



Determination of Employability Skills Required by Electrical Technology Students in Colleges of Education in Nigeria

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ABSTRACT - The rate of unemployment among youths in Nigeria has assumed a worrisome dimension. More importantly that those affected are specialized graduates from tertiary institutions. The youth unemployment rate has been of persistent increase since 2014 from 11.7% to 36.5% in 2018. It has been established that the vacancies exist, but the graduates lack the skills to match the jobs. Therefore, the aim of this paper was to identify the constructs and sub-constructs of employability skills that are needed to match Electrical Technology students with the labour market. The research design is a qualitative method involving document analysis and interview protocol of stakeholders in electrical technology. The stakeholders were the academics and the employers. The documents were analysed using frequency matrix table. While the interview of the stakeholders (experts) were done thematically. To ensure the reliability of the constructs and sub-constructs, an item pool was constructed to determine the agreement and content reliability index for the constructs. From the item pool, 5 constructs and 193 sub-constructs were generated. These were constructed into instrument for expert review. Three experts in electrical technology rated the instrument for determining the agreement level, using the Fleiss kappa approach. The percent agreement for the raters are 89.63%, 86.01%, and 81.86% respectively with a mean agreement of 85.83%. The 85.83% indicate an almost perfect agreement by the experts for each of the constructs in the instrument. This is very good for producing a functional framework of employability skills.

Keywords: Constructs, Electrical Technology, Employability, Kappa Agreement, Raters, Unemployment.

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I. INTRODUCTION

The labour market today have shifted from the traditional way of presenting your certificate and get the job. The job sphere is in most cases technology driven and therefore, requires graduates and students to acquire new skills (Schwab, 2016; Peters, 2017). Realizing this, the Federal government of Nigeria, took steps to create and expand the job opportunities for the youths by investing heavily in the power sector of the economy. The data released by the National Bureau of Statistics(NBS, 2017) indicates that the power generation output in Nigeria attained 7,000 megawatts of electricity for the first time in decades. This was due to the unbundling of the power sector to give room for efficiency and expansion. This has created various vacancies in the various sub-sectors of the electricity supply chain such as generation, transmission, and distribution. Thus, more job opportunities were opened to graduates from tertiary institutions and especially Electrical Technology Students.

The stability in the power sector has a multiplying effect. It grows the level of foreign direct investment in the economy. This translate to more jobs opportunities for graduates. For instance, the Federal government through the Minister of Culture and Information announced the creation of 7million jobs in the last three years (Lai, 2018).

Related to this is the improved budgetary allocation for education which has increased from millions of naira to billions since 2011. Specifically, the 56 billion nairas budgetary allocation to education in 2017 increased to 102.9 billion nairas in 2018. This has brought about improved government intervention in both facilities and training with the aim of improving outcome which is employability of graduates. This role is effectively being handled by the Tertiary Education Trust Fund (TETFUND). The quality of a school is a function of the employability of its graduates (David Finch; Melanie Peacock; Nadege Levallet; William Foster, 2016). One

definitely expect an improved educational outcome in terms of ability to secure jobs based on the available job opportunities in both the public and private sectors of the economy. It is therefore worrisome that the employers of labour continue to lament about the poor quality of graduates which has made them a misfit for the labour market. This has earned them some unprintable names such as half-baked graduates or, graduates who are not graduate (Holmes and Holmes, 2015; Babatunde Durosinmi-Etti, 2017). (Ari, 2018) notes that the vacancies exist but, the people to fill them are not there. Ari Joseph is the Director General of the Industrial Training Fund (ITF) in Nigeria. There is, therefore, a huge waste of government investment in Technical Education due to the existence of skills mismatch between the school and the workplace (Daihiru Sale Mohammed and Sarimah Ismail, 2014). This is because it has been opined that the jobs are there but the graduates lack the skills to match those jobs (Babatunde Durosinmi-Etti, 2017). The employers expect the graduate to possess other skills apart from academic qualification (Daihiru Sale Mohammed and Sarimah Ismail, 2014; Emmanuel, 2015; Jollands, 2015b). The continuous increase in the rate of youth unemployment reveals that the issue of skills mismatch in Nigeria education system has not been adequately handled particularly, at the College of Education level where many graduates of Electrical Technology are found to be roaming about the streets (Need Assessment Report, 2016). The school should be concerned with the process of transition from the school to the workplace (Cai, 2013). Therefore, for the local content policy of the government to materialize and become functional, the school must be alive to its responsibility of developing students to be job-ready and capable of fitting into the employment market. This can only be achieved when we have in place a functional employability skills framework that is capable of bridging the skills-gap existing between the school and the labour market most especially for Electrical Technology students that has received considerable attention from the government of Nigeria.

