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Exploratory Factor Analysis of Financial Entrepreneurial Competencies for Technical College Programs for a Sustainable Self-employment

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Abstract--- *The study was aimed to explore and summarized Financial Entrepreneurial Competencies (FECs) through Exploratory Factor Analysis (EFA) for the development of a model for technical college programs in the North-West geo-political zone of Nigeria. The quantitative research approach was used to develop insight to stakeholders' perspective: teachers and entrepreneurs. The study used survey questionnaires. The sample of the study involved 331 participants, including 249 technical college teachers and 82 SMEs entrepreneurs form the three states in the zone. Statistical Package for Social Sciences (SPSS) version 24, was used to analysed the data collected and a value of 0.72 Cronbach's alpha was achieved. From the EFA, the study found that a three-factor structure is an appropriate method for describing the elements of FECs. Additionally, the value for KMO measure of sampling adequacy amount to 0.821 and the value for Bartlett's test was significant at the 0.000 level this indicated that correlation between the variables are sufficiently large for factor analysis. The study also identified 61.99% as a total variance explained which is greater than the accepted threshold value. All the 12 items had a sizable inter-item correlation > 0.4, except FEC9 and FECP14 were eventually removed due to the complexity of the variable and were omitted in EFA. The study also highlights; it has been concluded FECs are worthy for inclusion into technical college programs as entrepreneurial competencies required by technical college students for self-employment in Nigeria.*

Keywords--- *Financial Entrepreneurial Competencies, Self-Employment, Technical College Programs.*

I. INTRODUCTION

Financial competency is defined as conceptually how venture manage and design strategies for financial knowledge, which significantly affects the decision making, awareness and attitudes of decision makers, in relation to making the right decisions and performance of the venture [1]. FECs is consider as an enterprise competency assessment model [2]. Consequently, Chang et al. [3] FEC a primary competency need by entrepreneur. According to [4] financial and economic literacy is one of the most important ECs. Lack of FECs has been recognized as one of the elements liable for lacks of proper knowledge or information about financial decision making and that these decisions can, in turn, have enormous unexpected consequences [1].

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Consequently, technical college students are also liable of facing such issue when start up venturing [5] enumerated issue in financial competencies as to start a venture, an entrepreneur needs funds to start the venture and also to keep it buoyant. Therefore, FECs are important for inclusion into technical college curriculum.

II. METHODS

The purpose of this research is to explore and ascertain element of FEC required by technical college students in Nigeria that would be integrated in the technical college programs curriculum. Having an appropriate FEC will assist in integrating entrepreneurship training in the colleges which in turn produce novice and prospective entrepreneurs that will contribute in job creation and poverty alleviation in the country. The samples of the study involved 331experts as the respondents, which includes 249 technical college teachers and 82 SMEs entrepreneurs who were drawn from the population using Krejcie and Morgan (1970) table for determining the sample size of a known population. They construct 95% confidence interval with ±3.5% margin of error. Therefore, the rationale behind adopting this technique is every respondent in the population has an equal chance of been selected [6]. The study adopted McClelland's Human Motivation theory because in the context of entrepreneurship, the need to achieve results is a driving force that determines the extent of entrepreneurial activities. McClelland's goal was to discover and also examine the psychological factors that cause the entrepreneurial of personalities. McClelland believed that a society with high level n-achievement would produce more entrepreneurs [7]. Accordingly, it will assist in more rapid economic development, McClelland (1965) has opined that the provision of free enterprise depends on the person's psychic needs for realization rather than on the lust for funds [8]. This theory lends a quick interest to people's behaviour, aims and motivations and approaches in a way that entrepreneurs have a stronger requirement for achievement. It is noted that the commitment is very important for entrepreneurs and this effort makes entrepreneurs participate in entrepreneurship.

A. Data Collection

Data collection is an important aspect of conducting research in education. Data collection in this study was based on quantitative instrument [6].The teachers' and entrepreneurs' questionnaire was formulated by the researchers to answer research question about the required FEC for technical college students in Nigeria. The questionnaire consists two parts, Part I demographic information Part II contained the 17 items structured questionnaire Thus, both the two categories of the respondents used the 17 items structured questionnaire.

