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Characterization Of Sustainable Construction Artisans Training And Development in Ekiti State, Nigeria

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ABSTRACT
Traditionally, Construction Artisans or tradesmen are made up of masons, bricklayers,plasterers, carpenters joiners,tillers,painters, decorators, electricians, plumber, metalworkers or iron benders and welders and aluminium fabricator fitters etc. Availability of this category of workers, especially for building construction is becoming rare day by day, and where they are found,are met with the incompetent staff.In view of this, it is imperative to evolve a pragmatic line of action to mitigate a total extinction of skilled artisans from our society, and gear up efforts towards sustainability. This paper therefore purports to look into the existing deplorable situation with a view to identify causes of in-availability and non-performance of the available few in order to find a lasting solution to the problems. field work reveal unwillingness of the youths to learn trades either through vocational technical schools or apprenticeships system as the root amongst others. Of skilled artisans shortage in Ekiti State, Public private collaboration approach wall identified as major solution to this onerous problem. In other words, governments at all levels (Federal, State and Local) construction companies and professional bodies should get themselves involved in the improvement of training facilities and processes and also encourage prospective trainees and youths to sign up for training.Literature review revealed that similarities between the Zambia situation with that of Ekiti State of Nigeria. Hence a modified model characterized by Kaoma and Muya (2016) has been localized to meet up with the dare need of sustainable training and development of construction artisan/ tradesmen in Ekiti State. The model gives room for deeper practical and on-the-job training to produce reliable artisans and sustain the training model.

KEYWORDS: CHARACTERIZATION, SUSTAINABLE CONSTRUCTION, ARTISANS, TRAINING AND DEVELOPMENT

I. INTRODUCTION

The Nigerian construction industry has been experiencing tremendous expansion since the day of oil boom in 1970's coupled with relocation of the administrative headquarters from Lagos to Abuja (a virgin land turned to a sprawling city). Increasing number of States from four(4) regions to thirty-six, States (36) between 1967 and 1996 has become another factor for construction industry expansion in the country.

Ekiti State was created in 1996, being one of the latest created States. The State CapitalAdo – Ekiti, some Zonal and Government Area headquarters have been experiencing a lot of urban renewal and metropolitan expansions, establishment of new institutions and expansion of governmental infrastructures spread all over the States. These have increased the volume of construction works thus increasing the hiring of skilled artisans/tradesmen to a spiral level. Hitherto, Ekiti State has been experiencing a trend of poor workmanship in construction works because skilled artisans seemed to have been going into extinction. The situation on ground in Nigeria today has shown that Technical and Vocational Education and Training has been dangerously jeopardized by a host of diverse interests ranging from diminishing interest of youths to the vocations to governmental/employers non-challant attitude towards the provision of the much needed training facilities

This study aimed at developing a sustainable training model that, if accepted, will eventually enhance effective and sustainable artisan supply to mitigate the shortage of adequate skilled and experienced artisan workers in Ekiti State of Nigerian Construction Industry. To achieve these objectives, the study intended to:

- Established shortage of required artisans
- Determine factors contributing to the shortage of artisans
- Examine the present model / method of artisan training, and
- Evaluate dual or public/private system of training as a pathway to mitigating artisan shortage in Ekiti State of Nigerian Construction Industry.

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II. LITERATURE REVIEW

Who is an Artisan/Craftsman?

Ordinarily, the construction industry is globally referred to as the important industry because of its massive contribution to development process andprovides infrastructure and facilities to other industries. It has many featuresthat set it apart from other industries, which accentuate the need forprofessional engagement (Wahab, 2010). The team for each project isassembled from a disparate collection of professionals, Subcontractors,Craftsmen, Artisans, Labourers and Suppliers within and outside the industry (Bamisile, 2004). This paper is inspired by the obvious dwindling number and capability of artisans and craftsmen in Nigeria, especially Ekiti State.

