

THEME

ASSESSMENT AND BIG DATA

SUB-THEME

ORGANIZATION AND STORAGE OF BIG DATA: IMPLICATION FOR ASSESSMENT

TOPIC

Developing A Data Bank And Increasing Access To Employment For Certified Craftsmen In Nigeria

BY



PROF. IFEOMA M. ISIUGO-ABANIHE

E-MAIL: ifyabanihe@gmail.com, TEL: +2347031375555

and



MARK UGWOKE

E-MAIL: markugwoke@yahoo.com, TEL: +2348033781644

Abstract

The role of craftsmen in national development cannot be over-emphasised. Their skills are necessary in engineering, construction, hospitality, entrepreneurial sector, etc. However, part of the problems of economic and technological development in Nigeria includes inadequate number of skilled manpower and lack of access of certified craftsmen to employers of labour. Prior to now, organization and storage of data on certified craftsmen did not include important parameters such as location and other demographics. This study, therefore aimed at developing a data bank of certified craftsmen of out-turns of Technical Colleges in Nigeria using the results of the National Business and Technical Examinations Board (NABTEB) May/June, NBC/NTC Examination (2013-2017) for easy accessibility and employability. Population and sample of the study were 300,327 and 97,929 certified craftsmen, respectively. Descriptive statistics was used to analyse the data. The findings of the study revealed that the annual out-turn of certified craftsmen in Nigeria is low, and most of the trades were dominated by males. It also indicated that there were evidences of mismatch of skills in the skills' supply and demand chain in Technical and Vocational Education and Training (TVET). It was therefore recommended that the data bank of certified craftsmen be provided and updated periodically with relevant demographic variables in order to facilitate access and employability. The result of the study has implications for more programmatic emphasis on skills development and acquisition. Additionally, the paper made recommendations on strategies for revitalizing assessment for TVET institutions to enhance the status of the certified craftsmen.

Keywords: Data-bank, Certified Craftsmen, Trades, Gender-based differences in Career TVET

Introduction

Data bank is a well-organized and maintained collection of data or information on one or more subjects for easy consultation and use. Information, such as data sets of certified craftsmen in Nigeria, which can be accessed through remote servers, computers and other electronic devices in a well-organized manner is highly useful in this era of Big Data. Creation of a data bank on Craftsmen has the capacity to enhance their accessibility and employability as they can be easily reached by employers of labour from various parts of the world as well as facilitate new discussions which could broaden the range of traditional statistics on craftsmen. Developing a data bank on Craftsmen challenges our conventional thinking about the collection and production of statistics as well as processes of carrying out assessment for the certification of craftsmen (Hammer, Kostroch, Quiros, STA Internal Group, 2017).

Craftsmanship development in Nigeria dates back to the Pre-colonial period when children of Master Craftsmen learned the trades of their parents, and the knowledge and skills of the crafts were handed down from father to son. The advent of colonial rule in 1901 witnessed foreign artisans and craftsmen who were brought into the country to help the colonial government carry out skilled jobs, such as erecting residential and administrative buildings and construction of the railway system to facilitate external trade (Adewale, Siyanbola and Siyanbola, 2014). Till date, the private sector, through the apprenticeship system, has remained the predominant provider of skills and employment to the workforce in Nigeria; regrettably, most of them practice without certification (Ari, 2018).

Formal training of skilled workers started with the establishment of training schools in some departments of Civil Service. Each school was managed by its respective departments where training was geared towards departmental needs in Public Works, Post and Telegraphs Department, and Nigerian Railways. However, realising that shortage of skilled manpower at the artisan, craftsman and the technician levels was one of the factors responsible for poor implementation of the second National Development Plan (1970-1975), Technical colleges and Polytechnics were established – one in each State of the Federation - for production of craftsmen, technicians and technologists. In April 2009, Vocational Enterprise Institutions (VEIs) and Innovation Enterprise Institutions (IEIs) were launched. These are largely private sector-led institutions that run 3-year modular programmes, where each year of study could be terminal as each level ensures a specific employable skill.

