakers have taken entrepreneurial skills as a priority (Jones et al. 2017; Mwasalwiba 2010) with the hope that entrepreneurship education will foster the skills in graduates for entrepreneurial success. With this, graduates are expected to create value-adding ventures thereby reducing unemployment in the long run (Yin and Liang 2018; Asghar, Hakkarainen, and Nada 2016; Hamzah et al. 2016). In a more articulated presentation, researchers have argued for the critical role of entrepreneurship education in generating the entrepreneurial skills for economic benefits (Galloway et al. 2005; Trivedi 2016; Rae 2010; Mohamedbhai 2015; Jones et al. 2017). The real or perceived economic benefits that may arise from entrepreneurship education (Jones et al. 2018a; Testa and Frasccheri 2015) brings to fore the need to conceptualize entrepreneurial skills differently from entrepreneurial capital.

From the views of Audretsch and Monsen (2008), Carree and Thurik (2010), Ntayi et al. (2014), and Toth (2012), entrepreneurial capital is conceived as a set of skills that positively fosters entrepreneurial activities. In the core sense of economic innovation, entrepreneurial capital may not necessarily lead to the creation of new firms but also innovations which could generate additional economic output for existing firms, industry, economy, or region. In other words, our definition of entrepreneurial capital encapsulates a set of variables that uniquely results in new economic units or output and we maintain that these variables or skills-set (i.e. entrepreneurial skills) can be acquired through education (Unger et al. 2011). To what extent entrepreneurship education stimulates entrepreneurial skills is a question that has further extended the argument for or against the legitimacy of entrepreneurship education (Apostolopoulos et al. 2018; Kuratko 2005; Hägg and Gabrielsson 2019). Without undermining, at the least, the perceived importance of entrepreneurship education in this regards (Kariv, Cisneros, and Ibanescu 2019), this concern suggests that continuous empirical inquiries (Jones et al. 2017) should be carried out to determine how best entrepreneurship education programs should be designed and delivered to effectively stimulate desired outcome (Fayolle, Gailly, and Lassas-Clerc 2006a). As further suggested, the evaluation of entrepreneurship programs requires dynamic assessment models that take cognizance of variations in content, teaching methods, and institutional setting (Apostolopoulos et al. 2018). In this regard, methodology or model assessing an entrepreneurship program should consider the elements of entrepreneurship education within a given context. This article, therefore, explored how

entrepreneurship education components could practically impact on entrepreneurial skills in university students from an African context. It is anticipated that an empirical inquisition into this nexus would generate implications that may be useful for policy overhaul and redesign of more effective entrepreneurship education for sustainable economic growth.

In the paper, we applied a modification of the assessment model set forth by Fayolle, Gailly, and Lassas-Clerc (2006a) to determine the aspects of entrepreneurship education that need to be revisited with a focus on stimulating entrepreneurial skills in developing economies like Nigeria. Second, to show the applicability of Fayolle, Gailly, and Lassas-Clerc's (2006a) assessment methodology from an African perspective with empirical evidence from Nigeria. A practical contribution of this paper is that its findings will extend the empirical evidence required to strategically reposition entrepreneurship education in emerging economies to further their economic growth, prosperity, and wellness. Besides, this paper will contribute to the ongoing debate on the methodology for assessing entrepreneurship education.

The next section of this paper focuses on an in-depth review of scholarly thoughts around nexus of entrepreneurial capital and skills and economic growth; the importance of entrepreneurship education in fostering entrepreneurial skills. While the succeeding sections of this article present the methodology, results, and findings as well as discussion around the findings.

2. The necessity of entrepreneurial capital and skills in emerging economies

With an intense focus on sustainable economic growth, it has become imperative to include entrepreneurial capital in a region or country's economic function, in addition to physical, social, economic, and human capital, to sustainably increase its economic output (Audretsch and Keilbach 2004). This inclusion has become more necessary especially for emerging economies in the light of obvious reasons, which in themselves are integral to national economic objectives.

First, entrepreneurial capital not only triggers economic growth but can potentially promote inclusive development within an economy. Much of the rapid economic growth recorded in emerging economies have not been sustained over a considerable long term. A reason for this short-lived experience of rapid economic growth is the lack of real inclusive development within such an economy. A fundamental aspect of inclusive development is leveraging on private sector potentials – corporate or individuals – to contribute to economic growth. This essentially creates opportunities for the private sector to continuously and vigorously innovate thereby creating firms and products which offer higher value propositions. As a result of this, more entrepreneurs create more firms that have value to offer to any segment of the market based on innovative products or processes. This economic innovation made possible through entrepreneurial capital increases entrepreneurial activities which in turn, sustains economic growth and development for the longer-term. Based on the fifteen areas of measuring inclusive development, it can be postulated that if entrepreneurial capital is sustainably built within an economy, it will, in turn, stimulate inclusive

development – a broader measure of economic performance which consequently fosters higher economic growth (World Economic Forum 2018). Thus, entrepreneurial capital is needed for sustainable higher economic growth and inclusive development.

Secondly, statistics have shown that rapid economic growth rates in emerging economies are relatively unstable and often decline in the short term. Figure 1 below shows the growth rate trend for emerging African economies such as Nigeria, Ghana, Uganda, South Africa, and Zambia. The figure reveals that although gross domestic growth rates were high between 2008 and 2013 (a period of six years) averaging about 7 percent excluding South Africa, it, however, plummeted afterward to an average of 3.75 percent between 2014 and 2016. This major drawback for the rapid economic growth rates recorded in emerging economies is possibly caused by exposure to external/global economic dynamics. The low resilience of these economies is contingent on that the economies are mostly dependent on mono and primary products such as oil, diamond, gold, etc. Entrepreneurial capital, if well developed, could add value to these products, thus creating multiplied high-value products and firms to make the economy more resilient and their economic growth less volatile. It will also lead to the much-needed economic diversification which these countries had long hoped and worked for.

