WATARI: MULTI-DISCIPLINARY JOURNAL OF SCIENCE, TECHNOLOGY AND MATHEMATICS EDUCATION VOLUME 7 NUMBER 1. MARCH 2023. PAGES 87-97
Web: www.watarijournal.com; Email: watarijournal@fcetbichi.edu.ng ; E-i-C: ccimadu@yahoo.com

ASSESSING THE ENTREPRENEURIAL MIND-SET OF TECHNICAL COLLEGE STUDENTS FOR SUSTAINABLE SELF-EMPLOYMENT IN NIGERIA

[1]**Abubakar Ibrahim Muhammad**, PhD,
[2]**Basheer Garba Fagge**
[3]**Kabiru Mohammad Abdu**
[4]**Musa Ali Jogana**, PhD
[1, 2, 3]Metalwork Technology Department
[4] Building Technology Department,
School of Secondary Education (Technical),
Federal College of Education (Technical), Bichi Kano Nigeria
E-mail: abuhumran@yahoo.com;

Abstract
Technical education is bedrock for employment but the system is facing set back due to the lack of appropriate Entrepreneurial Mind-set model. The objective of the study is to develop and validate entrepreneurial mind-set conceptual model required by technical college students for sustainable self-employment in Nigeria. The procedure used in the sampling was random sampling; three out of the seven states listed in the study area were used. Therefore, the target population was 891paticipants instituting 650 teachers and 241 entrepreneurs. Consequently, 254 teachers and 110 entrepreneurs were selected constituting of 364 respondents. The research design for the study was survey research method using questionnaire approach in the data collection. The instrument was validated through both face and content validity by the experts' judgment and all their observations and the corrections were considered and made appropriately. The result showed that all the items under important elements of entrepreneurial mind-set were found to be reliable, the reliability coefficient was 0.811. The method employed to analysed the data of this work was Confirmatory Factor Analysis (CFA). The finding of the study shows a modified measurement model of the significant relationship between the responses of the teachers and the entrepreneurs on the eight significant elements of entrepreneurial mind-set needed. Therefore, going by the modified model it has been achieved that integration of entrepreneurial mind-set competencies into technical college programs is appropriate. It emphasis that the implementation of this study by the stake holders, will assist in reducing the menace of unemployment among the technical college graduate. This study offers essential entrepreneurial mind-set model for integrating into technical college programs for sustainable employment in Nigeria.

Keywords: *Entrepreneurial Mind-set; Technical College; Confirmatory Factor Analysis*

INTRODUCTION

Technical education is a vital instrument for sustainable national growth and industrial development globally (Yusuff and Soyemi, 2012). It is the utmost dependable means for alleviation of poverty, redundancy, underemployment in developing countries

(Nwachukwu, 2014). That is why the Nigerian in the National Policy on Education (NPE) emphases the importance of technical education as enshrined to cover three vital areas which includes, technical colleges; vocational enterprise institutions (VEIs); and national vocational qualifications framework (NVQF) (Federal Republic of Nigeria, 2013:16).

These colleges are regarded as the leading vocational institute. Nevertheless the students of these colleges are lacking entrepreneurial competencies such as entrepreneurial mind-set (EM) as maintained by Dawha and Medugu, (2016). Similarly, (Amaechi et al., 2017) preserved that technical college graduates are deficient in entrepreneurship competencies essential for the establishment of small and medium enterprises (SMEs). Consequently, (Chekole, 2014) opined that there is an existing gap in the colleges' curriculum that doesn't include the necessary entrepreneurship competencies for facilitating advancement of Small and Medium Enterprises (SMEs). Therefore, it is paramount for the technical colleges to have a conceptual model of entrepreneurial mind-set that would be integrated into the its curriculum as an answer to the present situation of our youths being without jobs and elevation the level of poverty among the populace (Enombo et al., 2015).

