

## **E**NTREPRENEURIAL TECHNICAL SKILLS REQUIRED BY BUILDING CRAFT STUDENTS IN TECHNICAL COLLEGES FOR ESTABLISHING SMALL AND MEDIUM ENTERPRISES IN NIGERIA

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### **ABSTRACT**

*Entrepreneurial technical skills are the knowledge and expertise needed to accomplish complex tasks relating to computational and physical technology that make an individual achieve success in the world of work. There have been reports of increase of unemployment, unproductivity and unprofitability of the building technology graduates, probably due to adequate skill acquisition lapses. The building technology graduates need to exhibit exceptional abilities for the discharge of their responsibilities to the society, and to position them better in establishing Small and Medium Enterprises (SMEs). This paper identified the entrepreneurial technical skills required by building craft students in technical colleges for establishing SMEs in Nigeria. The descriptive survey design was used for the study. The target population was all the building construction trades teachers and managers of technical workshops in technical colleges in Ebonyi state. A*

### **Introduction:**

Entrepreneurial activities seek to foster individuals to undertake the conscientiousness of making innovations in the economy by initiating sound ideas for the production and distribution of new goods and services with renowned and working business models. The entrepreneurship concept has become globally super importance for accelerating economic growth, both in the developed and developing countries (Garba, Onyebuchi and Onoh, 2017). It speaks volumes about the economic status of a nation. Individuals'

*structured questionnaire in line with the formulated two research questions was used to guide the study. The statistical mean, standard deviation, and t-test analysis were used to analyze the data. Findings of the study showed that building construction entrepreneurial technical skills like choosing appropriate foundation and building renovation entrepreneurial technical skills like ability to carry out housing evaluation are essential to building craft students for establishing SMEs in Nigeria. The paper recommended that constant seminars and workshops should be organized for trainees and teachers in technical colleges on the need of acquiring entrepreneurial skills. The findings of the study could be applied in building technology education and other training outfits for adequate equipping of the trainees towards optimum building project delivery.*

**Keywords:** *Entrepreneurship, Technical skills, Building craft, Small and medium scale enterprises, Technical colleges.*

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Level of entrepreneurial excellence depends on the extent of skills like technical skill, commercial skill, and so on possessed by such persons. Technical skills refer to the knowledge and expertise needed to accomplish complex actions, tasks and processes relating to computational and physical technology as well as diverse groups of other enterprises. Technical skills are highly relevant for sustainable employability opportunities (Yahya, Iskandar and Sunardi, 2017) towards adequate managerial and entrepreneurial performance (Hysong, 2008) in complex work sector like the building industry. Skill acquisition for the building industry often starts at the technical college level. At this level, building technology programme is aimed at producing skilled craftsmen (from among the building craft students) who will be able to perform basic building technology functions both in the private and public sectors. Technical skills in the building technology profession exist for both building construction and building renovation activities. Basic building technology functions like site investigations and surveying, determining construction materials, components, system and techniques, building

services, operation and maintenance, energy supply and efficiency, structural systems, communications, as well as smart technology could provide profitable SMEs opportunity.

SMEs, which are non-subsidiary independent firms that employ very few number of employees plays a vital role in the economic development of a developing country like Nigeria. Since SMEs contribute significantly to the attainment of economic development of a nation (Abdul, 2018), it is wise to determine technical-based entrepreneurial skills needed by individuals in various sectors for profitable SMEs ventures. Mbanefo and Eboka (2017) conducted a study on acquisition of innovative and entrepreneurial skills in basic science education for job creation in Nigeria. They used a population of 441 principals and 4340 basic science teachers to gather information with 22-item questionnaire instrument on entrepreneurial skills acquisition. The findings of their study suggest that teachers are required to use practical oriented methods in teaching the students to enable the acquisition of the adequate skills in science education for job creation.