An artisan is a skilled worker who makes things by hand (Oxford Dictionary of Current English(2006). EncartaEncyclopaedia (2008) respectivelydefinesan artisan as "skilled craft person: somebody who is skilled at craft and person skilled at manually crafting decorative or utilitarian objects. Artisans and craft men have been in Architecture i.e building construction industry since the period of ancient civilization till today". 'Bezalel, Oholiab and all other craftsmen to whom the Lord has given skills and understanding, who know how to make everything's needed to build the sacred tent are to make everything just as the Lord has commanded' (The Holy Bible, Exodus Chapter 36: Verse 1. Good News Bible). This is a proof that skilful artisans and craftsmen have ever been required to erect buildings and infrastructures from the beginning. It is an indication that training and development of artisans to acquire the appropriate level of skilfulness and experience to handle their assignments effectively and perfectly can never be over emphasized. Artisans in the construction industryaremadeupofcarpenters jointers, mason,bricklayers,electricians, plumbers, painters,tillers decorators, plant/equipment operators,drivers,iron benders/welders and emerging ones such as aluminium fabricators, POP ceiling fixers, special wall finishers, interlocking pave makers etc.

2.1 SHORTAGE OF ARTISANS

According to Faria and Almeida (2014) quoted in Kaoma and Muya (2016) that skill shortages in construction are pressing concerns for policy makers in several countries. Shah and Burke also opined that skills gaps occur when employers are hiring workers who are considered under-skilled relative to desired levels of qualification: while shortage occurs when the demand for workers particular occupation is greater than the supply of those who arequalified. Ekiti State of Nigeria, which is the focus of this study, is a fractional part of a developing country, Nigeria. Shortage of artisans has become a phenomenon, and unravelling its causes is a wholesome task. Skill gaps in knowledge influences productivity levels of workers, eventually it contributes to poor workmanship because lack of experience and competency levels of the workforce is affected (Ali & Wen 2011; Sherif,Remon, Anas, Mandela &Eman 2014). Mojahed and Aghazadch (2008) quoted by Kaoma and Muya (2016) posited that the level of skills and experience of the workforce on site is the most important aspect for site productivity in the construction industry. Experience and good skills of artisans improve both the intellectual and physical abilities of labour and contribute to increased productivity and efficiency on construction site. To increase the performance of labour, training and good management practices are some of the tools used for enhancing construction labour productivity and quality control improvements that could further through better remuneration (Kaoma&Muya. 2016).

Khalil and Lees, (2006); Kaoma and Muya (2016) both posited that the construction industry relies on human and material resources to provide its numerous services and products. The importance of craft skills in the production has since been established. They also quoted Fellows *etal.,* (2002) who opined largely that organizations depend on the efforts of craft skills to deliver these products and services primarily because the industry is still manual labour intensive. Construction craft skills aretherefore in high demand in both quantity and quality but regrettably several studies revealed that they are scarce in most parts of the world (Agapion 1998;Gannard1998; Datoegoem, 2006; Muya *et al.,* 2006 cited by Chan & Dainty, 2007; Smith, 2009; Abdulahi, 2010; Kikwasi, 2011; Medugu*et al*., 2011 cited in Chindo, Ibrahim, Musa – Hadday, 2015). Presently, about 60-70 percent foreign artisans are handling skilled jobs in our country. The Lekki free Trade Zone as of today has the deficit skill gap of almost 2000 Technicians that they could not get among our artisans. Contractors handling construction works in this Country come into Nigeria with their workers because they do not have confidence in our artisans. So, I keep wondering why cannot we have vocational skill and who could also bridge the gap of the over 50 percent unemployment rate in Lagos State? (Durosimi-Etti,2016). There is no painstaking to conclude therefore, that construction artisans/craftsmen gap in Nigeria (Ekiti State in particular) has reached a stage of emergency by allramifications including training, development and management.

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2.2 FACTORS CONTRIBUTING TO THE SHORTAGE OF ARTISANS

In the past before the emergence of technical/vocational institutions/schools, Artisans were trained through apprenticeship/on the job process. The advent of formal school training system encouraged a sizeable number of young school leavers who benefitted immensely from the system and this raised hopes amongst the populace. The supply of Vocational Education and Training (VET) by the government through the education system can be justified as a means to improve the opportunities of youthswho lack the skills demanded in the labour market, or the ability or motivationto continue with higher education.

Furthermore, individuals might prefer this option to academic education as it implies shorter investment of human cynical and facilitates earlier entry into labour market (Eichhorst, Rodriguez – Plamas, Schnuidl&Zimmermann, 2012). The vocational education system is less developed in the developing countries, despite numerous attempts to 'Vocationalise' the schooling systems base upon the European model. For instance, attempts to expand vocational schooling in Sub-Saharan African from 1960's onwards failed due to structural dis-functions of the labour markets (Foster, 1965; King & Martins 2002). Nigeria (and indeed Ekiti State) an integral part of the Sub-Sahara Africa is one country that has failed woefully in the area of VET.