Comparative Job structure of the Tertiary Institutions in Nigeria

Although, it is very difficult to get unemployment data in Nigeria because the schools lack the database for graduates tracking (Asaju, 2014; Woolley et al., 2015). Research indicated that Electrical Technology graduates from Colleges of Education ought to have fair better on the employment scale as against their counterpart from the University and Polytechnic because of the nature of their training which gives them job opportunities as a professional technical teacher in schools and Technical Officers in Trades, Businesses and Industries (NCCE, 2012; NPE, 2013). However, the existing situation and the result of preliminary studies reveal that the Colleges of Education trained Electrical Technology graduates are not always being considered for employment because of their over-reliance on academic qualification. This again accounts for the sacking of twenty-two thousand (22,000)

teachers in Kano state in January 2018 for being unfit for the job (Nwachukwu, 2018).

The National Board for Technical Education (NBTE) which is in charge of Polytechnic education only has its focus on business and industries for its graduates. Thus, graduates of Polytechnics are mono-sector trained unlike Electrical Technology students from Colleges of Education who are dual sector trained. Schedule 80, subsection a, b and c of the National Policy on Education (NPE, 2013) specifically stated the industrial and business roles for Colleges of Education Technical, and Polytechnics.

Unemployment in Nigeria

Nigeria, the largest black race in the World is situated along the coast of West Africa. Nigeria and Ghana are having the highest number of people in the sub-region. However, Nigeria is the most enriched with the largest coastline and numerous mineral resources that put her in a vantage position in the global reckoning. However, the state of economies in many of these countries has made some researchers and State watchers to worry about the State and impact of Education on the life of the inhabitants of these nations most especially, Nigeria. For example, the World Bank Global ranking of Universities at the end of 2016 shows that no single West African countries made the first one thousand in the world Educational ranking of Universities. In another index, World Bank, (2016) global unemployment index shows the alarming rate of unemployment in West Africa compared with some Asian countries like Malaysia and Singapore. All these are affirming the low qualities of Nigerian graduates; the level at which Education is in Nigeria and particularly, the need to reform Technical Education.

In a related development in 2016, while countries like Malaysia and Singapore had their highest level of unemployment at 4.5 percent and 6 percent respectively at the end of 2016. That of Ghana and Nigeria stood at 19.7 percent and 12.9 percent respectively during the same period. The previous unemployment rating in both Malaysia and Singapore were put at 3.5 percent and 2.1 percent respectively while the previous level of unemployment for both Nigeria and Ghana stood at 13.3 percent for Nigeria and 5.96 percent for Ghana.

Although it could be argued that all the four countries cited witnessed an increase in their level of unemployment when compared with their previous ratings as stated above, the rate of increment in the level of unemployment in both Malaysia and Singapore were marginal, while that of Nigeria and Ghana were astronomical especially, when compared the size of the Ghanaians population with that of Malaysia at about twenty-nine million people each. Secondly, the quality of education in some Asian countries might be responsible for their low level of unemployment when compared with some African countries like Nigeria and Ghana. For example, while both Nigeria and Ghana Universities could not be found among the first one thousand Universities in the world, both Malaysia and Singapore had their Universities among the first five hundred in the world.

Fig. 1 shows the growing rate of youth unemployment in Nigeria.