Thirdly, emerging economies teem with a young population where ages 55 years and below make up more than 80 percent of the total population (World Bank 2018). These young populations are beaming with ambition, energies, ingenuity, and entrepreneurial drive but sadly to note, they lack the skills that make for entrepreneurial capital (Fuller and Kasumu 2012; Bonnici 2015; Kendall 2019). Skills, identified as crucial elements of entrepreneurial capital (Audretsch 2007), refer to core ability to perceive, inquire, articulate, organize, and be self-motivated to take on entrepreneurial choices. Drawing from the underpinning theoretical postulations by Chell (2013, pp.7–9) and Johnson et al. (2015), entrepreneurial skills in this paper is contextualized

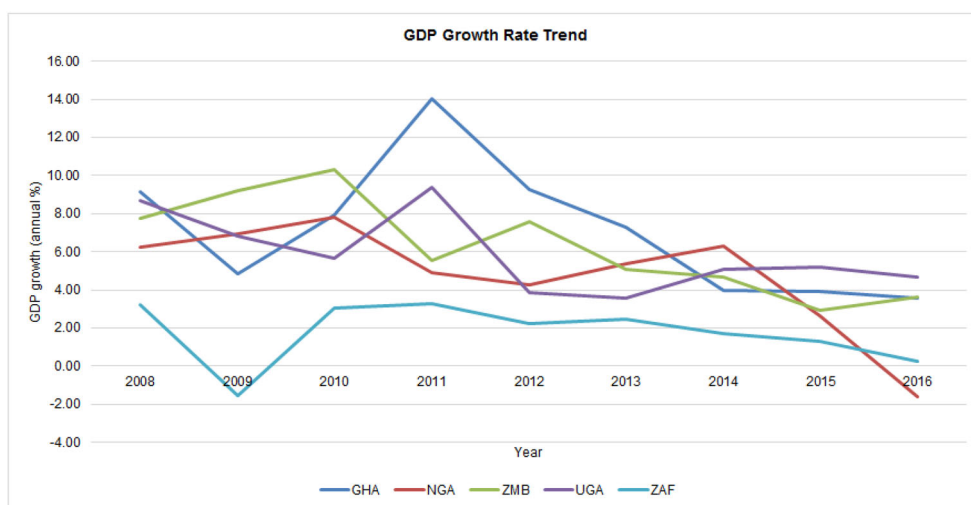


Figure 1. GDP growth rate trend for selected emerging African economies: 2008–2016.
Source: World Bank (2018)

as the proficiencies accrued from one's abilities, mindset, and knowledge through life-long learning adaptable for conceiving, exploring and realizing valued economic/social needs. Entrepreneurial skills will focus on how newly generated forms of knowledge and other forms of skills are translated into innovative firms and/or products for commercial purposes. Thus, to sustain the momentum of economic growth rates as well as advance inclusive development of emerging economies, the skills that account for entrepreneurial capital especially of the active population must be developed.

3. Entrepreneurship education: a source of entrepreneurial skills

It is a commonplace understanding that entrepreneurial skills identified as being crucial for economic benefits can be imparted through entrepreneurship education (Mwasalwiba 2010). Even though education is paramount to growing both human capital and entrepreneurial capital, the orientation and approach of the education to build entrepreneurial capital would have to differ significantly. Partly in response to the need to build the required entrepreneurial capital, entrepreneurship education has evolved since it first appeared at Harvard in 1946 where Myles Mace taught the first acclaimed entrepreneurship lecture at Harvard's Business School (Katz 2003). The World Economic Forum (2009) proposed a model of rethinking entrepreneurship education with a primary focus on spurring individuals to be entrepreneurial both in thinking and behaving.

While highlighting what to teach; where to teach; whom to teach; and how to teach entrepreneurship education, the World Economic Forum's (2009) model is framed on the continuum of lifelong learning scale that inclusively targets all categories of entrepreneurship education audiences. Nonetheless, it is pertinent to buttress the need to structure entrepreneurship education with strong reference to context (Fayolle, Gailly, and Lassas-Clerc 2006a, 2006b). For instance, Nigeria modeled a compulsory entrepreneurship education curriculum based on policy documents emanating from international instructions. The resulting program may well align with the government's policies and objectives, it may, however, lack the critical input from empirical evidence emanating from researches done in the same context. This is likely to render the entrepreneurship education program in Nigerian tertiary institutions less effective when compared to expected outcomes.

The World Economic Forum's (2009) model may have encapsulated what is already obtainable in some parts of the world, however, based on Fayolle and Gailly (2014), Fayolle and Toutain (2013), Neck, Greene, and Brush's (2014) works, this paper argues for the need to remodel entrepreneurship education program in emerging economies like Nigeria within a framework that rigorously focuses on the intended outcome. Like in some emerging economies, an intended outcome of entrepreneurship education in Nigeria is to rigorously on a large scale, equip students of higher institutions with skills and exposure necessary for creating valuable solutions superior to current economic growth strategies. Fayolle and Gailly (2014) suggested that this outcome should be linked to the components of entrepreneurship education to create a structure for building entrepreneurial capital through strategic

entrepreneurship education. The next section examines the theoretical explanations of possible components of entrepreneurship education.