In other to increase the performance of labour, training and good management practices are some of the tools used for enhancing construction labour productivity and quality control improvements that could improve further through better remuneration (Kaoma&Muya, 2016). This was further cited in Offei –Nyoko*et al.,* (2012) who identified irregular remuneration as a contribution factor for shortage of artisan in the Ghana construction industry. The work of Oseghele*et al.,* (2015) on skilled labour shortage in Edo State, Nigeria revealed the most severe factors responsible for it were scaling down of craft person training programmes and the decline in the number of young people joining construction trades, especially bricklaying and carpentry. All over Nigeria today especially in Ekiti State which is the subject of this paper, there is a mass exodus of our teemingunemployed/unemployable youths into commercial motorcycles popularly called Okada and tricycle (Keke - Napep) commuting business to make quick money rather than learning a trade/craft that will lead to life lasting provision. This has contributed a great deal to the declining availability of the middle and lower level construction personnel.

A study of relationship between Artisan's wages and labour supply carried out in Saki, Oyo State, Nigeria by Sammui (2011) revealed that the existing practicing building Artisans in the study area were sensitive to the wages being paid per day. The Author thus opined that as the youths were not eager to train as artisans, whatever the variations in wages might be, there was a very urgent need to evolve strategies that would not only keep the existing artisans in the trades but would also encourage would-be apprentices to enrol and learn the trades.

2.3 LIMITATION AND METHOD

Though, the outcome of the work could be adopted to any of the thirty-six (36) States of Nigeria but the ease of access to information needed and peculiarity of Ekiti State has influenced it's choice as the research location for this technical/vocational training modelling.

Questionnaires were used to collect data from the existing six (6) Government Technical Colleges in the State, while oral interviews wereconducted with the Heads of the groups of six major construction related Artisans identified in the State. This oral interview was also extended to selected members of each group. However, this work was limited to StateGovernment owned Technical Colleges.

III. RESULTS AND DISCUSSION

Sequel to the creation and take-off of Ekiti State in October, 1996, Ekiti State Board for Technical and Vocational Educational (EKBTVE) in conjunction with National Policy on Education designed the goals and objectives of Technical and Vocational Education (TVE) to meet the following needs of the NigerianSociety amongst others:

- To train individuals in the use of both brains and hands to produceprofitable goods and services
- To produce crafts persons/Technicians who will practice their skills indoing the jobs designed by Engineers and interpreted by Technologists
- To produce individuals who will acquire skills in various trades forcareer development and educational advancement.
- To also train individuals willing and wanting to learn.

There are six (6) Technical/Vocational Schools, the oldest of which was established in 1966 while others were established much later. The schools are:

1. Government Technical College, Ado-Ekiti

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2. Government Technical College, Ijero-Ekiti
3. Government Technical College, Ikole-Ekiti
4. Government Technical College, Otun-Ekiti
5. Government Technical College, Igbara-Odo-Ekiti
6- Government Technical College, Ilumoba -Ekiti

Table 1: Construction Related Trades Offered by Each School

SN	Trade	Colleges
1	Block laying and Concreting	Ikole, Igbara–Odo
2	Carpentry and Joinery	Ado
3	Plumbing and Pipe Fittings	Ikole
4	Electrical Installation and Maintenance	Ado, Ijero, Ikole, Otun, Igbara-Odo, Ilumoba
5	Metal Fabrication (Iron Bending)	Ado, Otun
6	Painting and Decoration	Ikole

Source: Ekiti State Board for Technical and Vocational Education (ESBTVE)

Table 1: above shows with the exception of electrical installation and maintenance that is being offered by all the technical colleges, one or two colleges are offering others. This indicates that the schools had inadequatefacilities to offer these construction related trades.