Ikupolati et al. (2017) conducted a study on entrepreneurs' managerial skills as determinants for growth of small and medium enterprises in Nigeria. They used a simple random sample of 204 entrepreneurs of registered SMEs with Corporate Affairs Commission in Abuja, Kaduna, Kano, Ibadan, Lagos and Aba for the study. They discovered that both the entrepreneurs' conceptual and technical skills contribute to the managerial skills of the entrepreneurs that could bring growth in SMEs in Nigeria.

Ugwoke et al. (2016) used four research questions and null hypotheses with a population of 473,455 persons to investigate human capital development needs of Nigeria students for entrepreneurship education through career and technical education. The findings of the study showed that there was no significant difference between the respondents on the entrepreneurial skills in planning, organising, and co-ordinating and implementing an enterprise as well as resources and methods of teaching the skills.

Although other researchers in the past have conducted studies to determine skills needed for better establishment and running of SMEs in Nigeria, the studies are yet to cover all necessary issues bordering business in general, and building technology in particular. In this paper, the entrepreneurial technical skills required by building craft students in technical colleges for establishing SMEs in Nigeria were studied. Emphasis was laid on the building construction and renovation entrepreneurial technical skills in the study. The study is significant for building technology education establishments and other training outfits for adequate equipping of the trainees towards optimum delivery of building projects.

### Statement of the Problem

A major setback of the building industry is the incessant degradation of the output of the graduates when exposed to the world of work. There have been reports of increase of unemployability, unproductivity and unprofitability of the building technology graduates, probably due to adequate skill acquisition lapses. The resultant effect is redundancy of the building technology graduates, as well as failure and collapse of building and civil engineering structures. Although researchers in the past have conducted studies on ways of improving skill acquisition in building technology profession, studies in the area are not sufficient as many aspects of skills acquisition are yet uncovered. A study on entrepreneurial technical skills required by building craft students at the technical college level for establishing SMEs calls for urgent research attention to mitigate the above mentioned problems.

### Research Objectives

- i. To determine building construction entrepreneurial technical skills required by building craft students in technical colleges for establishing SMEs in Nigeria.
- ii. To determine building renovation entrepreneurial technical skills required by building craft students in technical colleges for establishing SMEs in Nigeria.

### Research Questions

- i. What are building construction entrepreneurial technical skills required by building craft students in technical colleges for establishing SMEs in Nigeria?
- ii. What are building renovation entrepreneurial technical skills required by building craft students in technical colleges for establishing SMEs in Nigeria?

### Hypotheses

- H<sub>01</sub> There is no significant difference in the mean responses of teachers of building construction trade of technical colleges, and managers of technical workshops on building construction entrepreneurial technical skills required by building craft students in technical colleges for establishing SMEs.
- H<sub>02</sub> There is no significant difference in the mean responses of teachers of building construction trade of technical colleges, and managers of technical workshops on building renovation entrepreneurial technical skills required by building craft students in technical colleges for establishing SMEs.

### Methodology

The research adopted the survey research design. The study was conducted in Ebonyi State of Nigeria. The target population was all the building construction trades teachers and managers of technical workshops in technical colleges in Ebonyi state. The population consists of 50 building construction trades teachers and 72 managers of technical workshops. A questionnaire survey that contained 20-item statements was administered to 122 respondents over a period of five weeks. The questionnaire sought for information from the respondents based on the building construction entrepreneurial technical skills and building renovation entrepreneurial technical skills required by building craft students in technical colleges for establishing SMEs in Nigeria. The research instrument exhibited a Cronbach's alpha reliability coefficient of 0.84. The statistical mean, standard deviation and t-test were used to analyze the data. The decision rule for the mean statistics was 3.0. A mean of 3.0 and above was accepted, while a mean below 3.0 was rejected.