Mind-set is a collection of all the tools needed for work in every situation. a technician needs these tools to carry out his/her job. According to Dweck (2015) Entrepreneurial mind-set is focused on growth mind-set against a fixed mind-set. The former, refers to the belief that intelligence can develop over time. The later, denotes to the belief that people belong to something for instance, one belongs to school or belong to a specific department. Going by the Dweck's research it assumes a growth mind-set is a convincing stand-in for technical college students' creativity and innovativeness. SMEs have great role in economic development in Nigeria, hence, they required leaders who are more creative, innovative and entrepreneurial. Thus, technical college students need to develop competencies that match up with the challenges ahead. Developing a model that help in the integration of entrepreneurial competencies that emphases a curriculum scheme which will produce students with entrepreneurial mind-set is the objective of this research. Consequently, it is very important to enhance students creativity in order to make them more entrepreneurial, so that they will overcome the changes that facing them after graduation (Solesvik et al., 2013). Moreover, for the establishment of venture entrepreneurial mind-set is needed where the venturing is large or small.it is indeed, appears that inculcating entrepreneurial intervention within technical and engineering education has yield the expected outcome that increases the entrepreneurial interest among the students (Call et al., 2016).

Statement of the Problem

There is a growing concern about high poverty rate, unemployment and under employment among the youth, and the absence of entrepreneurial competencies in the technical college curriculum, it can be inferred here that technical college students lack entrepreneurial competencies required for establishment of their own enterprises in the labour market. According to Odora and Naong (2014) technical college are students ill-equipped to start their own businesses. Moreover, Ogumbe (2015) believed that technical college students are graduating without entrepreneurial skills.

Objective of the Study
To develop and validate an entrepreneurial mind-set conceptual model required by technical college students for sustainable self-employment in Nigeria.

Significant of the Study
The study will be useful for the National Board for Technical Education as policy makers and curriculum planners in planning the curriculum and proper curriculum co-ordination that will assist in providing the right entrepreneurial competencies need for the training of students to become self-reliance upon graduation and contribute for the development of the society.

Research Question
What are the important elements of entrepreneurial mind-set essential to technical college students for sustainable self-employment in Nigeria?

Hypothesis
There exists no significant relationship between the responses of teachers and entrepreneurs on the important elements of entrepreneurial mind-set essential to technical college students for sustainable self-employment in Nigeria.

Methodology
The research design for the study is survey research method using questionnaire approach in data collection. was used by the researcher in this study (Creswell, 2009). Survey research design is used in quantitative approach as a data collection method in a study (Gall, Gall and Borg, 2007; Johnson and Christensen, 2012; Creswell, 2014).
The location of the study was north-west geo-political zone; it constitutes 7 out of the 36 states in Nigeria. Hence, specifically, the research was conducted at technical colleges and SMEs in the three states (Jigawa, Kano and Kaduna) of the north-west geo-political zone. All the technical colleges in the zone are established and financed by either the federal or state government. Additionally, all the Federal and State own technical colleges are supervised by National Board for Technical Education (NBTE) in terms of curriculum, staffing and supervision (National Board for Technical Education, 2017).

Sample and Sampling Procedure
The procedure used in the sampling was random sampling; three out of the seven states listed in the study area were used. Kumar (2011) opined that in random sampling it is imperative that each element in the population has an equal and independent chance of selection in the sample. The procedure of the sampling in this study was according to Krejcie and Morgan (1970). Therefore, the target population was 891paticipants instituting 650 teachers and 241 entrepreneurs. Consequently, 254 teachers and 110 entrepreneurs were selected constituting of 364 respondents (Creswell, 2009, 2014).

Instrument for Data Collection

A structured questionnaire was used to collect data from the respondents Creswell (2009). Accordingly, the data analysis was performed using the Statistical Package for Social Sciences (SPSS) 23.0 and Analysis of Moment Structures (AMOS) was used in testing the reliability of the instrument.

The instrument was validated through to both face and content validity by the experts' judgment from the department of Technology Education, Abubakar Tafawa University Bauchi and department of Science and Technology Education Bayero University Kano Nigeria. All the observations and the corrections made by the validators were considered and made appropriately.

