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N-POWER (N-BUILT) CRAFTSMEN'S TRAINING PROGRAM AND PERFORMANCE OF BUILDING CONSTRUCTION PROJECTS IN SOUTHWEST NIGERIA

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ABSTRACT

In Nigeria, a large number of building construction projects did not meet clients' satisfaction or are abandoned because of incompetence of craftsmen working on construction sites. This made the Nigerian government to establish (N-Build) programs in 2015 to bridge craftsmen's training gap. The research study assessed (N-Built) craftsmen's training program on the performance of building construction projects in South-west Nigeria. Three hundred and ninety-five (395) questionnaires were administered to government agencies, professional bodies, center heads, trainers, and trainees who are stakeholders and are engaged in the (N-Built) craftsmen's training program. Two hundred and eighty (280) questionnaires was retrieved from the respondent (70.9%). From the result of the study, the major hindrances to the progress of (N-Built) craftsmen's training are collection of tools during and after the training, engagement on six-month' internships, collection of feedback from the trainees, and relating the impact of the training on the economy. The major skills needed for (N-Built) craftsmen training is tool handling technique, communication of drawing, practical competence, lateral and horizontal verbal communication, and active listening skills. While the factors affecting craftsmen's (N-Built) training programs in Southwest Nigeria are the availability of government funding, inconsistency in government policies, inadequate provisions of deliverables, late arrival of materials for the training, and improper planning. The paired sample t-test result of the proposed effect of (N-Built) craftsmen's training on construction project performance indicated a significant relationship (p-value < 0.05). In conclusion, (N-built) craftsmen's training should be encouraged to improve the performance of building construction projects in Nigeria.

Keywords: Construction Projects, Craftsmen, N-Built, Training, Performance, Program

INTRODUCTION

The importance of building construction sector in any nation cannot be underscored (Hossain *et al*., 2020; Akewusola *et al*., 2025). The construction industry occupies a delicate position, because it has a significant impact on the economic growth of both the developed and developing nations (Phale *et al*., 2020; Yuan *et al*., 2022). Its finished products are the infrastructure needed for shelter, transportation, communications, employment opportunities, power supply, manufacturing and health sector (Phale *et al*., 2021; Parmar *et al*., 2024). Nearly every element of the economy is impacted by construction industry's operations as construction projects also contributed to 16.0% of GDP and employ around 25.0% of Nigeria's workforce (Ayangade *et al*., 2009). Provision of sufficiently trained craftsmen who will work on construction sites to actualize the design is crucial and requires careful consideration in developing nations like Nigeria, where rapid urbanization and technological advancement are highly desirable (Ibrahim, 2023; Brett *et al*., 2023). Nigeria's construction sector was recognized as the country's largest employer of workers, second only to agriculture. However, it faces difficulties in finding technical skilled craftsmen, which will impact the productivity of the organization, the quality of the work, and the length of time projects are completed (Ibrahim, 2023). The failure of the industry is attributed to, high level of neglect accorded to training of construction craftsmen (Ebenezer, 2024; Ijigah & David, 2024). Most construction projects in Nigeria fail because of poor craftsmanship, rework, low productivity, late completion, cost overruns, a high accident rate, bad work practices, and conflicts which are signs of craftsmen's poor performance (Habu & Oni ,2024; Momodu *et al*., 2024). All these factors need to be enhanced to improve the performance of construction sub-sector.

Building construction craftsmen are workers who contribute expertly with their hands to the practical implementation of a construction project. Since they are primarily involved in the actual implementation of building projects, craftsmen are vital to the survival and expansion of the construction sector. Craftspeople supply the labor force required for the country's economy to thrive and remain competitive. (Huber, 2008). The Nigeria Industrial Trust Fund (ITF) (2005) enumerated steel fixers (iron-benders), bricklayers (masons), electricians, carpenters, tillers, painters and plumbers, as craftsmen engaged on construction projects (Ekune & Anthony, 2024). Construction craftsmen received formal or informal training to practice construction trades. They attended workshops, technical colleges, and vocational schools for formal training, which is usually supplemented by fieldwork. They also receive informal training by a master craftsman as apprentice or on the job training. But in Nigeria, most of the craftsmen are trained through traditional apprenticeship system by a master craftsman, hence ranked lowest in the world labour market (Lebechukwu & Peter, 2021). Training is the process of bringing a person to a deserved state of efficiency by instruction and practice (Olaniyan-Shobowale *et al.,* 2024).