B. Exploratory Factor Analysis via SPSS

The EFA is carried out to determine the number of factors that influence the variables and which variables are related [9]. In this study, the main reason for using EFA is to determine which elements of the questionnaire precisely define the scale of individual variables and the exceptions that do not contribute to the scale of any variable. To be precise, the EFA is used to identify FEC elements by exploring and summarizing the basic correlational structure for the data collected using the 17 item questionnaire[10]. Samples of 331 raw data were used for analysis and reduction methods in this EFA were carried out using the FEC questionnaire. The EFA was carried out using SPSS 24, the principal factor analysis with Kaiser-Meyer-Olkin (KMO) and the Bartlett sphericity test; extraction correlation matrix with eigenvalues greater than 1 and maximum iterations for convergence up to 25;

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varimax rotation, correlation between elements, diagonal correlations of anti-image and total explained variance were taken into account. The threshold for KMO is> 0.5 and the Bartlett test, if significant, is less than 0.05; if KMO is <0.5, it is not interpreted [11]. Varimax rotation was adequate for correlated data and the factor load value greater than 0.5 was accepted. The elements that appeared in both aspects of the coefficient with values above 0.5 and those that appeared alone in the component were eliminated [11].

C. Data Analysis and Findings

An appropriate method and statistical tools were used to determine the results of this research. The data were verified using the descriptive statistics to test the data normality that is value of 2 for kurtosis and 7 for skewness [12] were used to screened the collected data in this study. The data was similarly analysed using EFA through SPSS version 24. To determine the suitable areas of FEC, EFA was used through discovery and summary of the basic data correlational structure collected for data with 17 items questionnaire [13].

III. RESULTS

The following tables present the results of EFA of FEC, including estimates of 17 items of FEC, namely FEC1 to FEC17. Table 1 shows normality and reliability test; similarly, no item was deleted in the test of normality and outliers and the overall Cronbach's Alpha coefficient of all the items is 0.878 (Table 1)which is higher than the recommended threshold value of 0.6 [11].

Table 1: Results of the Normality and Reliability Tests

Item	Cronbach's Alpha Value	N	Mean	Std. Deviation	Skewness		Kurtosis	
		Statistic	Statistic	Statistic	Statistic	Std. Err	Statistic	Std. Err
FEC1	.878	331	3.10	0.882	-1.003	.134	1.142	.267
FEC2		331	3.02	0.860	-.738	.134	.466	.267
FEC3		331	2.95	0.879	-.621	.134	.039	.267
FEC4		331	3.06	0.898	-.619	.134	-.369	.267
FEC5		331	3.00	0.952	-.800	.134	.342	.267
FEC6		331	3.13	0.907	-.971	.134	.699	.267
FEC7		331	2.95	0.928	-.527	.134	-.515	.267
FEC8		331	2.97	0.924	-.589	.134	-.292	.267
FEC9		331	2.87	0.966	-.623	.134	-.001	.267
FEC10		331	2.94	1.028	-.804	.134	.080	.267
FEC11		331	2.97	1.016	-.730	.134	-.214	.267
FEC12		331	3.05	0.963	-.950	.134	.646	.267
FEC13		331	3.08	0.959	-.913	.134	.375	.267
FEC14		331	3.15	0.859	-.780	.134	.043	.267
FEC15		331	3.09	0.954	-.850	.134	.062	.267
FEC16		331	3.20	0.915	-.877	.134	-.114	.267
FEC17		331	3.20	0.908	-1.033	.134	.622	.267
Valid N		331						

The value of KMO was .821, above the commonly recommended factor analysis validity threshold value of 0.5. This threshold value was held by the Bartlett's test of Sphericity which is significant at 0.00 and which confirmed that the results obtained were significant as shown in Table 2.