Confirmatory Factor Analysis (CFA)

Analysis of Moment Structures (AMOS), Version 23.0 (AMOS 23.0; Arbuckle, 2003) was used to perform a CFA on the remaining 201 respondents after Exploratory Factor Analysis (EFA) from the overall sample of 331 to determine if the factor structure need adjustment. Therefore, AMOS was used to achieve the research objective provided to answer the research question and tested the hypothesis. Both the research question and the hypothesis were intended to identifying the important elements of entrepreneurial mind-set and determined the relationship between the responses of teachers and that of entrepreneurs on the important elements of entrepreneurial mind-set considered appropriate as essential to technical college students for sustainable self-employment in Nigeria.

Assumptions in Using AMOS

To achieve adequate power in AMOS based on Hair's recommendation Hair et al. (2014) this study used a sample of 201 respondents which is sufficient enough. Additionally, sample size of 10 subjects per variable was used which is adequate based on the rule of thumb (Byrne, 2016).

Internal consistency of the nine important elements considered appropriate for the conceptual model was determined using Cronbach's alpha statistics. These result showed that all the items under important elements of entrepreneurial mind-set were found to be reliable, the reliability coefficient was 0.811. In that, no value was below 0.50 (unreliable) and also all the variables are above adequate of 0.60 which is classified as conventional (Hair et al., 2014).

After the internal consistencies between the elements were obtained, the initial model was tested using the 3 combinations of fit measures: Absolute fit measures, Incremental Fit measures and parsimonious fit measure of the model.

Result and Discussion

In this section of the data analysis the model of measurement of entrepreneurial mind-set was tested, which referred to the research question and to the hypothesis that it was tested at > 0.05.

Measurement Model of Entrepreneurial Mind-set

In CFA of Entrepreneurial Mind-set through Amos 23, the calculated values of fit indices on initial model for entrepreneurial mind-set, according to the obtained results, the initial model doesn't fulfil the goodness of fit indices; 4.108 for (x^2)/DF (normed CMIN), GFI (0.935), TLI (0.886), CFI (0.924), AGFI (0.879), RMSEA (0.097) and P<0.005 (see Table 1). This emanated to the modification of the initial model through expunging variables that contribute less to the model goodness of fit. Figure 1 below presents the structure of the measurement model.

Table 1 The output estimate tables of entrepreneurial mind-set

ITEM	FACTOR	A Estimate	B Squared Loadings (Estimate Square) A^2	C Sum of squared loadings (sum of A^2 per factor)	D AVE = C /number of items per factor)	E Delta D= 1-estimate squared (1-B)	F Sum of loadings/est. (sum of A)	G Sum of loadings squared (sum of F^2)	H Sum of Delta (sum of E)	I CR denominator= (G+H)	J CR = G/I
EMC2	EM CP1	.595	.354	2.103	.421 **.649**	.646	3.139	9.853	2.897	12.750	.773
EMC5		.748	.559			.441					
EMC1		.322	.104			.896					
EMC3		.739	.546			.454					
EMC4		.735	.540			.460					
EMC9	EM CP2	.851	.724	1.349	.675 **.823**	.276	1.632	2.663	.667	3.330	.799
EMC8		.781	.609			.391					
EMC6	EM CP3	.793	.629	1.058	.529 **.727**	.371	1.448	2.097	.942	3.039	.690
EMC7		.655	.429			.571					