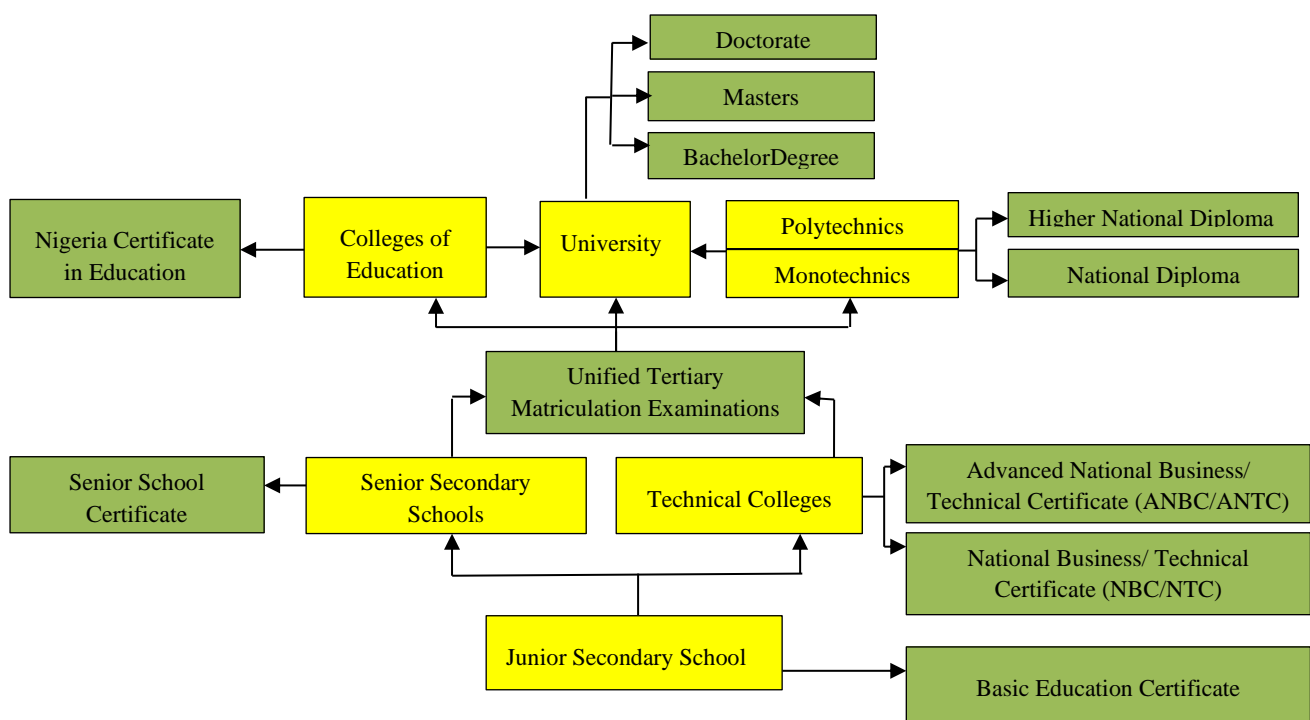
Currently, Nigeria has 171 Technical Colleges, 98 Vocational Enterprise Institutions (VEIs), 150 Innovation Enterprise Institutions (IEIs) that provide training in technical and vocational skills, excluding the Polytechnics and Mono-technics (Federal Ministry of Education, 2018), and, recently, other training institutions and non-formal channels that equip learners with skills and competences to meet the needs of the labour market through the Nigerian Skills Qualification (NSQ) programme.

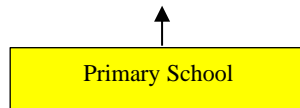
Increasingly, efforts are being made in Nigeria to provide a world-class vocational and technical education system that will create an internationally competitive workforce (UNIDO, 2017; Federal Ministry of Education, 2018). Problem of insufficient number of technical and vocational institutions and other challenges have limited progress in TVET, especially in terms of production of qualified craftsmen and technicians in the formal technical education sector, particularly in the technical colleges where the graduates are awarded craftsmanship certificates - the National Business Certificates (NBC) and National Technical Certificates (NTC). According to NBTE (2016), the total number of accredited technical colleges in Nigeria had been 177 consisting of 21 Federal Science and Technical Colleges (FSTCs), 154 State Government Technical Colleges (GTCs) and two privately owned colleges. This figure is grossly inadequate in a country with a population of over 183 million citizens, that has over 12,000 regular secondary schools. Although the National Council on Education approved the establishment of more Federal Science and Technical Colleges – one in each of the 36 States and the Federal Capital Territory, Abuja, 774 Technical Colleges in the 774 Local Government Areas and 3096 Vocational Centres - this has not been fully implemented (Isiugo-Abanihe, 2018). Therefore, the problem of dwindling enrolment in Technical colleges and the attendant issue of inadequate number of Craftsmen and Technicians have continued to be a menace.

Similarly, the deficit in the proportion of qualified Craftsmen produced in the country is a reflection of the non implementation of policy directives on transition rates from basic education to Senior Secondary Schools and Technical Colleges. The National Policy on Education (NPE, 2004) prescribed the following transition rates at the end of basic education: (Senior Secondary Schools should absorb 60% of total out-turn; the Technical Colleges should absorb 20% of total out-turn; the Vocational Technical Training Centres should absorb about 10% of total out-turn; while Apprenticeship Scheme should absorb about 10% of total out-turn). The basic education annual turnout rate is about 4 million, which implies that the expected enrolment into Technical Colleges ought to be up to 800,000 representing 20% of the total out-turn (ITF and UNIDO, 2016). This figure, however, is far from the reality in view of the prevailing situation of dwindling enrolment in Technical Colleges.

