

## Skills Improvement Needs of Building Craftsmen in Building Construction Industries for National Security.

By:

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### Abstract

*This study was designed to determine the Skills Improvement Needs of Building Craftsmen in Building Construction Industries for National Security in Bauchi State, Nigeria. The research adopted a descriptive survey research design. The target population for the study was 61 respondents made up of 34 Building Engineers and 27 Foremen in the Building Construction Industries. A 63 item structured questionnaire was used for data collection. The instrument was validated by three experts and Cronbach alpha reliability estimate was used to ascertain the extent of sameness of the items and reliability coefficient of 0.82 was obtained. Data was collected and analysed using statistical package for social science (SPSS Version 22), Mean and standard deviation were used to answer the research question, while t-test was used to test the hypothesis at 0.05 level of significance. The findings on skills required indicated that all the items are required by the respondents, and the finding on the techniques of improving skills gap indicated that the respondents agreed with all the items. Findings revealed that building craftsmen in building construction industries required all the practical skills need for improvement in their work trade in brick/block work skills, plastering/rendering skills and foundation skills for national security. The study therefore recommended among others, that Building Construction Industries should organize retraining workshop for their Craftsmen on the areas where they require skill improvements.*

**Keywords:** Skills Improvement Needs, Building Craftsmen, Construction Industries

### Introduction

The building construction industries play a key role not only in terms of the national economy of any country but stands as a central function in providing the urban fabric necessary for man's progress towards greater civilization. The level of building achievement and activity in any country is a measure of the country's success that reflects the two relevant factors: a high level of building activity indicating a healthy vigorous national economy; and

highly developed building forms indicating a high level of civilized and cultural achievement in a country, (Obiegbu, 2003).

Construction industry in Nigeria is built on a foundation of skilled craftsmen who are primarily supplied through various sources such as craft training institutions, vocational or technical colleges, on the job training and apprenticeship (Yakubu,

2003). Ubenyi (1999) and Anigbogu (2002) opined that the labour-intensive nature of construction activities in Nigeria was attributed to the predominance of large number of construction firms that rely solely on skilled and unskilled labour for their operations. Studies by (Obiegbo, 2002; Bokini, 2005 and Njoku, 2007) have indicated the existence of shortages of quality craftsmen in the Nigerian construction industry. Typically, young workers are often recruited through friends or relatives (often foreman) they are low or unskilled, earn low wages, and hence are less effective, (Sugiharto, 2010). These young workers enter the pool of construction workers for it is the only industry that can provide employment for those without any academic qualifications even though continuous employment is not guaranteed, (Sugiharto, 2010). The Federal Republic of Nigeria (FRN, 2013) stated that practical competencies play an important role in preparing building craftsmen in building construction Industries. Vocational Education equips learners with appropriate skills, abilities and competencies that contribute to the development of the society. Building construction is a form of Vocational and Technical Education as enshrined in the National Policy on Education, (FRN, 2013) to give training and impart the necessary skills for the production of craftsmen, technicians, technologists and other skilled personnel who shall be enterprising and self-reliant. For building construction industries to be very effective in the performance of their activities, these craftsmen might require skill improvement in their work.

Improvement is the process of making something better than what it was before. Improvement according to Olaitan, Amusa and Azouzu (2010) is the ability or condition for becoming better than before. According to Igweh and Bakare (2012), for a good work to be done, it requires knowledge and skills.

Skill and knowledge demonstrate competence and promote a professional image within construction industries. Shah and Burke (2003) defined skill as an ability to carry out a productive task at a certain level of competence. For the construction industry in Nigeria to be able to service the economy, it has

to parade competent hands in its operations, which includes credible consultants and contractors with qualified and competent operatives inclusive of craftsmen.