4. Components of entrepreneurship education

In the theory of planned behavior, Ajzen (1991) postulated that actions/intentions of individuals are antecedents of volition influenced by perceived behavioral control, subjective norm, and attitude towards the behavior. Based on the foregoing postulations, scholars have suggested how entrepreneurship education can be designed to stimulate entrepreneurial skills (Jones et al. 2018a) thereby building entrepreneurial capital (Rueda, Moriano, and Liñan 2015; Krueger, Reilly, and Carsrud 2000; Fayolle, Gailly, and Lassas-Clerc 2006a). Fayolle, Gailly, and Lassas-Clerc (2006a) and Fayolle (2013) in particular suggested that certain aspects of entrepreneurship education within the context of the theory planned behavior may be studied to evolve the right kind of entrepreneurship education model that promises the needed entrepreneurial skills. These aspects include institutional setting, a typology for entrepreneurship education, contents of entrepreneurship education, pedagogy for entrepreneurship education.

4.1. Institutional setting

Some recent studies have underscored the importance of institutional setting as a variable of entrepreneurship education (Fayolle, Gailly, and Lassas-Clerc 2006a, 2006b; Shirokova, Osiyevskyy, and Bogatyreva 2016; Mustafa et al. 2016). The design and delivery of future entrepreneurship education, therefore, as suggested by Fayolle (2013), Fayolle and Gailly (2014), Jones et al. (2018a), and Fayolle and Toutain (2013), must take cognizance of institutional characteristics such as culture, structures, mechanisms, and resources that would help foster entrepreneurship programs. Jones et al. (2018a) noted that institutional factors are critical to the effectiveness of entrepreneurship education in Africa. The extent to which these institutional factors are available and harnessed or lacking would determine how effective entrepreneurship education would be in stimulating entrepreneurial skills in students. On this note, it is hypothesized that:

H1a: Institutional setting positively relates to the content of entrepreneurship education

H2a: Institutional setting positively impacts on entrepreneurial skills (of students, expected to contribute to entrepreneurial capital).

Referring to characteristics of institutional setting, these specifically include business incubator, financial and network support initiative for students' venturing, allocated time and space for entrepreneurial development, varieties of entrepreneurship programs available for students, etc. (Fayolle, Gailly, and Lassas-Clerc 2006a; Jones et al. 2018a). Giving room for more focused definition of what constitutes educational support factor that helps to shape entrepreneurial skills and abilities, Turker and Selcuk (2009) had provided some preliminary empirical evidence of the positive impact of institutional support on entrepreneurial intentions that count towards entrepreneurial capital.

4.2. A typology for entrepreneurship education

The current debate in the field of entrepreneurship education (Valerio, Parton, and Robb 2014; Katz 2008; Fayolle and Gailly 2008) exudes the fact that there is no generally accepted typology for entrepreneurship education. Fayolle, Gailly, and Lassas-Clerc (2006a) argued that one important yardstick for drawing typology for entrepreneurship education is making a distinction between training and education. From Fayolle, Gailly, and Lassas-Clerc (2006a)'s argument, whereas training seems to address specific skills need, education seeks to provide a broader range of skills for wider problem-solving purposes. Future entrepreneurship education that aligns with the foregoing implies a typology different from entrepreneurship education for start-up, entrepreneurial awareness, and continuing education for entrepreneurs as presented by Liñán (2004) in Fayolle, Gailly, and Lassas-Clerc (2006a). In this case, a typology for entrepreneurship education encompasses all the skills set that are required to create, lead, champion, and/or deliver innovative solutions.

4.3. Contents of entrepreneurship education

Entrepreneurship education has so far zeroed on the process of entrepreneurship where identification, evaluation, and exploitation of entrepreneurial opportunities, as well as harvesting of entrepreneurial investment, form the fulcrum of content (Fayolle 2013). However, the five-level content dimension cited in Fayolle, Gailly, and Lassas-Clerc (2006a) which includes know-why (objectives and values), know-how (competence), know-who (social capital), know-when (intuition), and know-what (knowledge) is now dominating perspectives on what makes for effective entrepreneurship education content shortly. To empirically ascertain this, one of the questions to be answered by future research in this domain concerns how contents of entrepreneurship education programs impact students' intentions (Fayolle and Gailly 2014). While noting that delivery of content could be related to teaching methods, in response to this research agenda, it is hypothesized that:

H1b: Content of entrepreneurship education significantly relates to the teaching methods for entrepreneurship education.

H2b: Content of entrepreneurship education significantly impacts on entrepreneurial skills (capital).

4.4. Pedagogy for entrepreneurship education

Pedagogy relates to the teaching approach and methods employed in delivering the content of an educational program and how effective they are. A review of literature according to Fayolle (2013) exudes different pedagogies in entrepreneurship education such as didactical, experiential learning, apprenticeship style, real-world approach, and active approach where case studies are predominant. Future pedagogies will, however, depend on the yet to be harmonized issues such as adequacy of methods and audience; methods and content; methods and objectives; methods and institutional setting (Fayolle 2013; Fayolle, Gailly, and Lassas-Clerc 2006a). More empirical

studies are needed in this aspect to determine a more universally acceptable pedagogy for future entrepreneurship education. However, it is important to stress that teaching methods could be limited by available resources within the host institutional setting. It is, therefore, necessary to hypothesize that:

H1c: Institutional setting significantly relates to the teaching methods for entrepreneurship education.

H2c: Teaching methods for entrepreneurship education significantly impact on entrepreneurial skills.

5. Entrepreneurship education framework for stimulating entrepreneurial skills

In the light of the foregoing, a conceptual model (see Figure 2) was developed to articulate a framework that can foster entrepreneurial skills in Africa, taking cognizance of its import in economic growth, based on the economic innovation theory. The application of such a framework must be contextualized within the realities peculiar to such countries or institutions (Hunter and Lean 2018). This implies that empirical studies that provide robust evidence must be conducted from time to time to validate this framework. For instance, with particular reference to entrepreneurial skills, a possible entrepreneurship education framework for building entrepreneurial capital is derived from the Fayolle, Gailly, and Lassas-Clerc (2006a, 2006b)’s thoughts and presented in this paper.