Table 2: Total Enrolment and Turn Out of the Six Colleges in the Last Three (3) Years

Academic Total Session Intake			Total Turn Out			
Session	Intake	% Decrease	NTC/NBC	% decrease	TIII&II/FCD	% Decrease
2015/2016	420	-	210	-	400	-
2016/2017	435	-	216	2.86	291	27.25
2017/2018	395	-	180	16.67	240	20.27

Source: ESBTVE

LEGEND:
NTC/NBC- National Technical Certificate/National Business Certificate
T/T III &II- Federal Labour Trade Test III &II
FCD- Federal Craft Diploma
Source: ESBTVE
Table 2: above is a comparative summary of trainees' enrolments and turnout for the last three (3) consecutive academic years 2015/2016,2016/2017 and 2017/2018respectively. It could be observed that the two (2) categories of students were turnedout from the technical schools. While those who passed out with NTC or NBCwere eligible for admission into tertiary institutions, those with TT III & II andFCD were the actual craft trades men who are the subject of this paper.
Observation further revealed percentage decrease of 27.25% and 20.27% between2015/2016 to 2016/2017 and 2016/2017 to 2017/2018 respectively for the craft/tradesman school category. This shows that thetechnical schools were hitherto not turning out adequate number of construction related craftsmen to complement the industry. Another shortfall was that thenumbers of technical school graduands werediminishing every year.

3.1 TRAINING STRUCTURE

The existing training structure is a three-tier system comprising of theory,practical and partnership with industries. The theory segment lasts for a period of ninety-six (96) hours per three months long term. Practical work segment last for forty-eight(48) hours per term. Partnership with industries in form of industrial training program (ITF) also lasts for three (3) months within three-year(3) technical school duration.
It has been observed that the period used on practical and industrial training is grossly inadequate. The technical and vocational training scheme/curriculum needs to be reviewed to give room for better practical and apprenticeship trainingsegment.

3.2 EMPLOYMENT PROSPECT

Information and data obtained through interview and questionnaire revealed that the technical school graduands prefer taking up employment with corporatebodies and government agencies rather than picking up their tools and prove their worth in the construction industry, for which they were trained. The cause of thiswas not farfetched with the low wages,employment insecurity and inferioritycomplex as major reasons adduced.

3.3 TRAINING MODEL

This study was aimed at developing a training model that will alleviate the shortage of construction related artisans and craftsmen

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tradesmen in Ekiti State, Nigeria. Kaoma and Muya (2016)carried out a similar study in respect of the construction industry in Zambia, and came out with Apprenticeship Skill Flow Chart Model (ASEM), which was built around the theoretical framework of addressing current heavily dependent on informally trained artisans working in Zambian constructioncompanies, because of low level of artisan graduates from trade schools. This study has revealed a high level of similarity between Nigeria and Zambia as regards the scarcity of skilled construction artisans. Sequel to this the ASEM model designed by Kaoma and Muya (2016) is no doubt, applicable to Nigeria. Hence, the adaptation of the model with some modifications in EkitiState, Nigeria.Kaoma and Muya (2016) designed the model to use three (3) different pathways of apprenticeship training and according to Dante and Igando (2012) an educational programme should seek to develop links to vocational training with certification and competences evaluation. It should be aimed towards development of a gradual process of acquiring knowledge, values,and skills.