Construction craftsmen training is a systematic development of the mindset, knowledge, and abilities a person needs to carry out a certain activity or career. (Fasone *et al*., 2024). In other words, it is an activity that focuses on helping workers become more articulate and efficient when doing their existing tasks or preparing for a new kind of work to satisfy the organization's changing demands. According to Ijigah *et al*. (2024), the survival strategies for entrepreneurship in a declining economy is training. The construction sector in

particular should prioritize workforce training as training is one of the survival strategies for business in a falling economy (Ijigah *et al*., 2024).

Although, Nigerian craftsmen are supposed to contribute significantly to cost-effective growth and productivity, their inadequate training appears to render them unable of adjusting to the latest technology advancements and procedures. According to Akwuobi (2023), the industry's challenge is to balance the demand for a large number of craftsmen who can perform highly skilled work with the need for a supply of labor capable of high productivity in carrying out simpler sequential procedures. Despite the fact that Nigerians provide the building sector with the vast amount of labor required for craftsmen (Orekan & Babatunde, 2020), the success of building construction projects in Nigeria is seriously threatened by the declining performance of local artisans over time. Hiring talented and productive indigenous craftspeople has been a difficult task for construction professionals in recent years (Ayeniyo *et al*., 2020; Ibrahim, 2023). Similarly, Gutkind *et al*. (2024) observed that foreign craftsmen from neighboring countries like Togo, Senegal, Ghana, Mali and Niger republic and are now profiting from the void left by their mass migration to Nigeria's building industry. The trend befallen the Nigerian construction industry due to the fact that Nigeria's need for artisans is growing exponentially without proper training (Mohammed & Zango, 2024).

The expense, commitment, low initial return on investment, and piracy of on-site craftsman training are some of the concerns that prevent many construction companies from actively participating in craftsmen training. This made the Nigeria Federal Government to establish the N-Power and N-built program in 2015 to bridge the training gap and (Odey *et al*., 2019; Ogwola *et al*., 2024). The CORBON in partnership with the National Social Investment Office (NSIO) has trained have trained more than 30,000 Nigeria youths within the age of 18years to 35years on the N-Power (N-Built) program under the national skill qualification framework. The goal of the training is to ensure global acceptance of our craftsmen and to provide opportunities for trainers under the National Skill Qualification (NSQ) framework. The training is expected to meet the National Occupation Standard (NOS) for building construction trades and shall be assessed for certification.

Akujuru and Enyioko (2019) state that N-Power Teach, N-Power Build, N-Power Creative, N-Power Agro, N-Power Tech Software, N-Power Tax, N-Power Health, and N-Power Tech Hardware are the main N-Power initiatives utilized to reduce poverty. Several research study have been carried out on N-Power programs, these included works by Akujuru and Enyioko, (2019); Effiong, (2019), Odey and Sambe (2019); Fatimehin *et al*., (2020) Muhammad and Mustapha (2021), Aderinoye-Abdulwahab et al., (2021) Okonkwo *et al*., (2021), Komolafe *et al*., (2022); Olorunsola (2022); Uche and Aliyu (2022); Bello and Michael (2022) Nnaeto and Nwambuko (2023); Isa *et al*., (2024); Muhammad *et al*., (2024); Aminu, and Aliyu, (2024); and Oboqua (2024). All the literatures review in the studies did not address the challenges faced by N-power (N-Built) programme and its relationship to craftsmen training in Southwest Nigeria. Also the study did not discourse the challenges and prospects of craftsmen training in Nigeria. and lastly their studies did not address craftsmen training and its effect on the performance of construction projects in Nigeria. According to Amusan *et al*. (2021) and Musa *et al*. (2024), there is always a clear correlation between the performance of artisans on the job site and their training. It was shown that projects with more highly qualified workers are more likely to be highly efficient, whereas initiatives with less skilled artisans are likely to provide subpar results. This study investigated the effect of craftsmen's (N-Built) training program on the performance of building construction projects in Southwest Nigeria.