Assessment and certification leading to the award of craftsmanship certificates in Nigeria is carried out by the National Business and Technical Examinations Board (NABTEB). The Board, as a public examination body in Nigeria plays the unique role of carrying out assessment and certification in the field of TVET below the tertiary education level. NABTEB was established by the Act 70 in 1993 to domesticate craft level Technical and Vocational Education assessment and certification which were originally undertaken by foreign examination bodies. NABTEB has, among several other functions, the responsibility for the assessment of potential craftsmen and master craftsmen who are awarded with the ordinary level National Business Certificate (NBC)/National Technical Certificate and the Master craft-level Advanced Business Certificate (ANBC)/Advanced National Technical Certificate (ANTC). In addition to the Craftsman Certificates awarded to products of Technical Colleges, which are equivalent to the Ordinary Level Senior Secondary Certificates awarded by other examination bodies in Nigeria (Fig 1), NABTEB awards other skills certificates that are comparable with the NBC/NTC under the Nigerian Skills Qualifications Framework. The NABTEB Craftsman and Master Craft certificates are equivalent to Levels 3 and 4 respectively in the Nigerian Skills Qualifications Framework (NSQF) (NBTE, 2013).

FIGURE 1: The Education System and Related Qualifications in Nigeria





Source: Adapted from ITF and UNIDO (2016)

Demographic data are important in planning for skills supply as the size of the younger ones in the population, in part, determines the number of new entrants to various levels of education and training in the years to follow. With the growing population, skills supply infrastructure will face huge pressure (ITF and UNIDO, 2016). The country which is politically and culturally organized into six geo-political zones (North Central, North East, North West, South East, South South and South West) is blessed with numerous and diverse natural resources distributed in all the geo-political zones. Expectedly, skills development and supply should be carried out in a manner that the training is tailored towards harnessing the natural resources available in each zone; and enhancing the functional relevance of certified craftsmen. The reality is that despite the central role of skills in shaping employment outcomes, there is very little information about the distribution of different types of skills in various geo-political zones and their contributions to labour market outcomes. The dearth of data on skills endowment is a huge obstacle affecting the design of skills development policies and programs. The data available do not have the characterization of the skills profile of the Nigerian population.

Similarly, gender diversity plays crucial roles in craftsmanship development. According to National Board for Technical Education (NBTE,2014) the total enrolment in Technical Colleges in the 2010/2011 academic session was 87,400 with males constituting 73,843 representing 84.5% while the number for the females was 13,557 representing 15.5%. However, the total out-turns from the technical colleges for the same session was 34,344 which is less than half of the enrolment with the males constituting 28,453 representing 82.8% while that of the females was 5,891 representing 17.2% (NBTE, 2014). The Public Authority for Crafts Industry (PACI) statistics, based on the genders of their craftspeople, showed craftswomen dominating some areas of craft industries, and craftsmen became less in number than craftswomen in their centres (Almamari, 2015). Dhamija(1981) summarized women's roles in crafts industries, when he asserted that "although handicrafts are often advised when income generating activities are sought for women, 'feminine' crafts tend to be time-consuming, give poor returns, and offer little opportunity for upgrading skills"(p.8). Omani women's predominance is evident in some traditionally male craft areas, such as silver-

smithing and pottery, where statistics show that, in the Khanjar Centre, Muscat, Oman craftswomen represent 19 out of 20 craftspeople, and the case is similar in the Pottery and Ceramic Centre.

According to National Bureau of Statistics (2015), the population of Nigeria as at 2015 was a little over 183million constituting approximately 92 million males and 91 million females. Almost half of the population of labour force are women. Agriculture provides employment for half of the labour force in the country, most of which are women and the poor people. McKinsey (2014) noted that employment generation in the country is mostly in agriculture and (mostly informal) household enterprises. The World Bank (2015b) jobs report indicated that in the immediate term, while the skills demands will still be largest in the farming sector, the non-farming sector is gaining significance. About 27 million (50 percent) of the Nigerian workforce are engaged in farm employment, followed by 17 million (29 percent) in household enterprises in off-farm self-employment. Most of the household enterprises are very small and informal, 80 percent are one-person activities and less than 3 percent have five employees or more.

Furthermore, the Nigeria jobs report (World Bank, 2015b) remarked that Agricultural sector will remain Nigeria's largest sources of employment in the medium and long terms contributing 22 percent of GDP, which is larger than oil that contributes 14 percent of GDP. Unfortunately, the female farmers, due to religious, cultural and socio-political practices, especially in the Northern Zones have limited access to skills development in trades such as Agricultural Implements and Machines, Automotive Assembly and Maintenance etc., to land ownership or credit facilities and sometimes men have the right to sell the products even if women produced them (JICA,2011).

The above situation is similar to that of Bangladesh where most TVET programmes constituted male-dominated trades. Only about one-quarter of the total TVET enrolments are female. Few girls are provided the opportunity to learn skills needed for the formal sector employment (ADB, 2014; World Bank, 2015). Similarly, Asian Development Bank (2014) reported that, female participation in TVET in Sri Lanka in 2009 was 41%. The proportion, however, varies from sector to sector and within a range of 6-100%. For example, the female participation in TVET teacher training is 100%; 6% in automobile repairs; and 12% in Electrical, Electronics and Telecommunication. Female students who wish to undergo vocational training are encouraged to register for traditionally feminine trades such as hairdressing, beauty culture, secretarial etc., while the male students are encouraged to enrol

for trades in Welding, Automobile Technology, Electrical, Electronics and Telecommunication etc.