A craftsman refers to a person male/female who has been instructed in the fundamental theory of particular craftsmanship. Craftsmen are expected to continuously keep abreast of these technological changes and the new materials and technological methods that were brought into the construction industries. Sackey (2009) describe construction craftsmen as those trained and skilled operatives who work manually with great expertise in various stage of the construction work. However, this study concerned itself with the practical skills required and the techniques for improving the identified practical skills gap of building craftsmen in building construction industries. For good practical skills of craftsmen in plastering and rendering of walls operation, the technique must be complied: ability of the craftsmen to clean the surface thoroughly, ability to clean up the working area. According Baylor (2013), Craftsmen operations in the building construction industry involve the skills required in accomplishing given tasks in ability of Mixing Mortars by hand, ability of Moulding of Blocks, ability Laying of Blocks, ability of Rendering of Walls, ability of Wall Tiling, ability of Pointing Top Walls and Laying of Curved Walls (Arches). Brick/block work operations are based on actual jobs and not pseudo jobs. The training should be carried out to the extent where it gives the trainee a productive ability with which craftsmen can secure and hold employment and be able to profit their skills. For employment, craftsmen lack the skills to adhere to these regulations on foundation. Foundation skills are required at all stages of a person's working life. Throughout the world, the business environment within which construction organizations operate continues to change rapidly. Organizations that fail to adapt and respond to the complexity of the new environment tend to experience survival problems in building construction industries (Lee, Allen, Meyer & Rhee 2001). Building construction industries have the awareness for improving their performance for national security preventing crime on construction sites has become a major concern for building

contractors and losses from theft and destruction in Nigeria can make difference between making a profit and experiencing a loss on a job. Theft and destruction is has a serious problem in the construction industry and losing equipment, materials, and tools as a result of theft, costs the average contractor thousands of Naira each year because of lack of security.

According to Fischer and Green, 'security implies a stable, relatively predictable environment in which an individual or group may pursue its ends without disruption or harm and without fear of such disturbance or injury' (2004, p. 21). A traditional definition of security may be the provision of private services in the protection of people, information and assets for individual safety or community wellness (Craighead, 2003). In addition, private or commercial security may be considered as the provision of paid services in preventing undesirable, unauthorized or detrimental loss to an organization's assets (Post and Kingsbury, 2009). According to Asad (2007) national security cannot be narrowed down to exclusively military term. Socio economic and cultural aspects, problems of growth and modernization, and national integration should be deemed important in considering national security. According to Umar (2014), global development now suggests the need for another analogous broadening definition of national security to include resources, environmental and demographic issues. National security request involves a lot of issues. It practically touches on all spheres of human existence. It ranges from food security to issues of environmental degradation. It touches on health matters. It encompasses psychological security as well as arms security. It was on this note, that there's need for skills improvement needs of building craftsmen in building construction industries for national security in Bauchi State, Nigeria.

### Statement of the Problem

The major goals of preparing building craftsmen are to succeed in building construction industries for national security, in the labour market and to equip them with the required skills that can enable them earn a living. Building craftsmen are expected to secure employment, set up their own businesses

and to be able to employ others based on the goals of technical education (FRN, 2013). The techniques for improving the identified practical skills gap of building craftsmen in areas of employment in building construction industries includes: Electrician, Steel fixer, Bricklayers, Plasterer, Painter and Decorator, Carpentry and Joiner. FRN (2013) states the goals of Technical College Building craftsmen as follows: understand the processes, materials, tools and equipment used in building construction, construct or supervise the construction of a simple residential building for national security, prepare for further studies in the construction or allied professions, earn a living through participation in building construction work and inculcate safe working habits in building construction industries. However, in recent years there are complains about the ineffectiveness of some craftsmen in building construction industries. Joshua (2012) stated that there is a growing concern among industrialists that craftsmen from technical institutions do not possess adequate work skills necessary for employment in building construction industries for national security. Hence the problems of the study is what are the skills improvement needs of building craftsmen in building construction industries for national security in Bauchi State, Nigeria.

### Research Questions

The following research questions were raise for this study:

1. What are the practical skills required by building craftsmen in building construction industries for National Security in Bauchi State, Nigeria?
2. What are the techniques for improving the identified practical skills gap of building craftsmen in the building construction industries for National Security in Bauchi State, Nigeria?

### Hypotheses

The following hypotheses were formulated for the study and were tested at .05 level of significance.

**Ho<sub>1</sub>:** There is no significant difference in the mean responses of building engineers and building foremen on the practical skills required by building craftsmen in building construction industries for national security in Bauchi State, Nigeria.

**H<sub>02</sub>:** There is no significant difference in the mean responses of building engineers and building foreman on the techniques for improving the building craftsmen practical skills gap identified for effective functioning in the building construction industries for national security in Bauchi State, Nigeria.