MATERIALS AND METHODS

The study used a survey research design and a closed-ended questionnaires. Table 1 shows the population and sample size of Government agencies representatives, Professional bodies representatives (NIOB/CORBON), Center heads Trainers, Trainee of N-Power/ N-Built programs, and professionals in Lagos and Oyo state who are involved in the Training of N-Power/ N-Built programs. 35,989 stakeholders participated on N-Power training but a sample size of 395 was selected from all the N-Power stakeholders in Southwest Nigeria using unlimited population formula by "Kothari (2004) and proportional sampling size by (Amare, 2015)" (Chaokromthong & Sintao, 2021). The study used a calculated sample size of three hundred and ninety-five (395) respondents and The Statistical Package for Social Science (SPSS) version 24 and Excel 2013 were used to analyze the data collected. The Mean Score (MS) was used to rank the various items and factors, and the pair t-test was used to determine the effect of training on project performance. They were chosen through a random sampling technique.

Table 1: Population and Sample Size of the Project Stakeholders

S/No	N-Built Stakeholder	Population	Sample Size
1	Government agencies	100	3
2	Professional bodies (CORBON/NIOB)	1000	15
3	Center heads	750	15
4	Trainers	1800	30
5	Trainees	30,000	300
	Professional Stakeholders		
6	Builders	1000	10
7	Quantity surveyors	105	4
8	Architects	160	6
9	Engineers		
	Structural	130	4
10	Mechanical	120	4
11	Electrical	130	4
	TOTAL	35,989	395

Table 2 shows the number of questionnaires administered to respondents with the response rate. Two hundred and eighty (280; 70.9%) of the three hundred and ninety-five (395) questionnaires that were distributed were eventually collected from the responder. Due to the time frame allotted for the research project, the remaining twenty-seven (115), or 29.1%, were not retrieved from the responder. Based on the claims of Yamane (1967) and Kothari (2004) that a survey's results might be regarded as objective and somewhat important if the return rate was not less than 40–50%, the percentage was deemed enough for this investigation (Chaokromthong & Sintao, 2021).

Table 2: Number of Questionnaire Administered and Retrieved in The Study Area.

Administered	Retrieved	Percentage (%)
395	280	70.9

RESULTS AND DISCUSSION

Characteristics of the Respondents

This comprises of data collected for the study on background information of the respondents which are; age of the respondent, location of the project, gender of the respondents, educational qualification of the respondents, respondent's year of experience, professional group of respondent and involvement in (N-Built) craftsmen program.
type of construction projects executed, position on construction project, Table 4.1 presented the descriptive statistics of the background info of the respondents. The number of respondents were two hundred and eighty (280). The data ranges from 1 to 6. The highest mean was 4.06 while the lowest mean was 1.05. The Standard Deviation (S.D.) of the data ranges from 0.22 to 2.41. Also, from the result of Table 3, all the data were spherically distributed and can be used to examine the cooperate governance of (N-Built) craftsmen's training program stakeholders in Southwest Nigeria.

Table 3: Descriptive Statistics of Background Information of the Respondents

Background Information of the Respondents	N	Range	Minimum	Maximum	Mean	Std. Deviation
Age of Respondent	280	5	1	6	2.83	1.46
Location of the project	280	5	1	6	4.06	2.41
Gender	280	1	1	2	1.52	0.50
Educational qualification	280	5	1	6	3.65	1.31
Respondent's year of experience	280	2	1	3	1.76	0.81
Professional Group of Respondent	280	4	1	5	3.02	1.32
Involvement in n-power projects	280	1	1	2	1.05	0.22
Position as N-Built Stakeholder	280	5	1	6	3.16	0.73
Valid N (listwise)	280					