Developing a database for Craftsmen and Technicians will facilitate monitoring and evaluation of trends in the production of this highly important sector of the work force. It is hoped that the database will promote job placement, monitoring of career growth, achievement of gender parity in education and employment, as well as other indicators of Nigeria's implementation of Sustainable Development Goals.

Poverty and unemployment rates are high in Nigeria. According to the National Bureau of Statistics (NBS, 2018), unemployment rate increased from 13.9% in the third quarter of 2016 to 18.8% for the same quarter in 2017; and, these draw attention to the urgent need for improvement of skills qualification. High unemployment rates, especially among youths, have grave implications for national economy as well as national security. The absence of matching skills with industry needs has also heightened the rate of unemployment, especially among the youths. This has been one of the prime concerns of stakeholders in the economy of the country. Given this scenario, adequate management of economic challenges in Nigeria have included development of strategies that empower the youths to acquire relevant skills in order to become self-reliant. The Nigeria Industrial Revolution Plan (2014) and the Economic Diversification and Industrialisation Policy documents had estimated that the Agro-allied sector; Metal and Solid Minerals, Auto Assembly Construction and Light Manufacturing Services would have high job creation potentials in Nigeria. Skills demand across the globe is shaped by technological changes especially the information and communication technologies which make it increasingly easy for employers to engage in complex skills demand and supply chains. Therefore, citizens do not only need to be skilled, also strategies that would ensure that they are productively engaged and potential job and wealth creators must be mobilized.

Furthermore, skills acquisition does not automatically translate to employment. Stakeholders in TVET have often expressed concern over under-employment and, sometimes, unemployment of certified craftsmen despite the need for them in the labour force. Osinem (2018), has expressed the opinion that the problem of unemployment of certified craftsmen is due to skills mismatches which he defined as a situation where there is a discrepancy between the qualifications and skills that individuals possess and those that are needed in the labour market. Osinem further noted that skills mismatch generally assumes two broad dimensions- the qualitative dimensions and the quantitative dimensions. He explained that the qualitative

dimension is a situation where graduates are not employable even though they have the right qualification on paper, while the quantitative arises when not enough young people are educated or trained at levels that will enable them fit into available positions, between what is being taught in the colleges and the needs of the society. These and other related problems exist due to lack of a consolidated big data or database that provide guidelines to labour needs.

Mismatches between TVET outputs and employer needs include: types of trades or occupations offered; competencies acquired compared with industry or self-employment requirements and practical experience opportunities for students (ADB, 2015). The identification of courses is not based on regular and systematic assessment of labour market needs. For instance, trades such as Oil Drilling, Blasting and Painting, Gas Testing, Helicopter Underwater Escape, Piping Layout and Drafting, Piping Stress and Analysis, etc. relating to the oil and gas are not offered at craftsmanship level despite the earnings from the sector for the country. Similarly, curricula for trades and courses may meet industry needs but the level of competencies acquired may not match their requirements. These are factors identified as possible causes that are responsible for the growing unemployment of certified craftsmen, in addition to irregular review of curricula, unqualified teachers of TVET, and students inadequately exposed to the right training infrastructure and industrial training experiences needed for effective production of certified craftsmen (Isiugo-Abanihe, Iro-Aghedo and Omeonu, 2018).

Summarily, the foregoing has argued that Vocational and technical skills contribute to the growth of the nation's economy, and Craftsmanship enhances the relevance and functionality of individuals in the society. As observed by Uwaifo (2009), craftsmanship promotes economic survival, vibrancy, and plays a vital role in the development of the society. Nigeria faces challenges in eradicating poverty, as the number of people living below the poverty line increases. It therefore follows that the country needs to set out critical measures to maximise the impact of craftsmen and artisans as catalysts for achievement of sustainable development. One way to achieve this is through the development of a databank of craftsmen which will effectively facilitate the link between skills supply and the demand market access. Lack of access to craftsmen and artisans has been identified as a major contributor to the problem of unemployment of craftsmen in Nigeria. The development of databank of craftsmen would enhance employability, improve productivity and stem the influx of foreign craftsmen as well as artisans into the country.

Statement of the Problem

The unemployment situation in Nigeria is a mirror of global trends. Over 200 million people were estimated to be unemployed in the world in 2016, and the projections are for a further increase in global unemployment by more than 3 million people by the end of 2018. It is against this backdrop that there is an increasing call on the government to reduce the burden of unemployment and poverty. In Nigeria, there has been consistent calls for improved funding in the TVET sector and increased access of graduates of technical and vocational education, particularly certified craftsmen, to employers of labour. Presently, there is no data bank of certified craftsmen in Nigeria. Available data on the certified craftsmen do not contain necessary demographics and context that would facilitate access. Consequently, many employers of labour, locally and internationally who would like to have access qualified, skilled craftsmen do not have any database to facilitate that at present. Could this problem of inaccessibility to certified craftsmen in Nigeria by employers of labour be a contributory factor to the plight of unemployment suffered by some of them and can this be solved? In this era of Big Data which is primarily concerned with turning imperfect, complex, often unstructured data into actionable information, the development of data bank of certified craftsmen using computer machines to enhance their accessibility is imperative.