Fig 1: Youth Unemployment rate from 2014-2018 (NBS, 2018)

Therefore, the role of Education in national development cannot be overemphasized. Azumah William Raphael (2014) while commenting on the poor state of education in Ghana, blamed the colonial masters for emphasizing General Education which resulted in the low development in Ghana. He observed that general education had turned the people to semi-literates with little attention focused on Technical Education in the educational system. With the rising concern that the level of youth unemployment will rise in the coming decade as contained in the 2016 World Bank report on Ghanaian's unemployment rate, there is, therefore, the rising fear about the preparedness of Government to deal with the rising problem. Some developed countries of the world had gone a step further in Technical Education by setting up accreditation bodies for the development of their graduate's employability skills like it is found in Japan, United Kingdom, Australia, United States of America and European countries (Ismail and Mohammed, 2015). Africa and Nigeria, in particular, is still struggling to get Technical Education right to meet the expected learner's outcomes. Just as it was revealed by the leading researcher and economist with the World Bank Daniel Rogger (2016), a solid educational foundation that is relevant to the labour market is significant for fighting the issue of joblessness in African nations. Therefore, to provide the youth with technical skills is important but, it is equally important to provide them with the skills with which they will be more employable. Consequently, employability skills are important tools for bridging the skill-gap that is existing between the school and industry in technical and vocational education (Daihiru Sale Mohammed and Sarimah Ismail, 2014). The rate of change in the world order due to globalization in the last two decades gave rise to employability. According to McGrath (2009), employability arises as a result of three basic essential facts: the decline of industrial production and the rise of a service-based economy, the acceptance of education as the way to end poverty and social exclusion, and the related notions of lifelong learning and broad-based careers. This development has made the School Curriculum be obsolete and creates a skill mismatched between the School and the Industry.

The term employability has been variously defined by different scholars. Therefore, employability is a construct with no specific definition. Martin, West, and

Bill (2008) attest to this when they said that the definition of employability has varied, and changed in accordance with the political discourse. As a result, the way employability is viewed has to do with the political inclination of individuals or sectors without losing the concepts. Mansour and Dean (2016) recommend that the idea of employability skills might be subjective regarding the individual setting. This is in agreement with Hillage and Pollard (1998) who asserted that employability is a construct of capitalism, and forms part of public discourse influencing individuals' cultural, social and vocational experiences. One of the major reasons adduced for the lack of coherence in the definition of employability is the divergent views of the stakeholders; the Industry, the Student, and the Institution (Tyman, 2013; Kinash, 2015). Guilbert et al., (2016) while describing employability noted that an individual has a successful career when he is continuously employable in the internal and external labour market during his working life. This definition of employability provides that individuals are responsible for being able to manage their careers across employment opportunities, and organizations which in-turn offers employment as long as the person is needed. Employability skills are required to gain employment, as well as to advance the venture in order to accomplish one's potential and contribute effectively to the advancement of the organization (Aida, Norailis and Rozaini, 2015).

Hillage and Pollard (1998) characterize employability as a person's capacity to secure job, maintain the job, advance in the performance of his roles, acquire new work if required, and secure appropriate and adequately satisfying work. McQuaid and Lindsay (2005) however, suggest that "employability remains a challenging idea as far as its utilization in both theory and policy are concerned. They contend that it has been used in the past century as both a predominantly labour supply and labour demand concepts. McQuaid and Lindsay (2005) sees the concept as being used in both forms. They suggest that the supply-side should focus on the initiative approach that builds value in the generation of a set of skills that supports national and institutional strategies and practices that can add to enhancing individuals employability development. Employers expect graduates to show the scope of more extensive skills and characteristics that incorporate group working, correspondence, administration, critical thinking and leadership capacities (Wilton, 2012).