Assessment of the Skills Needed for (N-Built) Craftsmen Training

Table 4 assessed the skills needed for (N-Built) craftsmen training. From the result in Table 4.9, Tools handling technique (MS= 3.49; S.D. = 0.94; t= 47.71) was ranked first, communication of drawing (MS= 3.32; S.D. = 0.99; t = 31.82) was ranked second and practical competence (MS= 3.28; S.D. = 0.91 t = 27.42) was ranked third among the listed the skills needed for (N-Built) craftsmen training Lateral and horizontal verbal communication (MS= 3.19; S.D. = 1.12 t = 43.78) was ranked fourth while Active listening skills (MS= 3.18; S.D. = 1.08 t= 42.00) was ranked fifth among the listed factors. Negotiation competence (MS= 1.59; S.D. = 0.97; t = 39.35) was ranked twenty-eighth and Leadership/control competence (MS= 1.56; S.D. = 0.82 t =43.15) was ranked least among the twenty-nine listed skills needed for (N-Built) craftsmen training. The study is in agreement with the research by Ibrahim, (2023) that the Nigeria construction craftsmen need a lot of training and skills. All the listed factors are significant (0.000) at Sig. (2-tailed) and the calculated table value (t) ranges from (t= 53.020) been the lowest to (t= 79.255) been the highest.

Table 4: Assessment of the Skills Needed for (N-Built) Craftsmen Training

Skills Needed for (N-Built) Craftsmen Training	Df	M	Std. D	t	Sig.	Rank
Tools handling technique	279	3.49	0.94	47.71	0.000	1
Communication of drawing	279	3.32	0.99	31.82	0.000	2
Practical competence	279	3.28	0.91	27.42	0.000	3
Lateral and horizontal verbal communication	279	3.19	1.12	43.78	0.000	4
Active listening skills	279	3.18	1.08	42.00	0.000	5
Health and safety training	279	3.12	1.07	48.94	0.000	6
Understanding of warning and signs	279	3.09	0.85	39.87	0.000	7
Understanding of signals	279	3.08	1.15	41.27	0.000	8
Use of correct tools during training	279	2.95	1.05	37.67	0.000	9
Writing skills	279	2.93	1.02	32.90	0.000	10
Paying attention to details	279	2.90	0.97	44.96	0.000	11
Wearing of safety cloths	279	2.80	0.81	49.13	0.000	12
Understanding of alarm signals	279	2.79	1.10	39.66	0.000	13
Understanding of safety colors	279	2.79	0.88	38.10	0.000	14
Labeling of faulty machines	279	2.76	1.17	57.57	0.000	15

Measurement and taking of readings	279	2.71	1.05	56.36	0.000	16
Taking of levels	279	2.66	0.89	47.85	0.000	17
Conversion from one unit of measurement to another	279	2.51	1.01	42.59	0.000	18
Estimation of quantities	279	2.43	0.97	41.79	0.000	19
Accurate mixing of components	279	2.39	1.00	36.19	0.000	20
Creative competence	279	2.31	1.07	46.76	0.000	21
Machine learning	279	2.25	0.86	60.89	0.000	22
Project management skills (cost, time and scope management)	279	2.17	0.95	60.38	0.000	23
Team work	279	2.11	1.07	62.44	0.000	24
Team spirit	279	2.04	0.86	52.87	0.000	25
Coordination of subordinates	279	1.93	0.78	50.02	0.000	26
Collaboration and team working ability	279	1.62	0.72	49.83	0.000	27
Negotiation competence	279	1.59	0.97	39.35	0.000	28
Leadership/control competence	279	1.56	0.82	43.15	0.000	29

Assessment of Effect of Craftsmen's Training on Project Performance

Table 5 assessed the proposed effect of craftsmen's training on project performance. From the result in Table 4.12, quality improvement (MS= 4.40; S.D. = 0.73; t = 69.94) was ranked first, accuracy of work without mistake (MS= 4.39; S.D. = 0.65; t =79.24) was ranked second and chain of apprenticeship (MS= 4.38; S.D. = 0.64; t = 79.27) was ranked third among the proposed effect of craftsmen's training on project performance. Productivity of the artisans (MS= 4.30; S.D. = 0.69; t =72.49) was ranked fourth while client satisfaction (MS= 4.29; S.D. = 0.66; t = 76.25) was ranked fifth among the listed factors. Cost of project (MS= 3.12; S.D. = 1.07 t = 48.94) was ranked twelfth and impact on the economy (MS= 3.09; S.D. = 0.85; t = 39.87) was ranked least among the proposed effect of craftsmen's training on project performance. All the listed factors are significant (0.000) at Sig. (2-tailed) and the calculated table value (t) ranges from (t= 27.42) been the lowest to (t= 82.52) been the highest. Findings from the research is in agreement with the study by Ifetimehin *et al*. (2020); Okonkwu *et al*. (2021); Lebechukwu and peter (2021), and Isa *et al*. (2023); who stated that N-Power programs was used to enhance the performance of Nigerian youths and reduce poverty.