Objective of the Study

The objective of this study therefore, is to develop a data bank for the purpose of increasing access and employability of certified craftsmen in Nigeria. Specifically, the researchers seek to:

- i. Develop a databank for accessing certified craftsmen in Nigeria using the results of NABTEB May/June 2013, 2014, 2015, 2016 and 2017 NBC and NTC examinations.
- ii. Ascertain if there is any difference in the distribution of certified craftsmen in the data bank due to geo-political zones.
- iii. Ascertain if there is any difference in the distribution of certified craftsmen in the data bank due to gender.
- iv. Ascertain if there is any difference in the distribution of certified craftsmen in the data bank due to trades.

Research Questions

To guide the study, the following research questions were posed:

- 1 What type of databank for accessing certified craftsmen can be developed using the results of NABTEB May/June 2013, 2014, 2015, 2016 and 2017 NBC/NTC examinations?
- 2 Is there any difference in the distribution of certified craftsmen in the data bank due to the geo- political zones?
- 3 Is there any difference in the distribution of certified craftsmen in the data bank due to gender?
- 4 Is there any difference in the distribution of certified craftsmen in the data bank due to trades?

Methodology

Design

This study is an ex-post facto type of research. The variables of the study were not manipulated, rather the study utilized secondary data of available information that already existed on the characteristics of certified craftsmen over five years from the Information and Communication Technology (ICT) Department of NABTEB. As an ex-post facto research, the design made it possible for the study to tease out possible antecedent factors that are necessary for consideration in the development of the data bank.

Population and Sample

The population of the study is made up of 300,327 candidates who sat for the May/June NBC and NTC examinations from 2013 to 2017. Of the 300,327 candidates, a subset of 97,929 who were certified craftsmen were purposively selected and their data extracted for analysis.

Method of Data Collection

The method of data collection used involved extracting the data for all certified craftsmen from the larger data set of May/June 2013, 2014, 2015, 2016 and 2017 NBC/NTC examinations from the database of Information and Communication Technology Department of the Board. The extracted data were organized starting from various trades of the craftsmen, the geo-political zones of the country, states, colleges where the craftsmen sat for the examinations and lastly, the gender of the craftsmen. Subsequently, a computer programme was designed and used to develop an online data bank of certified craftsmen for the May/June NBC and NTC examinations for the five-year period (2013-2017). This data bank was launched as a portal of data bank of certified craftsmen in the Board's official website.

Data Analysis

Data analysis was performed on the 97,929 certified craftsmen using a spreadsheet program (Microsoft Excel, 2016). Descriptive statistics (frequency and bar-charts) were used to analyse the data.

Results

Research Question 1: What type of databank for accessing information on Certified Craftsmen can be developed using NABTEB May/June results from 2013 to 2017?

Results of analysis of on-line registration information of the NABTEB-Certified Craftsmen from 2013 to 2017 yielded a spreadsheet on socio-demographic characteristics which include location (Geopolitical Zone, State and Institution), and gender.

The Spread Sheet data, though macro in nature, provide a data base that can be used to access Certified Craftsmen through their Institutions of training.

Research Question 2: Is there any difference in the distribution of certified craftsmen in the data bank due to the geo- political zones?

Table 1: Distribution of Certified Craftsmen by Geo-Political Zones

Geo- Political Zone	May/June NBC/NTC Examinations.Year					Total
	2013	2014	2015	2016	2017	
North Central	8885	8007	6638	7067	5647	36244
North East	2418	1879	1907	2705	2154	11063
North West	1730	2380	2944	3551	3551	14156
South East	1656	1446	1646	1899	1802	8449
South South	1249	1282	1547	1639	1733	7450
South West	4532	3948	4310	4232	3545	20567
Total	20470	18942	18992	21093	18432	97929