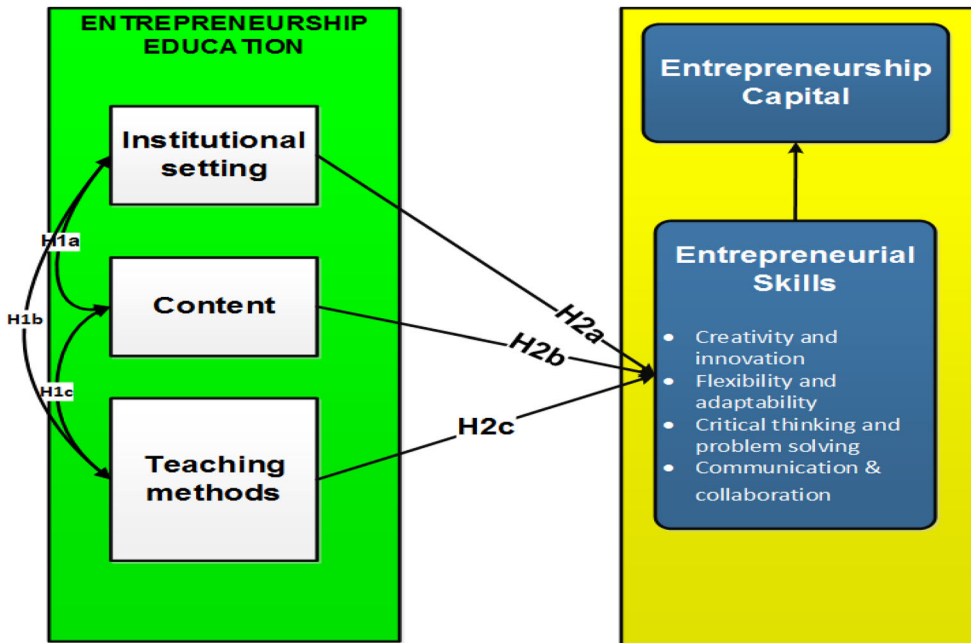


Figure 2. Entrepreneurship education framework for building entrepreneurship skills.

From the framework, it is assumed that entrepreneurship education components (institutional setting, content, and teaching methods) are related and interact. It is also assumed that each of these components plays a significant role in influencing entrepreneurial skills that are required in building entrepreneurial capital. Following these assumptions, this paper seeks to achieve the following objectives:

1. To determine the nature of the relationship between the components of entrepreneurship education.
2. To determine if carefully designed components of entrepreneurship education will impact on the entrepreneurial skills that make for entrepreneurial capital for an economy.

It is anticipated that the empirical pieces of evidence from this framework should corroborate existing evidence to suggest policy direction for repositioning entrepreneurship education for greater impact and outcome.

6. Preliminary empirical evidence of entrepreneurship education: Methodology

6.1. Study design

In this paper, preliminary empirical evidence on the entrepreneurship education framework for building entrepreneurial capital in an emerging economy was presented from a study of undergraduates in Nigeria. After careful consideration of research methodologies (Creswell 2013, 2003a, 2003b, 2009), the cross-sectional survey research design was adopted within the context of the quantitative research method. The choice of cross-sectional was motivated by the need to generate empirical pieces of evidence for further empirical studies which may be longitudinal in nature. A limitation of this choice is that cross-sectional findings will not capture variabilities that occur over time.

To achieve a high participation level, the authors selected a centrally located university in Nigeria. This decision was informed by the established practice of market segmentation which allows that an entire larger market is divided up into smaller homogeneous segments from which a representative sample is drawn for a survey (Rundle-Thiele et al. 2015). The assumptions of homogeneous subpopulations further justify the use of a subpopulation provided homogeneity is reasonably established. Adekiya and Ibrahim (2016) and Farhangmehr, Gonçalves, and Sarmento (2016) are examples of similar studies that have used subpopulations in their surveys. Typically, there is a great deal of homogeneity among Nigerian higher institutions in terms of curricular (as minimum benchmarked curricular are designed and disseminated by central regulatory bodies like NUC, NBTE, and NCCE); quality of funding, infrastructure base, socio-economic context, and pedagogy. Based on the foregoing, a federal government-owned university located in the middle belt region of Nigeria was selected as a study site for the conduct of this study. The choice of this institution is further justified by the following reasons:

1. The selected institution's cosmopolitan composition of both students and staff populations offers a unique setting for conducting research designed to reflect the ethnoreligious and socio-political diversities across Nigeria.
2. The entrepreneurship education curriculum at this institution is directly adopted from the minimum benchmark provided by the NUC with very minimal variations both in content and teaching methods.
3. The undergraduate students' population that offers the entrepreneurship module yearly in this university is as large as 4000 students thereby giving room for a good sampling.
4. Data consistency and well-bounded results interpretation can be obtained from this selected setting.