Based on the arguments and recommendations of scholars and researchers like Adeboye (2016); Cardoso (2014) and Tsai (2013), employability issues are very important to Nigeria contemporary higher education. There are also generic requirements that needed consideration by Higher Education Institutions in the process of developing means by which to prepare students for employment. Wilton (2012) suggested that Higher Institutions must go beyond the teaching of Technical and vocational skills because, nowadays, employers are looking for factors far beyond the possession of hard skills and academic qualifications for job recruitment. These unclear factors are elements of

employability skills (David J. Finch; Melanie Peacock; Nadege Levallet; William Foster, 2016). Therefore, the teaching of employability skills must be comprehensive. This suggestion aligned with the recommendations of Yasin et al., (2013) that Technical Education should be remodeled in such a way that it will equip students with the skills and knowledge needed in the sophisticated workplace. This suggestion applies to Electrical Technology because it is a trade area found in Technical Education in Nigeria. Technical Education should be included, developed, and reinforced with the academic standards and benchmarks that teach the essential skills that students need for success in life (Yasin et al., 2013).

Concepts of Employability Skills

It has been argued that technical and vocational education plays a vital role in human resource development of any country by creating skilled manpower (Lawal, 2013). No nation can develop without an effective technical and skillful workforce in her economy. Tsai (2013) notes the two greatest worries of employers to be how to find good workers and training them. The difference between the skills needed for the job and those possessed by applicants, sometimes called the skills-gap, is of real concern to human resource managers and business owners willing to hire competent employees. The new way to solve the problem of unemployment today is eventually turning to employability skills (Daihiru Sale Mohammed and Sarimah Ismail, 2014). This is about workers who have job readiness skills that help them to fit into the job system. Research conducted by Pierre (2012) in Grenada revealed that ninety-two percent of the respondents in the study believed that there are skills crises in Grenada and that Technical and Vocational Education will be better for their economic development. An important function of the TVET system is to equip its recipients with a combination of skills competence that is required for future economic conditions. To this end, the changes needed in the educational system requires the identification of existing changes in the system. This includes the weakness and the viewpoints about the future of the economy and the method of translating the views expressed into reality.

In particular, Tymon (2013) describes employment as those skills identifying with scholarly capabilities, subject knowledge, and business skills, practical and work experiences. Conversely, Hillage and Pollard (1998) opine that employability is not just about professional and scholastic abilities rather, it is about people applicable and useable labour market information data that enables them to make informed choices on labour market options that are available to them. Employability skills were therefore described as the 'soft skills' required to succeed and accomplish in the working environment (Tsai, 2013). An example of employability skills is; personal skills, attitude, and behaviours. Likewise, the idea of capabilities is firmly identified with the more extensive meaning of employability. In the assessment of Mansour and Dean (2016) both the capabilities and the gained skills of graduates can substantially affect the capacity to

effectively play out a given occupation. Moreover, the mismatch between the supply of general employability skills and the related relevant skills is a key issue as higher institutions keep on graduating a greater number of graduates that cannot be absorbed by the labour market (Dreden Tu Thomas Kochler, 2014).

The concept of employability has a useful application to labour market inclusion policies (Kalfa and Taksa, 2015; Kim, Kim and Lee, 2015). Particularly, employability is now focused on changing skills and employer's requirement such as the rise of 'soft' employability skills that are now being demanded by employers. The demand for generic skills, especially communication skills, has been a major requirement for many jobs. Therefore, interpersonal skills, personality, and appearance are very crucial in terms of the initial ability to access and maintain employment. (Tymon, 2013). Despite the substantial body of work done on the definition of graduate employability and the number of framework identifying list of knowledge, skills and attributes that graduates should possess, substantial gap still exists between the expectation of employers, graduates, students and staff about what, when and where requisites student learning should take place (Jollands, 2015a). (Jollands, 2015a) notes that very little research has been published about discipline differences in graduate employability. This again lends credence to Dacre Pool and Sewell (2007) who sees employability as a long life issue; nobody is ever perfectly employed. There is always an aspect of a person's employability that requires improvement. A person's lack of employability might occur through joblessness particularly among older workers through idleness. Idleness has been expanding across the developed economies of the world. A general move towards more adaptable work markets and the rebuilding in such areas over the past quarter of a century have prompted an adjustment in the supply and demand conditions for employment.