Table 2: KMO and Bartlett's Test

Kaiser-Meyer-Olkin (KMO) and Bartlett's Test		
Kaiser-Meyer-Olkin		.821
Bartlett's Test of Sphericity	Approx. Chi Square	598.643
	df	66
	Sig.	.000

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Three component of initial eigenvalues > 1 were indicated in Table 3, which collectively accounted for 61.99% of the variation in the actual variables greater than the minimum recognised variance explained of 60% [11]. This submitted that only three extracted factors had associative relationships. Likewise, the cumulative value of the Extraction and Rotation Sums of Squared Loadings were the same, making 61.99%. Therefore, the variation described by the initial solution had not been lost because of the latent factors which implied the suitability of the extraction method. Hence, 17 items of FECs were loaded into three factors (Table 3).

Table 3: Total Variance Explained of FECs

Component	Initial Eigenvalues			Extraction Sums of Square Loadings			Rotation Sums of Square Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	4.949	41.238	41.238	4.949	41.238	41.238	2.685	22.378	22.378
2	1.257	10.473	51.711	1.257	10.473	51.711	2.534	21.115	43.493
3	1.234	10.286	61.997	1.234	10.286	61.997	2.221	18.504	**61.997**
4	.871	7.259	69.256						
5	.703	5.860	75.116						
6	.631	5.256	80.372						
7	.576	4.804	85.176						
8	.468	3.896	89.072						
9	.449	3.740	92.812						
10	.363	3.029	95.841						
11	.272	2.264	98.104						
12	.227	1.896	100.000						

More so, all the 12 items had a sizable inter-item correlation greater than 0.4 with the exception of FEC9 and FEC14. Upon review the meaning of this item, FEC9 (Developing a flexible and competitive cash and price index.) and FECP14 (Knowledge of creation expansion path in business organization.) were eventually removed due to the complexity of the variable and were omitted in EFA. This indicated that there is a patterned relationship amongst the variables in this construct [14]. Upon reviewing FEC1, FEC12 and FEC13 were also omitted in EFA as shown in Table 5 below.

Table 4: Communalities and Matrixes of FECs

	Communalities		**Component Matrix**			**Rotate Matrix component**		
	Initial	**Extraction**	**Component**			**Component**		
			1	2	3	1	2	3
FEC1	1.000	.408						
FEC2	1.000	.541			.580		.663	
FEC3	1.000	.540			.513		.603	
FEC4	1.000	.537	.544			.541		
FEC5	1.000	.525	.662			.638		
FEC6	1.000	.566	.745			.772		
FEC7	1.000	.526	.692			.792		
FEC8	1.000	.532	.687			.635		
FEC9	1.000	.372	.457					
FEC10	1.000	.698			.795		.795	
FEC11	1.000	.714			.795		.852	
FEC12	1.000	.686			.594			
FEC13	1.000	.528		.687				
FEC14	1.000	.374		.537				
FEC15	1.000	.488		.608				.710
FEC16	1.000	.567		.633				.776
FEC17	1.000	.532		.665				.810

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Consequently, factor 1 covered five items FEC7 (Understanding of the operation of the capital market), FEC6 (Knowledge in pricing and estimating of goods and services.), FEC5 (Knowledge in book keeping.), FEC8 (Knowledge of cash flow and financial management of available resources.) and FEC4 (Managing, planning and budgeting strategies of the venture.). Factor 2 had four items FEC11 (Maintaining a standard and competitive pricing policy.), FEC10 (Knowledge of cash flow and financial auditing and taxation.), FEC2 (Financial discipline and value for money.) and FEC3 (Successful planning of the enterprises to obtain the required finance.). Factor 3 covered three items FEC17 (Plan for future occurrence.), FEC16 (Ability to assess success or failure of the business.) and FEC15 (Manage and assess on-going financial viability of key customers.). As a result, the findings of this study are presented in figure 1 as shown below.