From the institution's division of academic planning and management, it was estimated that about 15,700 students who had successfully done entrepreneurship courses were still to graduate from the institution at the time of the survey. At a 5% error margin, a sample of 750 university undergraduates was sampled via an adapted self-administered questionnaire. The 750 university undergraduate students were enrolled in academic programs across twelve broad disciplines: Arts ($n=108$), Education ($n=145$), Environmental Sciences ($n=50$), Law ($n=54$), Management Sciences ($n=41$), Medical Sciences ($n=59$), Natural sciences ($n=135$), Pharmaceutical Sciences ($n=22$), and Social sciences ($n=136$). To achieve a representative inclusion across the twelve disciples, a stratified random method was used. A simple inclusion criterion was that the prospective respondent would have completed at least one compulsory entrepreneurship course aimed at equipping them for entrepreneurial pursuit upon graduation from university or later on in life. Participants were recruited via a face-to-face personal contact made on campus based on the inclusion criterion. After obtaining informed consent with the understanding that participants could, at any stage of the study, voluntarily withdraw from the study, participants were engaged in the study. Out of the 750 administered questionnaires, 737 questionnaires were completed and returned. Meanwhile, after thorough data screening, a total of 707 questionnaires (representing 94.42% response rate) were found usable for analysis.

Of the 707 respondents screened for analysis, 458 students were male (representing 64.8%) while 249 students were female (representing 35.2%). While this is a reflection of the enrolment pattern in most institutions at all levels of education in Nigeria, it may not necessarily reflect the level of entrepreneurship across gender. In terms of age bracket, most of the respondents (69.3%) fall within the brackets of 16–25 years. Another 29 percent of the respondents were in the age bracket of 26–35 years while the remaining 1.7 percent represent respondents aged above 36 years. The fact that 98.3 percent of respondents aged below 35 years show that entrepreneurship education in this context is targeted at the age group that, according to Testa and Frascheri (2015) argued is most malleable towards entrepreneurship.

6.2. Measurement of study variables

Four variables presented in the framework above: institutional setting, the content of entrepreneurship module, teaching methods, and entrepreneurial capital (as measured

Table 1. Sampled questionnaire items relation to the study variables.

Construct	Sample statement	Source
Entrepreneurial skills	It is sometimes difficult to keep searching for solutions that would not count towards my CGPA	(Johnson et al. 2015; Chell 2013).
Institutional setting	Centre for Entrepreneurship Studies (CES) is equipped with staff and funds that can support the development of students' business plans/prospects	(Fayolle and Toutain 2013)
Content of EE	I now can explore my environment for potential entrepreneurial opportunities after offering GST 223	(Fayolle, Gailly, and Lassas-Clerc 2006a; 2006b).
Teaching Methods	GST 223 was taught by lectures only	(Fayolle 2013)

by entrepreneurial skills) are measured via the questionnaire on the Likert Scale of 1–7. The institutional setting was measured by institutional business incubators; financial support; networks that support entrepreneurial initiatives of students (Fayolle and Toutain 2013). The content of the entrepreneurship module was measured by indicators developed by Fayolle, Gailly, and Lassas-Clerc (2006a, 2006b). These indicators include awareness of the business environment, opportunity exploration, business modeling, etc. Teaching methods, which include didactical, experiential learning, apprenticeship style, real-world approach, and active approach where case studies are predominant were adopted from Fayolle (2013) and Fayolle and Gailly (2008). However, the entrepreneurial capital of individual students as measured via their entrepreneurial skills used indicators such as creativity and innovation, flexibility and adaptability, critical thinking and problem-solving skills; and communication and collaboration (Johnson et al. 2015; Chell 2013). Sampled questions asked on the variables are shown in Table 1.

6.3. Reliability and validity of measurement

The instrument for this study was tested for both reliability and validity. Cronbach's alpha was used to test the reliability of the variables. According to Gliem and Gliem (2003), a Cronbach's alpha score of 0.70 is regarded as acceptable. The Cronbach's alpha scores of 0.908 and 0.807 obtained for entrepreneurship skills and entrepreneurship education components (institutional setting, content, and teaching methods) show the indicators reliable. Content validity was considered a critical part of this process. Two experts who hold Ph.D. in entrepreneurship and entrepreneurial finance respectively including a statistician were consulted to ensure that the items on the questionnaire thoroughly reflect scholarly thoughts gleaned from the literature.

To ascertain the concurrent validity of the indicators in the instrument, the bivariate correlation method was used. The ensuing inter-item coefficients with their p values were compared with the 0.5 correlation benchmark and p value <0.05 respectively. Inter-item coefficients less than 0.5 indicated weak inter-item interactions but those greater than 0.5 generally indicated strong and positive interaction amongst items. While correlation coefficients with p value ≥ 0.05 were not significant

and thus would need review. The results show that all the items for entrepreneurial skills, entrepreneurship education, and entrepreneurial intentions were generally valid with p values less than 0.05 and correlation coefficients greater than 0.5 except for three items that were reviewed.

6.4. The structural model and data analysis

Structural equation modeling was used for data analysis. This is commonly used to estimate complex relational models in fields such as medicines and health sciences, social sciences, business, and management. In the structural model below, the bigger oval-shapes represent the study variables: institutional setting, content, and teaching methods. The rectangular shapes represent the indicators corresponding to each variable. While the smaller oval shapes are the error terms related to estimating the observed variables.