Table 5: Assessment of Effect of Craftsmen's Training on Project Performance

Assessment of proposed effect of Craftsmen's Training on project performance	Df	Mean	Std. Deviation	t	Sig. (2-tailed)	Rank
Quality improvement	279	4.40	0.73	69.94	0.000	1
Accuracy of work without mistake	279	4.39	0.65	79.24	0.000	2
Chain of apprenticeship	279	4.38	0.64	79.27	0.000	3
Productivity of the artisans	279	4.30	0.69	72.49	0.000	4
Client satisfaction	279	4.29	0.66	76.25	0.000	5
Time delivery of their assigned duties	279	4.28	0.60	82.52	0.000	6
Establishment of the trainee on the trade	279	3.49	0.94	47.71	0.000	7
Positive feed-back from customers	279	3.32	0.99	31.82	0.000	8
Working with less supervision	279	3.28	0.91	27.42	0.000	9
Self-reliance on the trade	279	3.19	1.12	43.78	0.000	10
Accurate estimates	279	3.18	1.08	42.00	0.000	11
Cost of project	279	3.12	1.07	48.94	0.000	12
Impact on the economy	279	3.09	0.85	39.87	0.000	13

Paired Sample Test Between proposed effect of Craftsmen's Training on project performance and Construction Projects performance after (N-Built) Craftsmen's Training

Table 6 shows the paired sample t-test result of level of proposed effect of craftsmen's training on project performance construction projects performance after (N-Built) craftsmen's training. The table indicated a significant relationship (p-value<0.05) and the calculated t-valve is higher than the table values. There is a significant different between the proposed effect of craftsmen's training on project performance and construction projects performance after (N-Built) craftsmen's training in Southwest Nigeria.

Table 6: Paired Sample Test Between proposed effect of Craftsmen's Training on project performance and Construction Projects performance after (N-Built) Craftsmen's Training

	Craftsmen's Training	Mean	Std. Deviation	Std. Error Mean	t	df	Sig. (2-tailed)
Pair 1	Proposed effect of craftsmen's training on project performance	3.5574	.20537	.02904	10.419	49	0.019
	Construction projects performance after (N-Built) craftsmen's Training	3.6456	.25642	.03626			

Assessment of Factors Affecting Craftsmen's (N-Built) Training Programs in Southwest Nigeria.

Table 7 assessed the factors affecting craftsmen's (N- Built) training programs in Southwest Nigeria. From the result in Table 4.17, availability of government funding (MS= 4.44; S.D. = 3.20) was ranked first, In-consistency in government policies (MS= 4.27; S.D. = 0.69) was ranked second and Inadequate provisions of deliverables (MS= 4.06; S.D. = 0.75) was ranked third among the listed factors affecting craftsmen's (N-Built) training programs in Southwest Nigeria. Late arrival of materials for the training (MS= 3.96; S.D. = 0.84) was ranked fourth while improper planning (MS= 3.85; S.D. = 0.58) was ranked fifth among the listed factors. Availability of advance technology and innovation (MS= 2.95; S.D. = 1.05) was ranked fifteenth and macroeconomics factors (exchange rate, inflation/relative price changes) (MS= 2.93; S.D. = 1.02) was ranked least among the sixteen (16) factors affecting craftsmen's (N-Built) training programs in Southwest Nigeria. All the listed factors are significant (0.000) at Sig. (2-tailed) and the calculated table value (t) ranges from (t= 32.90) been the lowest to (t= 108.684) been the highest. Findings from the research is in agreement with the study by Odey *et al*. (2019); Olorunsola (2022), Odalonu and Adigu (2023) and Obogua (2024) that availability of government funding, In-consistency in government policies, and Inadequate provisions of deliverables were the factors affecting the implementation of N-Power programs in Nigeria. All these factors should be addressed to promote training of youths on construction related craftsmen to boost the economy of Nigeria.