## Results

Table 1 shows the results of the mean and standard deviation analysis of the respondents on the building construction entrepreneurial technical skills needed by building craft students in technical colleges for establishing SMEs in Nigeria. Table 2 contains t-test analysis of the mean rating of the responses of building construction trades teachers of the technical college, and managers of technical workshops on the building construction entrepreneurial technical skills required by building craft students in technical colleges for establishing SMEs in Nigeria. Table 3 shows the results of the mean and standard deviation analysis of the respondents on the building renovation entrepreneurial technical skills needed by building craft students in technical colleges for establishing SMEs in Nigeria. Table 4 contains t-test analysis of the mean rating of the responses of building construction trades teachers of the technical college, and managers of technical workshops on the building renovation entrepreneurial technical skills required by building craft students in technical colleges for establishing SMEs in Nigeria. The results are presented in line with the research questions and hypotheses.

### Research Question 1

What are building construction entrepreneurial technical skills required by building craft students in Technical Colleges for establishing SMEs in Nigeria?

**Table 1**

*Mean and standard deviation responses of the respondents on the building construction entrepreneurial technical skills required by building craft students in Technical Colleges for establishing SMEs in Nigeria*

S/N	Item Statements	X	SD	Remarks
1	Reading and interpreting building plans	3.77	0.81	Required
2	Choosing appropriate foundation for a particular building	4.09	0.94	Required
3	Setting out of building using builder's square	3.80	0.62	Required
4	Mixing of cement, sand and gravel plus water in their right proportion	3.54	0.96	Required
5	Using head pan or wheel barrow for measuring materials	3.79	0.74	Required

6	Ability to mix concrete and obtain uniform colour manually	3.51	0.80	Required
7	Ability to use machine mixer to mix concrete	3.52	0.66	Required
8	Compacting of concrete using rammer	3.64	0.89	Required
9	Ability to plumb block walls using spirit level correctly	3.61	0.75	Required
10	Ability to plaster and render walls using trowel and stone rub	3.69	0.65	Required
11	Levelling of building using building lines and spirit level	3.64	0.90	Required
12	Compacting of concrete members using machine vibrator	3.54	0.68	Required
13	Ability to determine height of roof from its slope	3.96	0.94	Required

### Hypothesis 1:

$H_{01}$  There is no significant difference in the mean responses of teachers of building construction trade of technical colleges, and managers of technical workshops on building construction entrepreneurial technical skills required by building craft students in technical colleges for establishing SMEs.

**Table 2**

*t*-test analysis of the mean rating of the responses of building construction trades teachers of the technical college, and managers of technical workshops on the building construction entrepreneurial technical skills required by building craft students in Technical Colleges for establishing SMEs in Nigeria  $N=122$

Variable	N	X	SD	Df	t-cal	t-tab	Decision
<b>Item 1 Teachers</b>	50	3.75	0.81	121	-0.27	1.96	Accept $H_0$
<b>Managers</b>	72	3.79	0.82				
<b>Item 2 Teachers</b>	50	4.11	0.93	121	0.23	1.96	Accept $H_0$
<b>Managers</b>	72	4.07	0.94				
<b>Item 3 Teachers</b>	50	3.81	0.61	121	0.18	1.96	Accept $H_0$
<b>Managers</b>	72	3.79	0.62				
<b>Item 4 Teachers</b>	50	3.55	0.97	121	0.11	1.96	Accept $H_0$
<b>Managers</b>	72	3.53	0.96				
<b>Item 5 Teachers</b>	50	3.78	0.73	121	-0.15	1.96	Accept $H_0$
<b>Managers</b>	72	3.80	0.74				