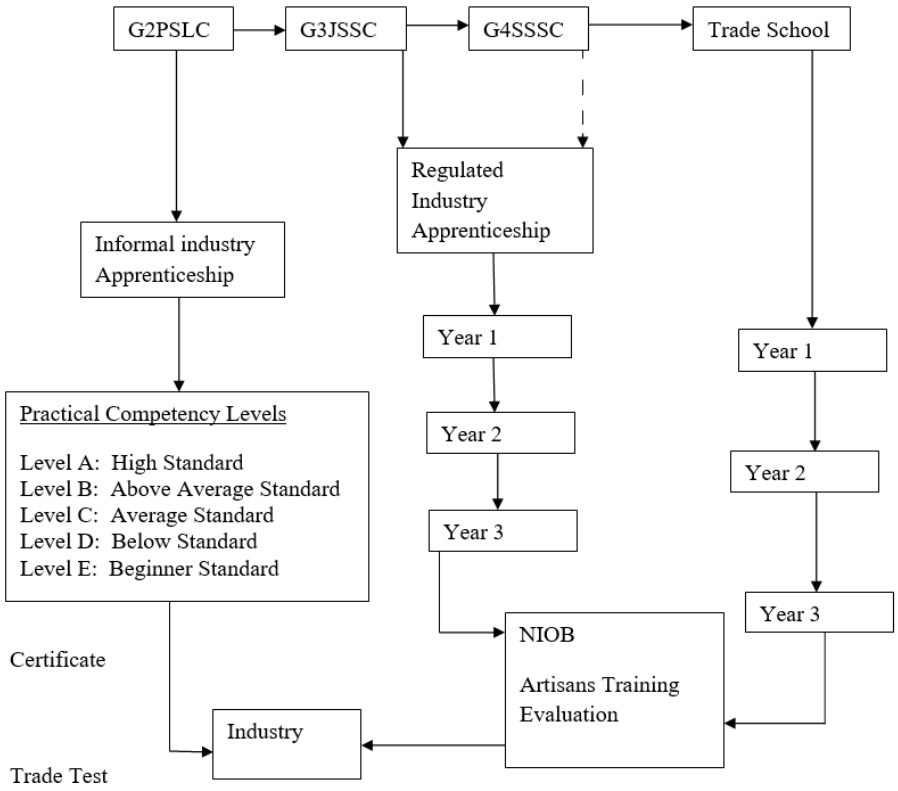

FIGURE 1 - Apprenticeship Skills Flow-Chart Model (ASFM) (Modified)
Source: Kaoma and Muya (2016)

LEGEND
G2- Primary School Leaving Certificate
G3- Junior Secondary School Certificate
G4- Senior Secondary School Certificate
Trade School –Technical/ Vocational School or College
NIOB- Nigeria Institute of Building
Based on the adapted ASFM the three (3) pathway training system forconstruction artisan, skill acquisition are:

- Informed Apprenticeship
- Regulated Apprenticeship
- Trade School Training

3.4 INFORMAL APPRENTICESHIP

Informal apprenticeship pathway is the life - long system of skill acquisition, whichhas been the traditional pathway training artisan/tradesmen. Youths who could not progress academically after obtaining the primary school education, could not complete primary school, or could not go to school at all due to poverty and other reasons have always signed up apprenticeship training with skilledand experienced artisans/tradesmen for a given period ranging from three(3) to five (5) years.
G2 dropouts and below has referred to the category who according to Kaoma and Muya (2016) could enrol for informal apprenticeship that is 100 percent

hand-on career. The levels E to A in ascending order represents the years of apprenticeship from one (1) to five (5) year respectively. Experts from the NIOB and related professionals bodies should carry out mandatory and frequent testing and assessment of trainees.

3.5 REGULATED APPRENTICESHIP

Junior Secondary School CertificateG4dropouts who could not proceed to Senior Secondary School could enrol into the regulated industrial apprenticeship to undergo a three (3) year training program in an organization/corporateand reputableconstructioncompany like Julius Berger and G.Cappa etc.

This path lays more emphasis on practical lessons than theory, as it is industry based. Examinations should beheld at the end of every year to assess and evaluate the progressive performance of the trainees. The industrial training fund (ITF) and NIOB should closely monitor the trainees' performance to warrant the award of certificate by the Nigerian Board for Technicaland Vocational Council (NBTC)

3.6 TRADE SCHOOL TRAINING

Successful Junior Secondary School Students G3 could either proceed to Senior Secondary school if they are bright enough to do so. However, those who could not go intoacademics could enrol into Technical/Trade school for a three (3) year formal training program. This program under the close supervision of Ekiti State Board for Technical and Vocational Education (ESBTVE) should also be monitored by NIOB and ITF. Successful completion of this program is certified byNBTC.

3.7 FEDERAL TRADE TEST

Successful completion of any of the three (3) pathways should be subjected to testing and assessment by the trade test unit of the Federal Ministry of labour and productivity, which issues Trade Test Certificates Grades III,II and I respectively inascending order.

3.8 VALIDATION OF MODEL

Kaoma and Muya (2016) affirmed that the proposed model was found suitable after validations and its implementation would go a long way in addressing the artisans' shortage in Zambian construction industry. They also opined that during training, apprentices should be blended with highly skilled personnel so that there was gradual transfer of artisan skills from one group to the other.

IV. CONCLUSION AND RECOMMENDATIONS

Literature review on this paper has exposed the Authorsto sizable situations of Artisans shortage in the construction industry generally. Many factors have alsobeen identified to be responsible for the shortage of the stuff. It has beenestablished that high level of poor workmanship has emanated from shortageof trained and skilfulartisans, which is a resultant of youths refusal to learn the trades and non-availability of effective training program. The vocational training centres/technical schools are moribund.

The traditional apprenticeship system of the old has proved very effective. This addressed the proposal for a two-year training model of Technical/ Vocation schoolssupported by industrial training.

The industrial training segment of this model should adequately involve thetraditional apprenticeship system. Encouraging the trainee with monetizedincentives during training will go a long way to uphold them.

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