In simple terms, employability skills of Electrical Technology students are about being capable of getting and keeping fulfilling work. More comprehensively, employability affords Electrical Technology graduates the capacity to move self-sufficiently within the labour market to realize their potentials through sustainable employment. This is because, employability depends on the knowledge, skills, and attitudes possessed by individuals, the way they use those assets, and present them to the employer and the context within which they seek work.

Electrical Technology

The primary purpose of Electrical Technology in the curriculum of the Colleges of Education is to produce competently trained manpower who will be able to teach, function in the industries, or self-reliant (NPE, 2013). Electrical Technology as contained in the National Policy on Education and the National Commission for Colleges of Education Standards combined with disciplines like Woodwork, metalwork, automobile, and building technologies to make technical education. The curriculum of electrical technology as practiced currently is majorly

in the hard-skills domain. It consists of courses such as electrical power and machines, maintenance and repairs of electrical equipment, electrical/electronic drawing, electrical/electronic devices, and mechanical engineering drawing among others (NCCE, 2012).

Statement of the Problem

Electrical Technology students in Colleges of Education in Nigeria are both prepared for teaching, and business and industrial jobs (NCCE, 2012; NPE, 2013). However, the rate of unemployment among the Colleges of Education graduates is growing higher due to the over-supply of Electrical Technology (ET) teachers for the teaching service and the failure of the graduates to secure employment in the power and private sectors of the economy. This is basically due to the skills mismatch between the Colleges and the Industry (Afolabi, 2014; Agboola, 2014; Sodipo, 2014; National Bureau of Statistics, 2018). It is obvious that the government is not willing to close down all the 70 Colleges of Education in Nigeria for obvious reasons of its consequences. The policy of the Federal government is that ET graduates should be able to seek jobs outside teaching as contained in the National Policy on Education (NPE, 2013). However, the defects in the curriculum of ET of the Colleges have made it difficult for the graduates to be adequately fit into the labour market. Thus, the deficient curriculum has made it difficult for ET students to be 21st-century jobs ready. This is further made worse by the rising rate in the change and application of technologies and the impending emergence of the 4th Industrial Revolution (IR4.0). There is, therefore, the need to put in place an urgent measure to stem the apprehension about the unlikelihood of ET students' ever getting jobs. This can only be achieved with a functional educational framework that is relevant to the demand of the labor-market for Electrical Technology students in Colleges of Education. Consequently, the need to match the students of Electrical Technology with 21st-century jobs necessitate the study on the determination of employability skills required by ET students in Colleges of Education in Nigeria. The study is aimed at exploring and identifying the constructs of employability skills that would be suitable for integration into the curriculum of ET in Colleges of Education in Nigeria.

Daihiru and Sarimah (2014) recommend a stronger relationship that integrates the Colleges and the industry so as to make a technical education graduates more marketable in the job market. Furthermore, the neglect of technical education is also a contributory factor to the increasing rate of Youth unemployment (Uddin, 2013). Emerging facts from researchers, experts and scholars show that the jobs are there but, the skills to match those jobs are not in existence (Babatunde, 2017). Babatunde (2017) asserts that the difficulty of Nigerian job-market is the absence of employability skills among youths to match the available jobs. He posited that the youth must acquire marketable skills that are relevant to the need of the employers in order to secure employment. The youths are made up of technical graduates among who are those who specialize in Electrical Technology and are

unemployed. To reduce the rate, a comprehensive change in the educational structure in a manner that will produce graduates with qualifications and skills that matches the need of the employers is important.