<b>Item 6</b>	<b>Teachers</b>	50	3.52	0.82	121	0.13	1.96	Accept Ho
	<b>Managers</b>	72	3.50	0.79				
<b>Item 7</b>	<b>Teachers</b>	50	3.53	0.66	121	0.17	1.96	Accept Ho
	<b>Managers</b>	72	3.51	0.65				
<b>Item 8</b>	<b>Teachers</b>	50	3.66	0.90	121	0.24	1.96	Accept Ho
	<b>Managers</b>	72	3.62	0.89				
<b>Item 9</b>	<b>Teachers</b>	50	3.59	0.74	121	-0.29	1.96	Accept Ho
	<b>Managers</b>	72	3.63	0.75				
<b>Item 10</b>	<b>Teachers</b>	50	3.71	0.65	121	0.34	1.96	Accept Ho
	<b>Managers</b>	72	3.67	0.64				
<b>Item 11</b>	<b>Teachers</b>	50	3.65	0.93	121	0.12	1.96	Accept Ho
	<b>Managers</b>	72	3.63	0.88				
<b>Item 12</b>	<b>Teachers</b>	50	3.55	0.68	121	0.16	1.96	Accept Ho
	<b>Managers</b>	72	3.53	0.67				
<b>Item 13</b>	<b>Teachers</b>	50	3.98	0.92	121	0.23	1.96	Accept Ho
	<b>Managers</b>	72	3.94	0.96				

### Research Question 2

What are building renovation entrepreneurial technical skills required by building craft students in Technical Colleges for establishing SMEs in Nigeria?

**Table 3**

*Mean and standard deviation responses of the respondents on the building renovation entrepreneurial technical skills required by building craft students in Technical Colleges for establishing SMEs in Nigeria.*

S/N	Item Statements	X	SD	Remarks
14	Ability to carry out housing evaluation	4.00	0.80	Required
15	Estimating cost of renovation correctly	3.83	0.82	Required
16	Supervising renovation work adequately	3.85	0.62	Required
17	Ability to take correct decision at the right time	3.81	0.79	Required
18	Sourcing renovation materials correctly	3.66	0.88	Required



19	Decorating building renovated parts correctly	3.68	0.76	Required
20	Ability to use computer systems effectively	3.64	0.98	Required

### Hypothesis 2:

Ho<sub>2</sub> There is no significant difference in the mean responses of teachers of building construction trade of technical colleges, and managers of technical workshops on building renovation entrepreneurial technical skills required by building craft students in technical colleges for establishing SMEs.

### Table 4

*t*-test analysis of the mean rating of the responses of building construction trades teachers of the technical college, and managers of technical workshops on the building renovation entrepreneurial technical skills required by building craft students in Technical Colleges for establishing SMEs in Nigeria N=122

Variable	N	X	SD	Df	t-cal	t-tab	Decision
<b>Item 14 Teachers</b>	50	4.02	0.81	121	0.20	1.96	Accept Ho
<b>Managers</b>	72	3.99	0.80				
<b>Item 15 Teachers</b>	50	3.85	0.82	121	0.26	1.96	Accept Ho
<b>Managers</b>	72	3.81	0.83				
<b>Item 16 Teachers</b>	50	3.83	0.61	121	-0.35	1.96	Accept Ho
<b>Managers</b>	72	3.87	0.63				
<b>Item 17 Teachers</b>	50	3.82	0.80	121	0.14	1.96	Accept Ho
<b>Managers</b>	72	3.80	0.79				
<b>Item 18 Teachers</b>	50	3.68	0.89	121	0.25	1.96	Accept Ho
<b>Managers</b>	72	3.64	0.87				
<b>Item 19 Teachers</b>	50	3.66	0.76	121	-0.28	1.96	Accept Ho
<b>Managers</b>	72	3.70	0.77				
<b>Item 20 Teachers</b>	50	3.65	0.98	121	0.11	1.96	Accept Ho
<b>Managers</b>	72	3.63	0.97				