### Methodology

The study used the descriptive survey research design. The area of this study was Bauchi State, Nigeria. The target population for this study was sixty one subjects which comprised thirty four building engineers and twenty seven foremen. Purposive sampling was used to select nine construction industries out of sixty one construction industries Bauchi State. This is because the building engineers / foremen in these building construction industries have a good number of craftsmen who are their staff and are in a good position to provide accurate and reliable judgment in terms of what are the practical skills are required of building craftsmen and finding out the techniques for improving the identified practical skill gap of building craftsmen to improved result in the building construction industries. A self-structured questionnaire developed by the researcher with

4-point respire of four-point scale was used and was validated by three experts from Federal University of Technology Minna. Cronbach Alpha Reliability Coefficient method was used to determine internal consistency of 0.82 was obtained using Cronbach alpha reliability estimate. A sixty three items questionnaire was used for data collection. Statistical package for social sciences was used for data analysis (SPSS Version 22.00). Mean and Standard deviation were used to answer the research questions. Analysis of t-test was used to test the null Hypotheses at .05 level of significance.

## RESULTS

### Research Question 1

What are the Practical Skills Required by building craftsmen in building construction industries for national security in Bauchi State, Nigeria?

**Table 1: Mean with standard deviation of Practical Skills required by building craftsmen in building construction industries for national security in Bauchi State, Nigeria.**

Block/Brickwork							
S/No		$\bar{X}_1$	SD <sub>1</sub>	$\bar{X}_2$	SD <sub>2</sub>	$\bar{X}_A$	SD <sub>A</sub> Decision
1.	Ability to lay the first course and check for accuracy using spirit level and straight edge	3.41	0.69	3.47	0.75	3.44	0.72 Required
2.	Ability to lay course III and subsequent courses and check for accuracy using spirit level and straight edge	3.30	0.72	3.24	0.74	3.27	0.73 Required
3.	Ability to use steel to support window and window door opening in wall.	3.22	0.58	2.91	0.75	3.07	0.67 Required
4.	Ability to ensure that the joints are truly vertical and squared to each opposite side	3.33	0.62	3.06	0.60	3.20	0.61 Required
5.	Ability Prepare insulating formwork of hollow blocks	3.33	0.55	3.03	0.76	3.18	0.66 Required
7.	Ability to fill-in the joint with mortar	3.37	0.49	3.03	0.80	3.20	0.65 Required
8.	Ability to work from a scaffold and sometimes their scaffold can be several stories high	3.41	0.69	3.32	0.68	3.37	0.69 Required
9.	Ability to stack the required quality of bricks/blocks	3.19	0.74	2.97	0.76	3.08	0.75 Required
		3.26	0.59	2.97	0.76	3.12	0.68 Required

10.	Ability to arrange the pioneering concrete pre-cast blocks on hard-core to keep the Island low and reduce the inverted water waves	3.26	0.59	3.06	0.74	3.16	0.67	Required
11.	Ability to finish a smooth surfacing watery method	3.26	0.66	3.38	0.65	3.32	0.66	Required
12.	Ability to measure and add to the mix desired amount of water required (30 liters) for one bag of cement and eight head pans of sharp sand	3.26	0.76	3.26	0.71	3.26	0.74	Required
13.	Ability to set out the base of the wall in line with the building drawing	3.15	0.72	3.35	0.65	3.25	0.69	Required
14.	Construct the pioneering (innovative) concrete pre-cast block	3.26	0.53	3.21	0.73	3.24	0.63	Required