6.4.1. Model testing

To ascertain that the structural model in Figure 3 fits with the dataset, the following indices were used: Relative Chi-Square (χ^2/df); Comparative Fit Index (CFI), Incremental Fit Index (IFI), Root Mean Square Error of Approximation (RMSEA), and PCLOSE. All indices indicate the structural model's goodness-of-fit at: $\chi^2/df = 3.475$ (≤ 5.0 for $n \geq 200$); CFI = 0.938 (≥ 0.90); IFI = 0.939 (≥ 0.90); and RMSEA =

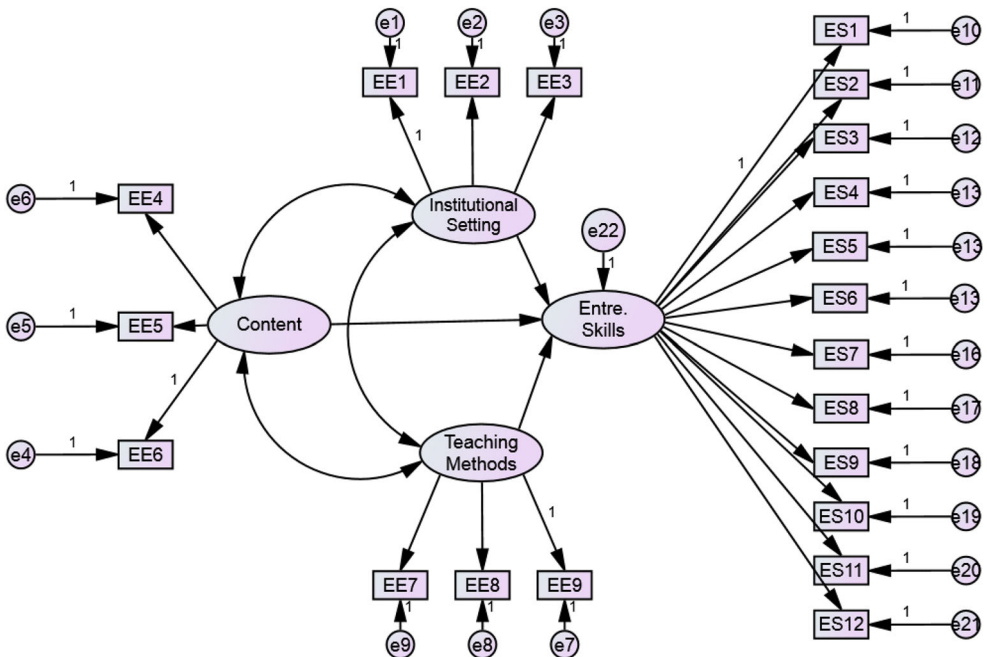


Figure 3. Structural model of entrepreneurship education framework for building entrepreneurship capital.

0.56 (≤ 0.80). These indices confirmed that the model fits the data collected for this study (Hooper, Coughlan, and Mullen 2008; Moss 2009).

7. Results and findings

7.1. The interaction among the components of entrepreneurship education

Within the reviewed literature, it was hypothesized that carefully planned components of entrepreneurship education are related. That is, one component does not stand in isolation of others. Implying that each component complements others to reinforce their impact on the expected outcome. To test this hypothesis, a structural model was developed and tested via AMOS version 25 as earlier stated. In this model, three entrepreneurship education components were examined: institutional setting, EE content, and teaching methods. These variables were correlated to determine the nature and strength of interaction among. The results are presented in Table 2 and Figure 4. The results show that only institutional setting significantly relates in a positive direction with the content of entrepreneurship program ($r = 0.58$, $p < 0.001$). However, relationship between institutional setting and teaching methods ($r = 0.76$, $p = 0.412$) was not significant. Similarly, the relationship between the content of the entrepreneurship program and teaching methods ($r = -0.84$, $p = 0.412$) was also not significant. These results demonstrate the fact that entrepreneurship education components will not automatically yield desired results if not carefully designed that is based on empirical evidence emanating from the context for which they are designed (Hunter and Lean 2018).

7.2. Entrepreneurship education builds entrepreneurial skills

The second hypothesis tested in this structural model examined the impact of the entrepreneurship education components have on entrepreneurial skills. The three components examined in the hypothesis were related to entrepreneurial skills and their standardized regression weights, r , estimated. The results are presented in Table 3 and Figure 4. The results show that only the content of the entrepreneurship program significantly impacts on entrepreneurial skills of students ($r = 0.58$, $p < 0.001$). Institutional setting ($r = -0.18$, $p = 0.111$) and teaching methods ($r = -0.46$, $p = 0.450$) are not significant in their impact on entrepreneurial skills. Similarly, these results demonstrate the fact that entrepreneurial capital is not a static phenomenon implying that its antecedents may not behave the same way in every context.

First, to determine the aspects of entrepreneurship education that needs to be revisited with a focus on stimulating entrepreneurial skills in developing economies like Nigeria. Second, to show the applicability of Fayolle, Gailly, and Lassas-Clerc's

Table 2. Standardized estimates of correlated components of entrepreneurship education.

Correlations	Estimate	p Value	Remark
Institutional setting <-> Content	0.58	***	Significant
Content <-> Teaching methods	-0.84	0.412	Not significant
Institutional setting <-> Teaching methods	0.76	0.412	Not Significant