Table 7: Assessment of Factors Affecting Craftsmen's (N-Built) Training Programs in Southwest Nigeria

Factors Affecting Craftsmen's (N-Built) Training Programs in Southwest Nigeria	df	Mean	Std. Deviation	t	Sig. (2-tailed)	Rank
Availability of government funding	279	4.44	3.20	102.67	0.000	1
In-consistency in government policies	279	4.27	0.69	101.14	0.000	2
Inadequate provisions of deliverables	279	4.06	0.75	88.45	0.000	3
Late arrival of materials for the training	279	3.96	0.84	77.24	0.000	4
Improper planning	279	3.85	0.58	108.68	0.000	5
Poor remuneration of the trainers	279	3.85	0.70	89.63	0.000	6
Availability of data to monitor the performance of the trainees	279	3.85	0.58	108.68	0.000	7
Financial stability of the training center	279	3.84	0.80	77.99	0.000	8
Experience of the (N-Built) project team member	279	3.83	0.64	98.52	0.000	9
Lack of follow-up on (N-Built) training graduate	279	3.83	0.80	78.68	0.000	10
Poor project management by (N-Built) stakeholders	279	3.83	0.74	84.40	0.000	11
Coordination and operation of team members	279	3.80	0.69	90.50	0.000	12
Stakeholders commitment and support	279	3.09	0.85	39.87	0.000	13
Availability of physical facilities in the training centers	279	3.08	1.15	41.27	0.000	14
Availability of advance technology and innovation	279	2.95	1.05	37.67	0.000	15
Macroeconomics factors (Exchange rate, Inflation/Relative price changes)	279	2.93	1.02	32.90	0.000	16

CONCLUSION

The major hindrances to the progress of (N-Built) Craftsmen's training are collection of tools during and after the training, engagement on six months' internships, collection of feedbacks from the trainees, and relating impact of training on the economy. The major skills needed for (N-Built) craftsmen training are tools handling technique, communication of drawing, practical competence, lateral and horizontal verbal communication, and active listening skills. According to the findings from the study, the effect of (N-Built) craftsmen's training program on the performance of building construction projects in Southwest Nigeria are to improve quality, enhance accuracy of work without mistake, create chain of apprenticeship, increase productivity of the artisans and client satisfaction. Economic impact of (N-Built) craftsmen's training program was ranked list among the listed factors. The paired sample t-test result of proposed effect of craftsmen's training on project performance and construction projects performance after (N-Built) craftsmen's training indicated a significant relationship (p-value<0.05) as the calculated t-valve is higher than the table values. Lastly the factors affecting craftsmen's (N- Built) training programs in Southwest Nigeria are, availability of government funding, in-consistency in government policies, inadequate provisions of deliverables, late arrival of materials for the training, and improper planning.

In view of the conclusions that enumerated from this research, the following recommendations are proposed to enhance craftsmen's (N- Built) training programs in Southwest and in Nigeria at large. Hindrances to the progress of (N-Built) craftsmen's training like collection of tools during and after the training, engagement on six months' internships, collection of feedbacks from the trainees, and relating impact of training to the economy should be addressed. Also, training and seminars on Skills needed for (N-Built) craftsmen training like tools handling technique, communication of drawing, practical competence, lateral and horizontal verbal communication, and active listening skills should be conducted regular to improve craftsmen performance. Construction craftsmen's training program should be encouraged to improve quality, enhance accuracy of work without mistake, create chain of apprenticeship, increase productivity of the artisans and client satisfaction and other performance index of building construction projects in Southwest Nigeria. Lastly the factors affecting craftsmen's (N- Built) training programs in Southwest Nigeria like availability of government funding, in-consistency in government policies, inadequate provisions of deliverables, late arrival of materials for the training, and improper planning should be speedily addressed.

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