### Plastering/Rendering Skills

15.	Ability to smoothen the edge of the corners of the wall with corner rubber after removing the wooden lathe	3.48	0.51	3.18	0.63	3.33	0.57	Required
16.	Ability to place plaster screed at convenient thickness on the wall with trowel	3.15	0.77	3.24	0.70	3.20	0.74	Required
17.	Ability to level up (smoothen the surface with the wooden float to form a sandy-gritty finish	3.37	0.63	3.12	0.69	3.25	0.66	Required
18.	Ability to fix wooden lath or batten at the edge of the wall in order to get the thickness of the plaster	3.44	0.51	3.18	0.72	3.31	0.62	Required
19.	Ability to spread mortar screed evenly on the first course to a thickness of 13mm	2.93	0.68	3.15	0.56	3.04	0.62	Required
20.	Ability to cure the rendered wall	3.22	0.70	3.26	0.67	3.24	0.69	Required
21.	Ability to spread mortar screed evenly on the first course to a thickness of 13mm	3.30	0.54	3.29	0.63	3.30	0.59	Required
22.	Ability to make a hollow or conical heap of the cement and sand constituents in order to receive the water for mixing	3.56	0.64	3.15	0.70	3.36	0.67	Required
23.	Ability to give smooth surface free of dust and dirt	3.26	0.66	2.97	0.72	3.12	0.69	Required
24.	Ability to pour the water skilfully (gradually) to the dry mix	3.30	0.67	3.06	0.74	3.18	0.71	Required
25.	Ability finish wall surface with compressed sand and cement	3.59	0.50	3.29	0.68	3.44	0.59	Required
26.	Ability to lay wall tiles	3.37	0.63	3.21	0.69	3.29	0.66	Required
27.	Ability to Clean all the joints and surfaces of the wall with a wire brush to remove oil or grease left on wall surface	3.30	0.72	3.12	0.81	3.21	0.77	Required
28.	Ability to keep all the mortar joints of wall rough to give a good bonding to hold plaster	3.37	0.49	3.21	0.69	3.29	0.59	Required
29.	Raking out of the mortar joint to a depth of at least 12 mm to give a better bonding to the plaster if the surface is smooth or the wall to be plastered is old one	3.30	0.61	3.15	0.70	3.22	0.66	Required

30.	Ability to protect the structural wall from driving rain and sandstorm	3.52	0.51	3.12	0.77	3.32	0.64	Required	
<b>Foundation Skills</b>									
31.	Ability to dig foundation trench	3.33	0.62	3.21	0.64	3.27	0.63	Required	
32.	Ability to construct block to ground level foundation	3.15	0.72	3.32	0.64	3.24	0.68	Required	
33.	Ability to back filling/laterite filling and compaction	3.33	0.62	3.09	0.67	3.21	0.65	Required	
34.	Ability of filling hard-core	3.11	0.70	3.03	0.63	3.07	0.67	Required	
35.	Ability to framework to reinforced concrete ground floor slab edges	3.30	0.61	3.24	0.65	3.27	0.63	Required	
36.	Ability to pipe work	3.33	0.62	3.26	0.71	3.30	0.67	Required	
37.	Ability to casting of reinforced concrete ground floor slab	3.48	0.58	3.15	0.70	3.32	0.64	Required	
38.	Ability to excavation of foundation trenches and approval	3.19	0.62	3.21	0.69	3.20	0.66	Required	
39.	Ability to column base concrete blinding foundation	3.30	0.54	3.24	0.70	3.27	0.62	Required	
40.	Ability to column base/column reinforcement positioning	3.11	0.64	3.12	0.73	3.12	0.69	Required	
41.	Ability to cast strip and column base concrete foundation	3.11	0.64	3.03	0.76	3.07	0.70	Required	
42.	Ability to formwork to ground floor level column foundation	3.30	0.61	3.38	0.65	3.34	0.63	Required	
43.	Ability to column to ground floor slab concrete casting	3.26	0.53	3.18	0.72	3.22	0.63	Required	
44.	Ability to strip off column formwork	3.22	0.51	3.06	0.65	3.14	0.58	Required	
45.	Ability to excavate foundation trenches to the required depth and width	3.04	0.59	3.00	0.74	3.02	0.67	Required	
46.	Ability to cast column base concrete foundation	3.30	0.47	3.00	0.70	3.15	0.59	Required	
47.	Ability ascertained the nature and bearing capacity of the subsoil	3.15	0.60	3.24	0.65	3.20	0.63	Required	
48.	Ability excavate trench vertical and free from loose materials	3.19	0.62	3.29	0.58	3.24	0.60	Required	
49.	Ability of foundation to excavates must be inspected and approved by the architects, or supervising officer	3.33	0.73	3.44	0.61	3.39	0.67	Required	
50.	Ability for all surplus materials from excavation not required after filling in and levelling shall be removed from site and disposed at the Contractor's expense.	3.11	0.75	3.44	0.61	3.28	0.68	Required	
<b>Grand Total</b>		<b>3.28</b>	<b>0.62</b>	<b>3.18</b>	<b>0.69</b>	<b>3.23</b>	<b>0.66</b>		

Keys:  $\bar{x}_1$  = Mean 1,  $\bar{x}_2$  = Mean 2, SD = Standard Deviation, and  $SD_2$  = Standard Deviation 2

Table 1: present the summary of the responses on the practical skills required by building craftsmen in building construction industries in Bauchi State. The result shows that all 50 items were rated with a mean score "Between" 3.04-3.44 The standard deviation for the 50 items were in the range of 0.57-0.77 all of which are less than the standard deviation threshold value of 1.96, indicating that the responses of the respondents are clustered around the mean. This clustering of the responses gives credence to the reliability of the mean. The ground mean 3.23 while standard deviation 0.66 also

showed that all the respondents required the skill; In essence, both the foremen and Building Engineers agree that the 50 listed skills are required.