### Discussion of Findings

The data presented in Table 1 revealed that the thirteen building construction entrepreneurial technical skills have mean and standard deviation values range of 3.51 to 4.09 and 0.62 to 0.94 respectively. It shows that all the thirteen skills are required by building craft students in technical colleges for establishing SMEs in Nigeria. It was found that setting out building using builder's square, choosing appropriate foundation for a particular building, and ability to determine height of roof from its slope are the highly required building construction entrepreneurial technical skills required by the building craft students. Other building construction entrepreneurial technical skills that were rated high are reading and interpreting building plans, using head pan or wheel barrow for measuring materials, ability to plaster and render walls using trowel and stone rub, levelling of building using building lines and spirit level, and compacting of concrete using rammer. The findings of the study are in line with the submission of Egba et al. (2017) that the ability to interpret building drawings is an essential skill needed by building construction professionals for effective building project delivery. The standard deviation values show that the opinions of the respondents were not far from one another. The t-test analysis in Table 2 indicates that the assumption that there is no significant difference in the opinions of building construction trade teachers in technical colleges and managers of technical workshops on the building construction entrepreneurial technical skills required by building craft students for establishing SMEs in Nigeria was upheld at 95 % confidence level for all the thirteen items. It concurs with the deduction of Ugwoke et al. (2016) that no significant difference exists in the opinions of the respondents on the entrepreneurial skills requirement in planning, organising and co-ordinating an enterprise. The data presented in Table 3 revealed that the seven building renovation entrepreneurial technical skills have mean and standard deviation values range of 3.64 to 4.00 and 0.62 to 0.94 respectively. It shows that building craft students in technical colleges require renovation skills like ability to carry out housing evaluation, estimating cost of renovation correctly, supervising renovation work adequately, and ability to take correct decision at the right time for establishing SMEs in Nigeria. Other required renovation skills are sourcing renovation materials correctly, decorating building renovated parts correctly, and ability to use computer systems effectively. The findings of the study agree with the assertion of Egba et al.

(2018) that decision-making is a necessary skill that building industry experts need to possess for excellent building construction exercise. The standard deviation values show that the opinion of the respondents did not vary much from one another. The t-test analysis in Table 4 indicates that the assumption that there is no significant difference in the opinions of building construction trade teachers in technical colleges and managers of technical workshops on the building renovation entrepreneurial technical skills required by building craft students for establishing SMEs in Nigeria was upheld at 95 % confidence level for all the seven items.

### Conclusion and Recommendation

The paper discussed the entrepreneurial technical skills required by building craft students in technical colleges for establishing small and medium enterprises in Nigeria. The study used the questionnaire research instrument to collect data from 122 respondents on the building construction entrepreneurial technical skills and building renovation entrepreneurial technical skills required by building craft students in technical colleges for establishing SMEs in Nigeria. The questionnaire contained 13-item statements for building construction entrepreneurial technical skills, and 7-item statements for building renovation entrepreneurial technical skills. The statistical mean, standard deviation and t-test were used to analyze the data. The following deductions were made, namely:

- Building craft students highly require building construction entrepreneurial technical skills such as setting out building using builder's square, choosing appropriate foundation for a particular building, and ability to determine height of roof from its slope for establishing SMEs in Nigeria.
- The students also require other building construction entrepreneurial technical skills like reading and interpreting building plans, using head pan or wheel barrow for measuring materials, ability to plaster and render walls using trowel and stone rub, levelling of building using building lines and spirit level, and compacting of concrete using rammer.
- Building craft students in technical colleges require renovation skills like ability to carry out housing evaluation, estimating cost of renovation correctly, supervising renovation work adequately, and ability to take correct decision at the right time for establishing SMEs in Nigeria.
- Other required renovation skills are sourcing renovation materials correctly, decorating building renovated parts correctly, and ability to use computer systems effectively.

- There is no significant difference in the opinions of building construction trade teachers in technical colleges and managers of technical workshops on the entrepreneurial technical skills required by building craft students for establishing SMEs in Nigeria at 95 % confidence level.

Based on the findings of the study, it was recommended that the ministry of commerce and industry should always conduct instructional supervision aimed at improving the entrepreneurial skills and competence in technical colleges. Constant seminars, workshop and conferences should be organized for trainees in technical colleges and teachers on the need for entrepreneurial competences for the world of work.

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