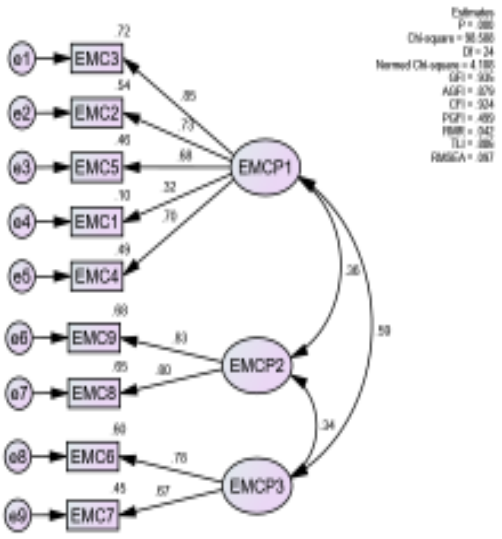

Figure 1 Measurement Model of Entrepreneurial Mind-set Model

A sum of 9 significant elements of Entrepreneurial Mind-set are displayed in Figure 1: EM3 (The possibility to become an entrepreneur), EM2 (Interest to become an entrepreneurs); EM5 (enhance the role of technical colleges as strategic drivers in instilling entrepreneurial mind-set.); EM1 (Hopes to be able to become an entrepreneur.) and EM4 (A strong desire to open their own business); EM9 (Ability to think positively about venture creation in technology and design); EM8 (Innovation skills development); EM6 (Inserting entrepreneurship activities in the curriculum) and EM7 (Give opportunity to promising entrepreneurs to relate with the students) that were measured to determine relationship between teachers and the entrepreneurs responses on the important entrepreneurial mind-set required by technical college students for self-employment. The model revealed that e4 (EMC1) had low factor loading (Figure 1) with the important elements of entrepreneurial mind-set: which contributed to the unfit of the model. Hence, the item was removed. Consequently, to further run the model analysis, covariance was put into another two items were covered: e1 (EMC3) and e2 (EMC2) in CFA.

After the third run of the CFA via Amos 23, the validity inspection of measurement model of Entrepreneurial Mind-set indicated that the level of model fit was satisfied as the results of the standardized estimates (Figure 1) indicated that the value of CMIN was 46.119 with 18 DF and p-value of 0.000 which is greater than the threshold value of greater than 0.05, therefore the p-value connected with this outcome was significant at p=0.000 (Awang, 2016). Accordingly, the normed CMIN (2.882) which is at the range of 1 to 3 is achieved. More so, a good value of normal CMIN (less than 3) was sufficient to show a good model fit (Hair et al., 2014). The GFI (0.965) and AGFI (0.921) were both greater than 0.9; the CFI (0.968), TLI (0.944) were also greater than 0.9; and specifically, the RMSEA was 0.076, a measure of less than 0.08 which established the goodness-of-fit analysis. These results recommend that the modified measurement model of EM shown an acceptable good fit as suggested by (Awang, 2016).

Consequently, the hypothesis of a significant relationship among the responses of teachers and that entrepreneurs on the important elements of entrepreneurial mind-set was hereby supported at <0.05 and Figure 2 was generated.

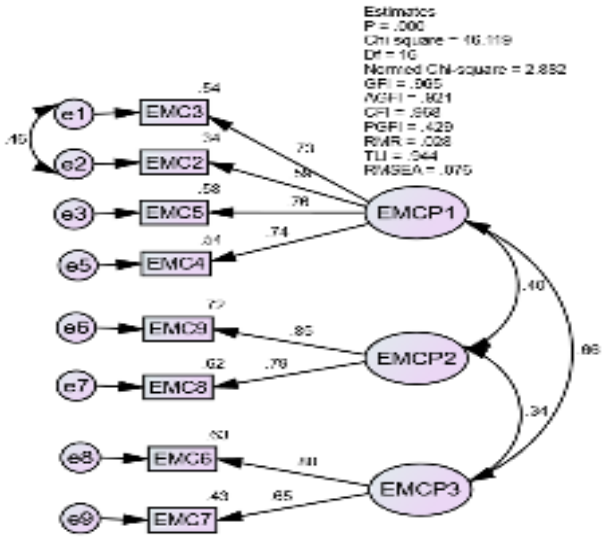

Figure 2 Modified of Entrepreneurial Mind-set Model

A modified measurement model (figure 2) displays the significant relationship between the responses of teachers and that of entrepreneurs on the 8 important elements of entrepreneurial mind-set needed by technical college students for sustainable self-employment in Nigeria. Therefore, going by (Figure 2) the modified model it can be determined that to achieve appropriate integration of entrepreneurial competencies into technical college programs, these significant elements of entrepreneurial mind-set should be put into consideration.