### Research Question 2

What are the techniques for improving the building craftsmen practical skills gap identified for effective functioning in the building construction industries in Bauchi state, Nigerian?

**Table 2: Mean with standard deviation of Techniques for improving practical skills gap identified for effective functioning in the building construction industries in Bauchi state, Nigeria.**

S/No		$\bar{x}_1$	SD <sub>1</sub>	$\bar{x}_2$	SD <sub>2</sub>	$\bar{x}_A$	SD <sub>A</sub>	Remark
51.	Health facility should be provided to take care of safety of craftsmen in construction industries.	3.04	1.02	2.94	0.92	2.99	0.97	Agreed
52.	Provision of necessary tools and equipment for carrying out the retraining needs	2.67	0.62	2.79	0.64	2.73	0.63	Agreed
53.	New technologies or methodologies in the construction should be shown to craftsmen	2.74	1.02	2.88	0.98	2.81	1.00	Agreed
54.	Provision of soft loan to craftsmen to enable him go for retraining	2.72	1.01	2.65	0.95	2.55	0.94	Agreed
55.	Construction industry sector to ensure opportunities are given to workers for retraining	2.85	0.72	2.97	0.72	2.91	0.72	Agreed
56.	Provision of sponsorship for further training to craftsmen by construction industries	2.85	0.91	2.97	0.87	2.91	0.89	Agreed
57.	Retraining programmed on how to use modern tools and equipment shall be put in place for craftsmen	3.07	0.96	3.21	0.91	3.14	0.94	Agreed
58.	Building construction contracts (and their types) have to be harmonized to project threat circumstances in building construction industries	2.93	0.87	3.03	0.83	2.98	0.85	Agreed
59.	Provision for existing qualification schemes for craftsmen which are related with the existing education and training of skilled personnel to organized education according to the curriculum of the specific craft in the construction industries	2.96	0.90	3.06	0.85	3.01	0.88	Agreed
60.	The building construction industries desires to make sure those supervisors at all levels are adequately skilled in handling subordinates, that they can satisfy the craftsman's need for sense of Attainment	2.96	0.76	3.06	0.74	3.01	0.75	Agree

61.	Provision for craftsmen in construction industries needs to master the new products supplied on the market by the component/materials industry, which they have to install and adapt to the building structure.	2.78	0.97	2.91	0.93	2.84	0.95	Agree
62.	Provision for Product related training and promotional activities of supply companies offering construction equipment and materials, also often include information about craftsmen performance issues and the activities in craftsmen qualification	3.22	0.64	3.32	0.64	3.27	0.64	Agreed
63.	Provision for the construction industries to enhance the responsiveness of education and training systems to these changes in skill requirements and to improve access to	3.48	0.51	3.53	0.51	3.51	0.51	Agreed
Grand Total		2.92	0.83	3.02	0.81	2.97	0.82	

Keys:  $\bar{x}_1$  = Mean 1,  $\bar{x}_2$  = Mean 2, SD=Standard Deviation, and SD<sub>2</sub> = Standard Deviation 2

The result shows that the entire 13 item were rated with a mean score "Between" 2.55-3.51 The standard deviation for the 13 items were in the range of 0.51-1.00; indicating that the responses of the respondents are clustered around the mean. This clustering of the responses gives credence to the reliability of the mean. The ground mean 2.97 while standard deviation 0.82 also showed that the entire 13 of the listed skills are agreed by the respondents; In essence, both the foremen and Building Engineers agreed that the 13 above

practical skills gap identified for effective functioning in the building construction industries in Bauchi State, Nigeria.

**HYPOTHESES**

**Ho<sub>1</sub>:** There is no significant difference in the mean responses of building engineers and building foreman on the practical skills supposed to have been required by building craftsmen in building construction industries in Bauchi state, Nigeria.