*** $p < 0.001$.

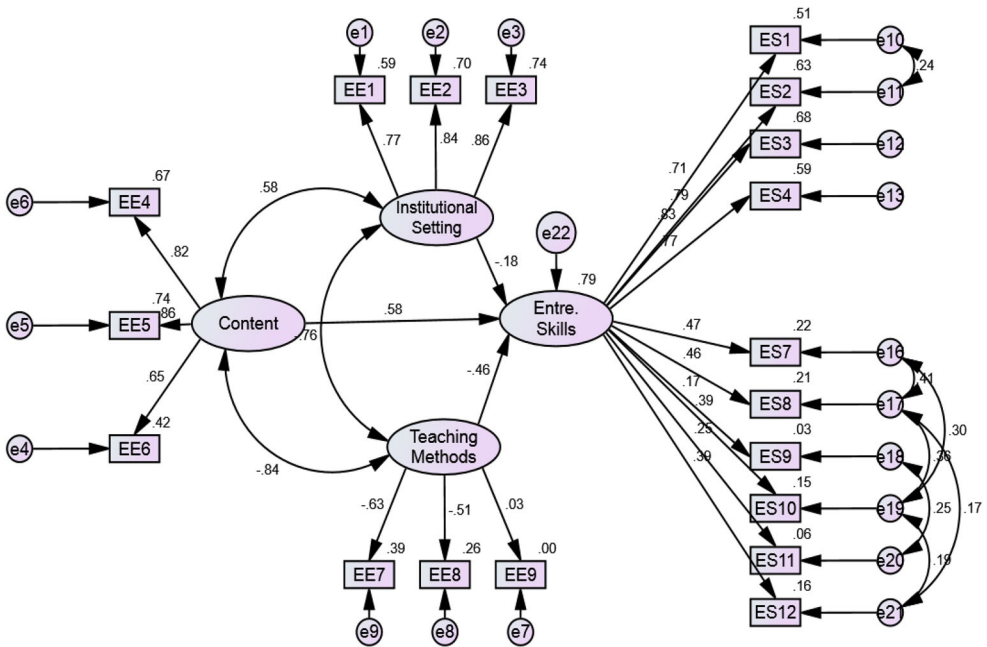


Figure 4. Tested structural model of entrepreneurship education framework for building entrepreneurship capital.

Table 3. Standardized estimates of regression weights of components of entrepreneurship education on entrepreneurial skills.

Regression paths	Estimate	<i>p</i> Value	Remark
Entre. Skills ← Institutional setting	−0.18	0.111	Not significant
Entre. Skills ← Content	0.58	***	Significant
Entre. Skills ← Teaching methods	−0.46	0.450	Not significant

***Means that $p < 0.001$.

(2006a) assessment methodology from an African perspective with empirical evidence from Nigeria. Caution should, therefore, be exercised when comparing results of EEP analyses. About entrepreneurship and for entrepreneurship will differ to some extent, in approach, content, and pedagogy. Therefore, the results of their evaluation cannot be compared so easily

8. Discussion

Recall that this paper focuses on testing the inter-relationships amongst the components of entrepreneurship education to determine the structural changes needed to effectively stimulate entrepreneurial skills in students from an African context (Jones et al. 2017). To maximize the desired outcome, it is expected that the design of an entrepreneurship education program should be carefully framed in a manner that allows for synergistic interaction among entrepreneurship education components.

This paper presents some mixed outcomes as earlier hinted by Fayolle, Gailly, and Lassas-Clerc (2006a). First, our study shows that the content of entrepreneurship

education is significantly related to the institutional setting in a positive direction (see Table 2). Whereas, EE content is not significantly related to teaching methods just as institutional setting is not significantly related to teaching methods. This finding suggests that there may be some missing links in the design of entrepreneurship education. As suggested by Fayolle and Gailly (2014), entrepreneurship education should be designed with strong reference and link to contexts. This way, elements of EE would strong tie in the same direction to achieve its objectives. Additionally, the institutional factors required to foster entrepreneurial skills must, therefore, be borne in mind while formulating entrepreneurship education content (Jones et al. 2018a). This is probably because what eventually gets taught as entrepreneurship education is strongly related to the institutional factors deployed in support of entrepreneurship education content (Jones et al. 2018a).

This paper also found that the content of entrepreneurship education (Content) has a significant positive impact on students' entrepreneurial skills (see Table 3). This position corroborates Hamzah et al.'s (2016) view. In their empirical investigation into how compulsory entrepreneurship course has impacted the real estate graduates from a public university in Malaysia, they reported that the content of entrepreneurship program influences students' entrepreneurial skills. Meanwhile, this paper found out that paradoxical outcomes could exist in an African context. Whereas content and institutional factors are found to be significantly related, the institutional setting was not found to have a significant direct impact on entrepreneurial skills. This raises a fundamental question about the institutional setting. Does institutional setting matter when it comes to stimulating entrepreneurial skills in every context? To answer this question, for example, Ntayi et al. (2014) inquisition into the problem of low-level entrepreneurial capital [skill] in Uganda, reported that institutional framing, plays a significant and positive role. Arguing from a European context, Apostolopoulos et al. (2018); and Hunter and Lean's (2018) also claimed that institutional factors contribute significantly to learning. However, a cursory critique of their papers shows a degree of variation in the conceptualization of institutional factors. While Ntayi et al. (2014) perspective on institutional setting borders on rules, laws, constitution, conventions, etc. Apostolopoulos et al. (2018) conceptualized institutional settings to include wider variables such as communication, the relationships amongst the stakeholders, social activities, and social influences being induced by culture.

On the other hand, this paper, as guided by Turker and Selcuk (2009) and Fayolle, Gailly, and Lassas-Clerc (2006a), conceptualizes institutional setting to include factors such as facilities required to effectively facilitate entrepreneurial learning in the university such as classrooms; laboratories, vocational skill centers, etc. It also included: business incubator (center for entrepreneurship studies) – what the center does to support students' entrepreneurial start-ups; network/linkage for student entrepreneurial initiatives – units or organs of the university that acts as a platform for linking or networking students with entrepreneurial initiatives; student-initiative support – institutional provisions that support students' entrepreneurial initiatives. The institutional setting also encompasses management support – the disposition and extent of support from the Chief Executive Officer (Vice-Chancellor, Rector or President); funding for entrepreneurship research – whether funds are provided to further entrepreneurship

research within the university; and lecturer–student ratio – the number of students to one lecturer available to teach the compulsory entrepreneurship module at the undergraduate level.