It is on record that the government invested heavily in TVET to ensure that the youth acquires saleable skills. This was done through massive importation of technical tools, machines, and equipment into the country for the purpose of teaching Introductory and Basic Technologies in schools. The step, however, only succeeded in imparting hard-skills knowledge in technical education students neglecting the soft-skills aspect needed by employers for 21st-century jobs (Ohiwerei, 2013; Uddin, 2013; Asaju, 2014; & Jackson, 2014; Pitan, 2017). The effect of this is that Electrical Technology graduates are competently trained to handle tools and equipment but lacks the basic soft skills for gaining and sustaining the jobs.

Higher institutions are the citadels and areas where the professional and productive workforce is produced (Mansour & Dean, 2016; Amusan, 2016). These institutions prepare skilled and professional workers to drive the county's developmental agenda. However, the preparation of students for the society is based on the curriculum of higher institutions. Technical education curriculum seems to have failed in meeting its set goals (Toby, 1997; Afolabi, 2014). This is because more graduates now roam about the streets in Nigeria. Perhaps, looking for jobs they are not competently trained for or qualified for. It is hard to comprehend that the jobs are not in existence since foreigners' troops into the country to take up jobs and appointments in the very juicy sectors of the economy (Chijoke, 2013; and Ari, 2017). These foreign nationals are always tagged as "expatriates" on arrival. This is a clear indication of a Skill-Gap between the Colleges of Education graduates and Employers.

Research Questions

1. What is the construct and sub-construct of employability skills required by electrical technology students in Colleges of Education in Nigeria according to document analysis?

2. What is the construct and sub-construct of employability skills required by electrical technology students in Colleges of Education from the perspective of employer and academics?

II. METHODOLOGY

The qualitative method involving document analysis and interview protocol were used to determine the constructs and sub-constructs of employability skills required by Electrical Technology students in colleges of education in Nigeria. The direct observable responses of the research participants was an interview protocol involving employers of labour and some academic members of staff in Colleges of Education in South Western Nigeria. The analysis was done thematically. 10 participants were involved in the study. The educational research utilizes interview and inquiries about the respondent's feelings, attitudes, motivation, experiences

of individuals and accomplishments (Anderson, 2010; Ivankova, 2014).

The interview for employers was conducted at intervals because it was very difficult to bring all the employers to a single location because of the distance. For the academics, it was a flexible semi-focused group. A flexible interview schedule was employed to enable each participant to participate actively so that their views on employability skills could be recorded. The interview was conducted in English.

The open-ended interview was used to elicit self-report on employability skills from the participants. Personal contacts were used during data collection. The responses of the participants were audio-recorded with the aid of electronic media. This was followed by its transcription and coding. The transcribed information was taken back to the participants for confirmation and authentication. This is to ensure the validity of the data.

The document analysis was done using frequency matrix. The interview data concerning the employers and academics was done using Fleiss Kappa reliability calculator to determine the expert agreement concerning the constructs and sub-constructs for the employability of electrical technology students. The mean agreement by the 3 experts is 85.83. Table 1 describes the interpretation of the Fleiss Kappa's value.

$$K = \frac{Po - Pe}{1 - Pe}$$

Where:

K = Calculated Kappa

Po = Observed Agreement

Pe = Expected Agreement

Table 1: Kappa Interpretation

| Kappa Value | | |
|--------------|----------------|----------------------------|
| < 0.00 | poor | Less than chance agreement |
| 0.01 to 0.20 | Slight | Slight agreement |
| 0.21 to 0.40 | Fair | Fair agreement |
| 0.41 to 0.60 | Moderate | Moderate agreement |
| 0.61 to 0.80 | Substantial | Substantial agreement |
| 0.81 to 0.99 | Almost perfect | Almost perfect agreement |

Source: (Viera, & Garrett, 2005; Fleiss Kappa, 1971)

Table 2: Raters Kappa Measures

| Raters | Rater 1 | Rater 2 | Rater 3 |
|--|---------|---------|---------|
| Total count of 0 in different column | 173 | 166 | 158 |
| Total number of items (ratings) | 193 | 193 | 193 |
| Proportion Agreement | 0.8963 | 0.8601 | 0.8186 |
| Percent Agreement | 89.63 | 86.01 | 81.86 |
| Measure of Agreement Kappa (Mean of Agreement) | 85.83% | | |

Table 2 illustrates the kappa agreement summary for the three experts in Electrical Technology.