**Table 3: t-test Analysis of the Mean Responses of Building Engineers and Building Foreman on the Practical Skills Required in Block/Brickwork Skills, Plastering/Rendering Skills and Foundation Skills for National Security in Bauchi State, Nigeria.**

	Levene's Test for Equality of Variances		t-test for Equality of Means				95% Confidence Interval of the Difference		
	F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
Equal variances assumed	2.373	.129	3.232	59	.002	.46571	.14408	.17740	.75401
Equal variances not assumed			3.258	57.375	.002	.46571	.14296	.17947	.75195

Table 3 shows the result of the analysis that the significant criterion (sig.) of the Levene's test for equality of variance was .129, which is less than

0.05. Thus, equal variance not assumed t value of 3.232 was compared with 0.05 level of significance. Since 3.232 is greater than 0.05, the hypothesis



was therefore not rejected. Thus there is no significant difference in the mean responses on the practical skills required by building craftsmen in building construction industries Bauchi State, Nigeria.

$H_{02}$ : There is no significant difference in the mean responses of building engineers and building

foreman on the techniques for improving the building craftsmen practical skills gap identified for effective functioning in the building construction industries in Bauchi State, Nigeria.

**Table 4: T-test Analysis of the mean responses of building engineers and building foreman on the techniques for improving the building craftsmen practical skills gap identified for effective functioning in building construction industries for National Security in Bauchi State, Nigeria.**

	Levene's Test for Equality of Variances		t-test for Equality of Means						
	F	Sig.	t	df	Sig. (2- tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference Lower Upper	
Equal variances assumed	.771	.384	1.760	59	.084	.33092	.18800	-.04526	.70709
Equal variances not assumed			1.791	58.582	.078	.33092	.18476	-.03884	.70067

Table 4 shows the result of the analysis that the significant criterion (sig.) of the Levene's test for equality of variance was .384, which is less than 0.05. Thus, equal variance not assumed t value of 1.76 was compared with 0.05 level of significance. Since 1.76 is greater than 0.05, the hypothesis was therefore not rejected. Hence, there is no significant difference in the mean responses on the techniques for improving the building craftsmen practical skills gap identified for effective functioning in the building construction industries in Bauchi State.

### Discussion of Findings

Findings on research question 1 revealed that building craftsmen in building construction industries required all the practical skills need for improvement in their work trade in brick/block work skills, plastering/rendering skills and foundation skills for national security. The above results agreed with the findings of Igweh and Bakare (2012) who conducted a study on work skills improvement needs of graduates of technical colleges in electrical installation and maintenance

for employment in the 21<sup>st</sup> century Nigeria. The authors found that graduates need improvement in work skills in domestic, industries installation battery charging and repairs. The findings are in line with those of Onifade (2005) who conducted a study on industry based skill competencies required of graduates of tertiary technical institutions for employment in electronic industries in Lagos State where he found out that graduates require various industrial based skills for work in manufacturing industries. The findings emanating from table 2 revealed the mean responses of building engineers and foreman on the techniques for improving the building craftsmen practical skills gap identified for effective functioning in the building construction industries in Bauchi state. As revealed that all items raised for techniques for improving the building craftsmen practical skills gap identified for effective functioning in the building construction industries in Bauchi state, Nigeria were positively rated. The findings of this study is in line with those of Machanga (2008) who carried out a study on the strategies for improving practical skills acquisition in

Science and Technical Colleges of Kebbi and Sokoto States. The author found out that students of Science and Technology College identify strategies for improving practical skills acquisition to determine the adequacy of training facility, tools and equipment in building construction for effective instructional methods and techniques used in training of students.

### Conclusion

Conclusively therefore, craftsmen required skills improvement for building operations, domestic and industrial used. This offers a good job opportunity for building craftsmen in building construction industries; however quite unfortunately most of them do not possessed the necessary skills to be either paid or self-employed. In conclusion, the study revealed the practical skills required in building construction industries and techniques to be adopted for improving practical skills gap identified for effective functioning in the building construction industries in Bauchi State.

### Recommendation

Based on the foregoing, the following recommendation were proffered.

1. Building Construction Industries should organize retraining workshops for their craftsmen on the areas where skills improvement are required
2. National Board for Technical Education should consider inclusion of the identified skills in the curriculum used in schools presently.