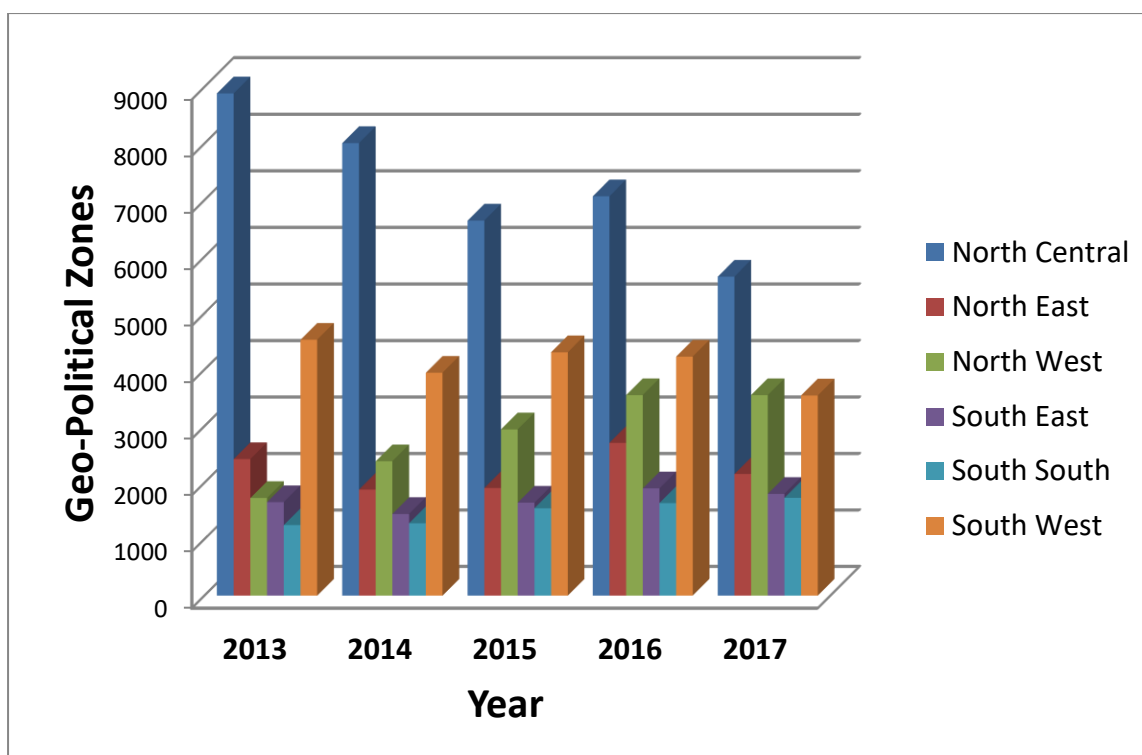


Figure 1: Distribution of Certified Craftsmen by Geo-Political Zones

Table 1 indicates that the North Central Zone has the highest number of craftsmen with a figure of 36,244 representing 37.0% of the total number of certified craftsmen followed by the South West Zone with 20,567 craftsmen representing 21.0%. On the contrary, the South South Zone has the least number of craftsmen of 7,450 accounting to 7.6% of the total certified craftsmen and this was closely followed by the South East Zone with a figure of 8,449 representing 8.6% of the total number.

Research question 3: Is there any difference in the distribution of certified craftsmen in the data bank due to gender?

Table 2: The Distribution of Certified Craftsmen by Trades and Gender

S/N	Trade	Year										Total
		2013		2014		2015		2016		2017		
		M	F	M	F	M	F	M	F	M	F	
1	Agric Equip & Implemen Mechanic Works	47	8	31	9	80	5	71	5	77	10	343
2	Animal Husbandry	12	3	88	46	66	23	79	36	92	70	515
3	Auto Electrical Works	3	0	4	1	4	2	2	0	3	1	20
4	Blocklaying/Bricklaying And Concreting	1133	70	1499	60	1890	93	1979	76	2232	76	9108
5	Book-Keeping	7204	6158	5755	4489	3671	3394	4704	3918	2246	2236	43775
6	Carpentry And Joinery	240	10	361	4	642	22	600	22	789	8	2698
7	Catering Craft Practice	26	260	31	360	31	372	56	496	54	536	2222

8	Ceramics	8	5	8	5	15	8	6	9	5	7	76
9	Computer Craft Studies	252	138	269	164	427	201	389	229	509	290	2868
10	Cosmetology	0	0	0	0	0	0	3	2	2	7	14
11	Draughtmanship Craft Practice	26	4	4	0	26	1	20	1	26	3	111
12	Elect Instal&Maint Work	2203	76	2602	120	3528	183	3545	140	3868	168	16433
13	Electronics Works	232	32	278	22	521	48	554	39	496	71	2293
14	Fabrication And Welding	315	11	532	11	729	14	740	23	783	9	3167
15	Fisheries	11	5	7	11	31	32	25	17	11	11	161
16	Foundry Craft Practice	0	0	0	0	6	1	9	0	8	0	24
17	Furniture Making	202	0	171	0	256	1	331	1	333	0	1295
18	Graphic Arts	6	2	24	1	23	3	23	1	55	6	144
19	Instru Mechanics Works	5	0	7	1	34	1	39	0	43	2	132
20	Ladies Garment Making	1	32	9	67	15	127	20	180	33	184	668
21	Leather Trades	2	1	7	2	4	0	10	5	11	0	42
22	Machine Wood Working	0	0	1	0	49	0	39	0	40	0	129
23	Marine Eng. Craft	0	0	1	0	3	0	8	0	9	0	21
24	Mech. Eng. Craft Pract.	380	7	470	15	598	14	639	15	905	17	3060
25	Men's Garment Making	3	0	5	0	3	0	17	0	5	0	33
26	Motor VehMech Works	1002	9	999	9	1318	11	1202	22	1508	21	6101
27	Painting And Decorating	70	14	57	13	108	25	107	25	113	29	561
28	Photographic Practice	1	0	0	0	0	0	0	0	0	0	1
29	Plumbing & Pipe-Fitting	67	1	84	0	116	0	178	1	169	3	619
30	Printing Craft Practice	10	0	11	1	12	3	17	3	19	6	82
31	Refri. & AC Work	68	3	65	3	105	4	152	6	132	1	539
32	Salesmanship	21	25	39	64	20	47	166	59	33	14	488
33	Secretarial Duties	5	26	1	14	2	5	0	2	1	3	59
34	Textile Trades	0	0	16	8	3	4	6	5	0	1	43
35	Tourism	5	6	0	1	1	0	2	2	9	13	39
36	Vehicle Body Building	4	0	5	0	11	0	14	1	10	0	45
Total		13564	6906	13441	5501	14348	4644	15752	5341	14629	3803	97929