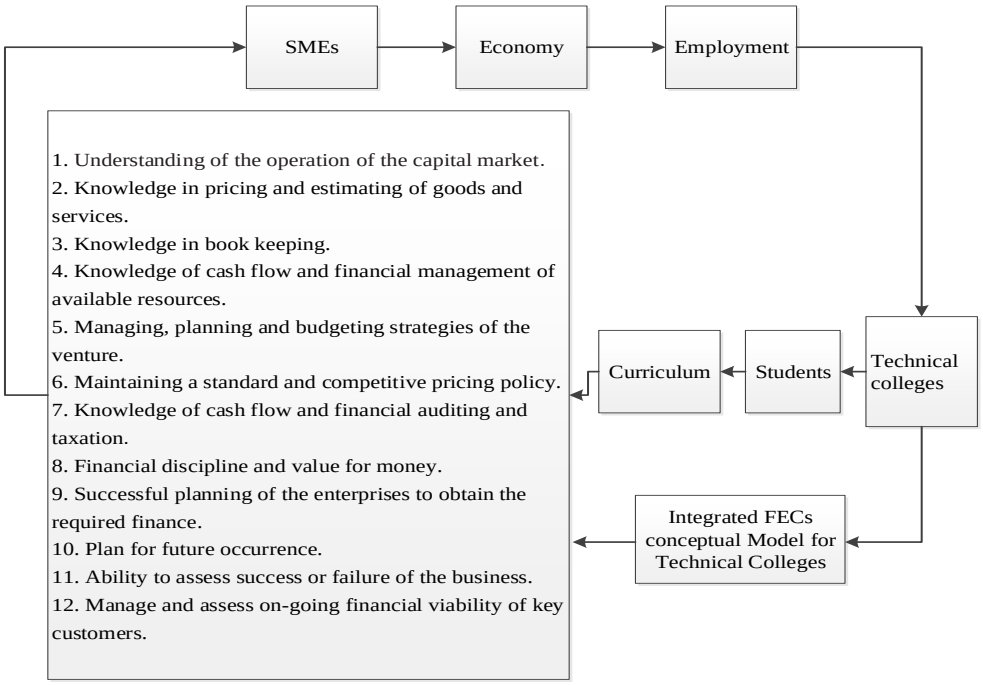

Figure 1. Conceptual Model of FECs skills for Technical Colleges

Figure 1: Conceptual Model of FECs Skills for Technical Colleges

IV. DISCUSSION

The result of this study revealed FECs as a vital component of ECs. The study recommended that FECs is required by technical college students as technical entrepreneurs so that they become self-employed after graduation. This recommendation is in line with the assertions of Brown and Hanlon [15] who ascertained that financial skills are the most important aspect needed by an entrepreneur for effective running of a business. This study reveals 12 elements as the main important skills of FECs for the ECs model required by technical college students in Nigeria.

The study emphases the importance of financial statement as one of the specific FECs dimension required by technical college students. Financial statement is a formal record of financial doings of an enterprise, individual, or any other person [16]. It includes, balance, income and cash flows statement [17].The objective of financial statements is to provide information on the financial position [18] performance and changes in the financial situation

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[19]. Assets, equity, liabilities, income and expenses are directly related to the financial situation of a business [20].

Furthermore, accountability is another specific important dimension of FECs as ascertained by [21] that accounting skill was found to be instrumental to entrepreneurial performance. Noh and Lim [22] found that accountability was a crucial skill needed to strengthen FEC.

Moreover, risk taking is also vital FECs dimension, needed by entrepreneur to prosper. Risk taking in an entrepreneurial perspective was identified [23] as to manage ambiguity and uncertainty condition in an innovative level and make sound decision in a such condition that can be able to control one's emotion. This finding is in line with the assertion of Robles and Zárraga-Rodríguez [24] who established that risk taking is a key individual skill that should be developed by student to become entrepreneur.

V. CONCLUSION

The result of this study was used to develop a ECs conceptual model for integrating into technical college programs. The EFA findings showed that a three-factor structure is an appropriate method for describing FEC elements. This conceptual model will assist in having a sustainable entrepreneurship that would boost economic growth of the nation more especially through the SMEs. The conceptual model was developed in accordance with the analysed data via EFA showing the vital FEC elements according to their appropriateness for the effective integration into technical college programs in Nigeria. The conceptual model has an implication to NBTE which is the supervisory agency toward the ensuring of the integration into the curriculum so that the knowledge should be imparted into the students.

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