### References

- Anigbogu, N. A. (2002) an appraisal of the Nigerian construction industry informal labour market. *Journal of Environmental Sciences*, 2 (4), 96-10.
- Asad, D. (2007). *National affair*, retrieved September 2007 <http://www.nigeriavillagesquare.com>.
- Bokini, S. K. (2005). Skills acquisition and development for craftsmen and artisans. *Journal of the Nigerian Institute of Building*, 23 (9), 100-111.
- Baylor, C. (2013). *Furniture craft tools – power tools, hand tool and furniture craft*

*machinery*. Retrieved on January 22, from <http://www.answer.com/topi/technology>

- Craighead, G. (2003) *High-Rise Security and Fire Life Safety*. Woburn, MA: Butterworth-Heinemann
- Joshua, M. (2012). *The Skills Gap: Origins and solutions*. Available at [http://www.hr.com/en/topleaders/all\\_articles/the-skills-gap-origins-and-solutions\\_i8pogmbi.html](http://www.hr.com/en/topleaders/all_articles/the-skills-gap-origins-and-solutions_i8pogmbi.html). Accessed on 18 August 2016 at 11.36 am.
- Federal Republic of Nigeria (FRN) (2013). *National Policy on Education*. (6<sup>th</sup> Ed): Abuja Educational Research and Development Council (NERDC).
- Igwe, A. U and Bakare, J. A. (2012). Work skill Improvement Needs of Graduates of Technical Colleges in Electrical Installation and Maintenance Works for Employment in the 21st Century Nigeria. (pp 75-80). Makurdi: *Proceedings of NATT 26th Annual National Conference (Silver Jubilee)*.
- Lee K, Allen, N.J., Meyer, J.P. and Rhee, K-Y (2001). The three-component model of organizational commitment: an *International Review*. 50(4)596-614.
- Machunga, I.S. (2008). A Survey of Strategies for Improving Practical Skills Acquisition in Technical colleges. *Unpublished Master's Thesis, Federal University of Technology Minna*.
- Njoku, J. (2007). Nigeria: death of craftsmen-IMPACTOR organized skill acquisition Training, Lagos Vanguard. Accessed 23, march 2013 from: *All AFRICA.Com Nigeria* pp1.
- Obiegbo, M. E. (2002) Training and Retraining of Craftsmen for Nigerian Construction Industry, the Millennium Challenge; *The Professional Builders NIOB, Journal* 57
- Obiegbo, M. E. (2003). Education and training of Builders towards proactive Roles in the 21st centuries building in Nigeria. *Seminars for Lecturers of Building programme in Tertiary institution. Nigerian institute of Building (NIOB), 13th December*.

- Olaitan, S. O., Amusa, T. A. & Asouzu, A.I. (2010). Competency Improvement Needs of Instructors for Effective Teaching of Fish Preservation and Marketing to Students in School of Agriculture in Niger Delta State, Nigeria. *A paper presented at the institute of education conference in 2010.*
- Onifade, O. J. (2005). Industry Based Skill Competencies required of Graduates of Tertiary Technical Institutions for Employment in Electronic Industries in Lagos State. *An Unpublished M.Ed Project Submitted to the Department of Vocational Teacher Education, University of Nigeria, Nsukka*
- Shah, O & Burke, A. (2003). Skills shortages: concepts, measurement and implications. Retrieved from <http://www.education.monash.edu.au/centres/ceet/docs/workingpapers/wp52nov03shah.pdf> on 25th November, 2014.
- Sugiharto, A. (2010). Training Field Personnel for Small to Medium Construction Companies: An Alternative Tool to Increase Productivity. *Journal of Construction Management and Economics*, 3(16):8
- Sackey, J.K.N. (2009). *Vocational and technical education. Motivate: Macmillan texts for industrial furniture craft technology.* Retrieved on January 24, 2013 from [www.macmillan.caribbean.com/book.e\\_spx?d-1008](http://www.macmillan.caribbean.com/book.e_spx?d-1008).
- Post, R. S. and Kingsbury, A. A. (2009). *Security Administration: An Introduction to the Protection Services.* Boston, M A: Butterworth-Heinemann
- Umar, M. I. (2014). Investigated skills required by woodwork technology teachers for improving practical projects in technical colleges in Kano and Jigawa states in northwestern Nigeria. *Published M.Ed Thesis.* Department of Vocational Teacher Education, University of Nigeria, Nsukka.
- Yakubu, N. (2003). Technical and vocational education and training (TVET) in Nigeria: Issues and strategies. *Final report of Sub regional seminar for West Africa titled Implementing the UNESCO/ILO recommendations conference technical and vocational education and training.* 8Th -11Th December, 2003.