Table 3: Distribution of Certified Craftsmen by Gender

S/N	May/June NBC/NTC Examination Series	No. of males certified	No. of females certified	Total no. certified
1	2013	13,564	6,906	20,470
2	2014	13,441	5,501	18,942
3	2015	14,348	4,644	18,992
4	2016	15,752	5,341	21,093

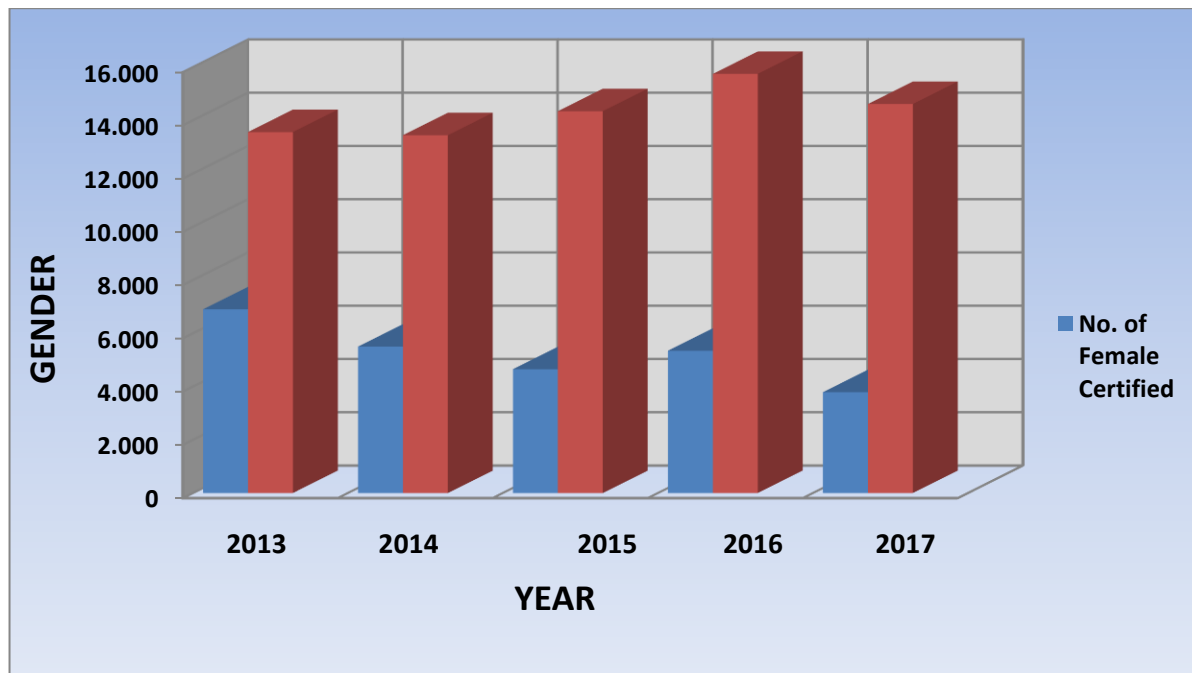
Total**71,734****26,195****97,929**

Figure 2: Distribution of certified crafts men by gender

Tables 2 and 3 indicate that the number of males certified as craftsmen is more than that of the females. Specifically, a total of 71,734 craftsmen representing 73.3% of the total number of certified craftsmen were males while 26,195 craftsmen representing 26.7% were females. The tables also reveal that 32 trades were dominated by males while four trades, specifically: Catering Crafts Practice, Ladies Garment Making, Secretarial Studies and Tourism were dominated by females. They further reveal that females were not certified as craftsmen in Foundry Craft and Vehicle Body Building while males were certified in all the 36 trades for the period of five years covered by this study. Again the tables show that an average of 19,585 certified craftsmen are produced annually in the country.

Research question 4: Is there any difference in the distribution of certified craftsmen in the data bank due to trades?

Table 2 depicts that 97,929 craftsmen were certified in 36 trades. It further indicates that book-keeping recorded the highest number of that certified craftsmen of 43,775 representing 44.7% of the total certified craftsmen while Electrical Installation and Maintenance Practice has 16,433 representing 16.8%. The next in the list is Bricklaying, Block Laying and Concreting with a total of 9,108 representing 9.3%, while Photographic Practice

had the least patronage with one certified craftsmen, followed by Cosmetology with 14 certified craftsmen, Auto Electrical Trade which had 20 while Marine Engineering had 21. Again, the numbers of certified craftsmen in four trades of agro-allied sector are as follows: Leather Trade (42), Fisheries (161), Animal Husbandry (515) and Agricultural Implements and Machines (343) is 1061 representing 1% of the total certified craftsmen in five years.