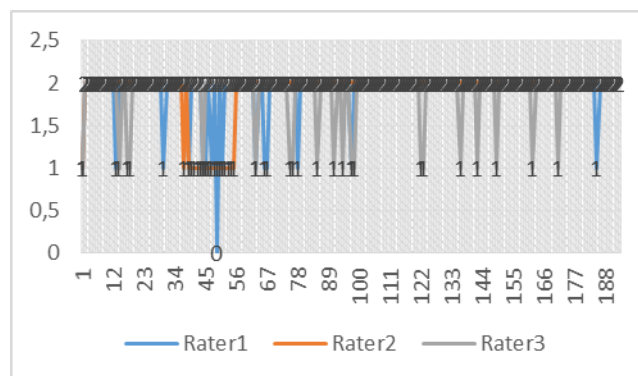


Fig. 2: Provides the raw scores by the expert raters

Data analysis and Findings

The documents are categorized into two; Journals and Policy documents. Based on the main items from the documents analysis and the interview, 5 main constructs, 43 sub-constructs and 193 items of employability skills were generated from the item pool. The main constructs are classified into technical and non-technical skills which were referred to as visible competencies (Boyatzis, 1982; Spencer, & Spencer, 1993). The technical skills consist of Electrical-specific skills which include, construction, installation, troubleshooting safety, and direct current. The non-technical skills are generic or employability skills (Tymon, 2013). They include personality skills, People Oriented skills, Applied Knowledge skills, Workplace skills, and Entrepreneurial skills. The sub-constructs consist of integrity, initiative, dependability, adaptability, professionalism, communication, teamwork, organizational, sensitivity, flexibility negotiation, numeracy, technology, scientific skill, critical thinking, information technology, problem-solving, decision making, planning and organizing, resource management, information usage, service-oriented, innovativeness, ability skill, resourcefulness, motivation and commitment, strategic and visionary. The hidden competencies consist of self-concepts and motives. In all, there were 5 main constructs and 39 sub-constructs from document analysis. The analysis of documents showed that technical skills were frequently mentioned in the journal articles and government policy documents. However, less attention was on non-technical skills as indicated by the matrix in the government policy document. The matrix for document analysis is shown in table 3. Table 4 and table 5 are abstracted matrices of some of the interview with the participants. The findings revealed the adoption of technical and non-technical skills to enhance the employability of Electrical Technology students from Colleges of Education.