3.2 Validity and Reliability of Entrepreneurial Mind-set Model

Accordingly, the output estimate tables of EMC of the CFA through Amos 23 (Table 2) presented the values of all factor loadings above 0.6 were adequate. Similarly, the average variance extracted (AVE) of EM was 0.54 and the composite reliability (CR) of EM was 0.75. These results indicated that the overall values of AVE were higher than 0.5 and values of CR were higher than 0.6. Hence, these results showed that EM had adequate convergent validity as suggested by (Awang, 2016).

Table 2 Summary of the findings

Construct	Entrepreneurial Competencies Elements	% of Responses	
Entrepreneurial Mind-set	**EM3:** The possibility to become an entrepreneur.		
	EM2: Interest to become an entrepreneur.	**Teachers'**	**Entrepreneurs'**
	EM5: (enhance the role of technical colleges as strategic drivers in instilling entrepreneurial mind-set.);	85%	80%
	EM4: A strong desire to open their own business		
	EM9: Ability to think positively about venture creation in technology and design		
	EM8: Innovation skills development		
	EM6: Inserting entrepreneurship activities in the curriculum		
	EM7: Give opportunity to promising entrepreneurs to relate with the students		

Discussion

The result of this study as presented in entrepreneurial mind-set model which identified eight important competencies accepted by the respondents to be integrated into technical college programs. These competencies are discussed as follows: Interest to become an entrepreneur; A strong desire to open their own business; Ability to think positively about venture creation in technology; and design. Innovation skills development; with Rekha et al. (2015) who found that nurturing EM through motivation and learning has led to the growth of entrepreneurship among students. Accordingly, the findings are in line with Cruz-Ros et al. (2017) who affirmed that in order for technical college students to become successful entrepreneur they should have good motivational skills.

The possibility to become an entrepreneur; Enhance the role of technical colleges as strategic drivers in instilling entrepreneurial mind-set; and Hopes to be able to become an entrepreneur; Embedding entrepreneurial courses across the curriculum and Providing platform for nascent entrepreneurs to interact with the students. These findings are support by the work of Jabeen et al. (2017) who developed an interpretative structural model and found that these competencies as strategic drivers worthy for enhancing the role of colleges in instilling entrepreneurial mind-set.

Therefore, it can be deduced that EM is the most important component of ECs that could first be instil in the mind of the students. Since EM is an antecedent of entrepreneurial behaviour, aims or actions and signifies person's worldview: attitudes, character, motivations and assumptions. Non-cognitive and affective thinking can influence mind-set. On the other hand, a new business formulation, either as a new enterprise or as part of a current organization (Rae and Melton, 2016). Therefore, there is need for all Sub Sahara African countries, Nigeria inclusive to take a fore front action in the integration of EM in the content of technical college programs for better

nurturing of novice entrepreneurs that will go alongside with the current IR 4.0 development. Because this is one of the most important ways to position the perception of the youths to understand the importance of entrepreneurship and how to integrate multidisciplinary knowledge for the development of the entrepreneurial spirit to face the challenges of IR 4.0 (Yeung, 2015). Thus, EM has direct influence on the ECs because it will influence the students to start up their own venture after they have graduated. These competencies should be integrated into the technical college programs curriculum for self-employment that would enhance the productivity of the society for better entrepreneurship and economic growth of the nation.

Conclusion

This study offers essential EM model for integrating into technical college programs for sustainable employment in Nigeria. It is recommended for the stake holder in technical education to employ this model for the enhancement of poverty alleviation and job creation among our teaming youth. The model will also assist technical college teacher to instil entrepreneurial mind-set to their students which will enable them to become successful entrepreneurs upon their graduation. Since the model was validated it will be useful for researchers in the field of technical education and entrepreneurial competencies.

Recommendations

The study recommended the integration of entrepreneurial mind-set component into technical colleges' curriculum. It is also emphasis the implementation of this study by the stake holders, so that the menace of unemployment among the technical college graduate will be out of content more especially in sub-Sahara African countries. This EM model which has been validated, it is reliable to be used by other researchers in the field of technical education and entrepreneurs.

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