The argument here is substantial variations in the conceptualization of institutional setting as well as other related concepts in the field of entrepreneurship education reopens discussion about the field's immaturity contrary to Katz (2008)'s view. Addressing these differences may help reduce their considerable mixed outcomes regarding the influence of institutional settings on the effectiveness of entrepreneurship education (Matlay 2006). Besides, addressing the variations in conceptualization and context vis-à-vis orientation and objectives of entrepreneurship education programs may also narrow the scholarly coherence pointed out by Hägg and Gabrielsson (2019). Experiences and empirical evidence from the world's regions, especially from Africa, may be useful in developing a robust and more mature field of entrepreneurship education (Jones et al. 2018b).

Another point to note about the divergent outcomes of the impact of institutional setting on entrepreneurial skills is that sometimes, authors examine institutional factors in isolation of other components of entrepreneurship education. This fact gives rise to variation in the study's context and scope which could potentially account for variations in findings. To address this, Fayolle, Gailly, and Lassas-Clerc (2006a) argued that further studies should examine components of entrepreneurship education in a model. Thus, structural modification to an entrepreneurship education model necessarily requires examining or assessing entrepreneurship education components jointly (Fayolle, Gailly, and Lassas-Clerc 2006a). The paper, therefore, suggests that entrepreneurship education should be more carefully structured to optimize its overall impact. The author's position in this regard corroborates Fayolle and Gailly (2014)'s view, who had upon this fact suggested that further studies in this area should empirically explore the causal links between entrepreneurship education variables. This is because these education variables are considered as important antecedents of entrepreneurial outcomes such as entrepreneurial skills in this case.

Furthermore, it is important to re-emphasize that the common practice among many African higher education institutions to design programs based on international models (Hunter and Lean 2018) has significantly accounted for the failure or low outcome of such programs. The ideal practice will be to generate a body of empirical evidence through studies, to inform remodeling a structure for such programs (i.e. entrepreneurship education programs in Nigerian universities) that adequately takes cognizance of the dynamics of variable inter-relationships.

In tandem with the purpose of this paper, it was also found out that institutional setting is not significantly related to teaching methods (see Table 2) just as much as both of them did not significantly impact on entrepreneurship skills of students (see Table 3). This finding suggests that given the significant impact of one component of entrepreneurship education on entrepreneurial skills does not automatically imply other components will have the same outcome. This is because these variables though inter-related, are also independent. For example, Hamzah et al. (2016) reported that teaching approaches/methods of entrepreneurship program influenced students'

entrepreneurial skills but it did not examine some other aspects of entrepreneurship education.

Another possible reason why the teaching methods and institutional setting did not significantly impact entrepreneurial skills may be that the presentation of entrepreneurship (i.e. transmission of content through the selected teaching methods) was not challenging enough to ignite the passion and interest of students towards entrepreneurial intentions. Ifedili and Ofoegbu (2011) had earlier hinted this in their investigation carried out in Nigeria. According to them, factors like poor lecturer-student ratio (1:800) as reflected by large classes; inadequate infrastructural facilities, absence of network/linkages to support students' entrepreneurial initiatives, student-initiative support, dysfunctional business incubator (center for entrepreneurship studies), poor management support and low or no funding for entrepreneurship research. Both Ifedili and Ofoegbu (2011) and Akhuemonkhan, Raimi, and Sofoluwe (2013) agreed that due to inadequate resources allocated to entrepreneurship education, teaching methods not so appropriate to teaching the content of entrepreneurship module has been used.

9. Contribution, practical implication, and limitation

By testing a modified model of Fayolle, Gailly, and Lassas-Clerc (2006a) for assessing entrepreneurship education, this paper buttresses the need for a more effective entrepreneurship education that fosters entrepreneurial skills required to drive economic growth in Nigeria, being a part of the African context. The results demonstrate that a contextualized entrepreneurship education is important to achieve desired outcomes. In consonance with scholarly consensus (Hägg and Gabrielsson 2019; Kariv, Cisneros, and Ibanescu 2019), this paper has demonstrated that an individual's entrepreneurial skills can be stimulated via entrepreneurship education. However, an optimal outcome in terms of stimulating entrepreneurial skills in students can be undermined if EEP is not well contextualized within the institutional setting and well-aligned with appropriate teaching methods.

In practical terms, the findings of this study exude the need to strategically boost funding of entrepreneurship education in emerging economies like Nigeria, as Ogah and Emesini (2013) and Olorundare and Kayode (2014) had suggested. Another practical contribution of this paper is that its findings have extended the empirical evidence required to strategically reposition entrepreneurship education in emerging economies like Nigeria to further their economic growth, prosperity, and wellness.

However, a limitation of this paper lies in the fact data relates to a dominant African country. Future studies should extend knowledge in this domain by conducting a cross-regional comparative analysis to reflect such peculiarities that must be accounted for towards maturing entrepreneurship education in Africa.

10. Conclusion

In any given socio-economic context, entrepreneurship education is seen as a potent tool to foster the entrepreneurial skills an economy requires to grow and develop.

The design and implementation of this entrepreneurship education, according to Hunter and Lean (2018) and Fuller and Kasumu (2012), must originate from the context for which it is meant. This implies that the design of entrepreneurship education that will guarantee the building of the required entrepreneurial skills in students must be empirically based. In the case addressed by this paper, evidence shows that though the content of the entrepreneurship education program conforms to the five-level content dimension cited in Fayolle, Gailly, and Lassas-Clerc (2006a, 2006b), the institutional setting and teaching methods (related education variables) are far from expectations. This is probably because the design and development existing entrepreneurship program were based on a structure that lacked rigorous focus on local contextual peculiarities (Hunter and Lean 2018). In response to Fayolle and Gailly (2014), a structural model was proposed and tested in this paper to provide an empirically-based framework for building entrepreneurial skills needed for sustainable economic growth in Africa.

Disclosure statement

No potential conflict of interest was reported by the authors.

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