Discussion

The finding of this study showed that data bank for accessing certified craftsmen can be developed using the results of NABTEB certificate examinations. The study also established that in this era of Big Data, the development of data bank of certified craftsmen in Nigeria to enhance their accessibility and employability is imperative. These findings are supported by Hammer, Kostroch, Quiros, STA Internal Group, (2017) who expressed their opinion that data bank of certified craftsmen in Nigeria will uplift the status of the craftsmen, enhance their access and employability as they can be reached by employers of labour from every part of the world, facilitate answering new questions better, undoubtedly, more ideas will arise, some of which could broaden the range of traditional statistics on craftsmen and respond to research needs that will challenge our conventional thinking about the collection and production of statistics as well as the processes of carrying out assessment for the certification of craftsmen. A portal of data bank of certified craftsmen was launched in the Board's official website, www.nabtebnigeria.org

The result also shows that North Central Zone has the highest number of certified craftsmen followed by South West, North East, South east and South South zones in that order. This indicates South South zone has the least number of certified craftsmen. The study also revealed that the females dominated trades such as Catering Crafts Practice, Ladies Garment Making, Secretarial Studies and Tourism. This could be as a result of the feminine nature of the trades, while the males dominated other trades such as Agro-allied trades, Automobile trades, Construction trades, Electrical trades, Fabrication and Welding etc. This result is supported by the Asian Development Bank (2014) which reported that in Sri Lanka female students who wish to undergo vocational training are encouraged to register for traditionally feminine trades such as hairdressing, beauty culture, secretarial etc., while the male students are encouraged to enrol for trades in welding, automobile technology, electrical, electronics and telecommunication etc. In contrast, Almamari (2015) stated that Omani women dominate some traditionally male craft areas, such as silver-smithing and pottery, where statistics show that, in the Khanjar Centre, craftswomen represent 19 out of 20 craftspeople.

Again, the finding of the study shows that there are both quantitative and qualitative mismatches between the trades offered at craftsmanship programmes and those needed in the society. On the average, a total of 19,585 certified craftsmen are produced annually in the country which. Similarly, despite the huge contributions of agro-allied sector to employment generation accounting for about fifty percent of the workforce, and twenty-two percent to the Gross Domestic Product (GDP), the number of craftsmen in trades relating to the sector is only one percent of the number of certified craftsmen in the country. Furthermore, Tourism trade recorded very low number of certified craftsmen despite its growing employment potential. Again, trades relating to oil and gas are not offered at the craftsmanship programmes despite the huge earnings to the economy from the sector. Instead, Book-keeping trade recorded the highest number of certified craftsmen accounting for over forty percent of the total number of craftsmen certified by the Board while Photographic Practice trade has the least number of certified craftsmen. The implication is that the skills being supplied at the craftsmanship level do not meet the skills demanded in the society for gainful employment. The imbalance in the skills supply and demand chain leads to skills mismatches. These findings confirmed the position of Osinem (2018) who stated that the problem of unemployment of certified craftsmen is due to skills mismatches which he defined between the qualifications and skills that individuals possess and those that are needed in the labour market. Similarly, the findings were supported by (ADB, 2015) which identified skills mismatches between TVET outputs and employer needs include: types of trades or occupation offered; competencies acquired compared with industry or self-employment requirements and practical experience opportunities (Isiugo-Abanihe, Iro-Aghedo and Omeonu, 2018)

Conclusion

The conclusion of this study is that the development of data bank of certified craftsmen to enhance their access and employability is very important, and this can be achieved using results of NABTEB certificate examinations. In general, the annual out-turn of certified craftsmen is averagely low; and there is gender disparity in the distribution of craftsmen across trades with males dominating in almost all the trades covered by the study. Finally, the study concluded that are evidences of skills mismatch which need to be corrected through enlightenment of potential candidates as well as providing a data base that can inform policy makers and implementers of TVET about prevailing trends and new directions needed for more sustainable development.

Recommendation

The following recommendations are made:

1. Strategies should be explored to re-organise assessment instruments and data to enhance regular and comprehensive updating of data bank of certified craftsmen;
2. Prospective female trainees in TVET should be encouraged to enrol in traditionally male-oriented areas through proper guidance, scholarship and bursary awards to enhance their employability.
3. TVET institutions must provide support for students while still at school or college through their local networks with employers and through better implementation and management of industrial attachments within work-based training and apprenticeship programmes.
4. Employers should effectively participate in setting occupational standards, curricula development, providing real industrial attachments for students and educating teachers/instructors on the sectors' latest trends and technologies to minimise qualitative skills mismatches.
5. National campaign to change perceptions and improve the image of TVET in the county to encourage more students' enrolments into the programmes and reduce quantitative skill mismatches should be instituted.
6. Development partners should carry-out a regular tracer study on certified craftsmen while skills market information system for the craftsmen should be created for proper planning and decision-making.

Future Directions

Results from the analysis presented are from 97,929 certified craftsmen who took the National Business/Technical Certificate (NBC/NTC) examinations in 2013 – 2017. Since it is anticipated that more potential will continue to take the NBC/NTC examinations in subsequent years, the sample size of certified craftsmen will be increased. To respond to this potential increase, the National Business and Technical Examinations Board NABTEB will make preparations for developing relational database management systems, which have the capacity to store large quantity of data.

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