Table 3: Findings of Document Analysis

| Competency Document | JOURNAL ARTICLES (JR) | | | | | | POLICY DOCUMENTS (PL) | | | |
|--|-----------------------|-----|-----|-----|-----|-----|-----------------------|-----|-----|-----|
| | JR1 | JR2 | JR3 | JR4 | JR5 | JR6 | PL1 | PL2 | PL3 | PL4 |
| TASKS PERFORMANCE | | | | | | | | | | |
| TECHNICAL (Electrical specific) | | | | | | | | | | |
| Electrical construction | / | | | / | | | / | / | / | / |
| Troubleshooting | / | | | / | | | / | / | / | / |
| Electrical installation | / | / | / | | / | | / | / | / | / |
| Testing and measurement | / | | | / | | | / | / | / | / |
| Wired devices | / | | / | | | | / | / | / | / |
| Dc power | | | | | | | / | / | / | / |
| Green technology | | | | | | | | | | / |
| Transformers | | | | | | | / | | / | / |
| Safety | / | | / | | / | | / | / | / | / |
| NON-TECHNICAL (Employability) | | | | | | | | | | |
| PERSONALITY | | | | | | | | | | |
| Integrity | / | | / | | / | | | | | |
| Initiative | / | / | | / | / | / | | | | |
| Dependability | / | / | / | | / | / | | | | |
| Adaptability | / | | | | / | / | | | | |
| Professionalism | / | / | / | / | / | | | | | |
| PEOPLE ORIENTED | | | | | | | | | | |
| Communication | / | / | / | / | / | / | | / | | |
| Teamwork | / | / | / | / | / | / | | | | |
| Organizational | / | / | / | / | / | / | | | | |
| Sensitivity | / | / | | | | | | | | |
| Flexibility | | / | | / | | / | | | | |
| Negotiation | / | / | / | / | | | | | | |
| APPLIED KNOWLEDGE | | | | | | | | | | |
| Numeracy | / | / | / | / | | / | | | | |
| Technology | / | | / | | | / | / | / | / | / |
| Scientific skill | / | | / | / | | | / | / | / | / |
| Critical thinking | / | / | / | | | | | | | |
| Information technology | / | / | / | / | | / | | | | |
| WORKPLACE | | | | | | | | | | |
| Problem -solving | / | | / | / | / | | | | | |
| Decision making | / | / | | / | / | / | | | | |
| Planning & organizing | / | / | | | | | | | | |
| Resource management | / | | | | | | | | | |
| Information usage | / | / | / | | | | | | | |
| Communication skill | / | / | / | | | | | | | |
| Service-oriented | | | | | | | | | | |
| ENTREPRENEURIAL QUALITY | | | | | | | | | | |
| Innovativeness | / | / | | | | | | | | |
| Ability skill | / | | | | | | | | | |
| Resourcefulness | | / | | | | | | | | |
| Motivation & commitment | / | / | | | | | | | | |
| Strategic & visionary | / | | | | | | | | | |
| MOTIVES | | | | | | | | | | |
| Achievement | / | | | / | | | | | | |
| Sense of worth | | | | / | | | | | | |
| SELF-CONCEPT | | | | | | | | | | |
| Attitude | / | | | / | | | | | | |
| Value | / | | | / | | | | | | |
| LIFELONG LEARNING | | | | | | | | | | |
| 21 st -century skills | | / | | / | / | | | | | |
| 14.0 | | | / | | / | | | | | |

Table 4: Summary of Interview Feedback for Entrepreneurial Skill

| Subconstruct | Employers | | | | | | Academics | | | |
|---------------------------|-----------|------|------|------|------|------|-----------|------|------|------|
| | EP 1 | EP 2 | EP 3 | EP 4 | EP 5 | EP 6 | AP 1 | AP 2 | AP 3 | AP 4 |
| Innovativeness | | * | * | * | | | * | | * | * |
| Ability | | | | | | * | | | * | * |
| resourcefulness | * | * | | | * | | * | | * | * |
| Motivation and commitment | | | * | * | | | | * | * | * |
| Strategic and visionary | * | * | | * | | * | | | | |
| Mental map | * | * | * | | | * | * | | * | |

Table 5: Summary of interview Findings for Lifelong Learning

| Sub constructs | Employers | | | | | | Academics | | | |
|----------------|-----------|------|------|------|------|------|-----------|------|------|------|
| | EP 1 | EP 2 | EP 3 | EP 4 | EP 5 | EP 6 | AP 1 | AP 2 | AP 3 | AP 4 |
| 21-Century | * | | * | | * | | | | | * |
| 14.0 | | * | * | | * | | * | | * | |

III. RESULTS

The Fleiss Kappa instrument for inter-rater agreement involve 3 experts in Electrical Technology in Nigeria. The ratings in the instrument consists of; Not

Important = 0, Less Important = 1, Important = 2. The value of Fleiss Kappa for each of the items in the construct is shown in Table 6.

Table 6: Fleiss Kappa Agreement Index for Constructs

| constructs | No of items | Rater1 | Rater 2 | Rater 3 | Mean of % Average | Level of Agreement |
|---------------------------------|-------------|----------------|----------------|-----------------|-------------------|--------------------------|
| Technical (Electrical specific) | 70 | 50/70 = 71.43 | 57/70 = 71.43 | 47/70 = 67.14 | 70% | Substantial agreement |
| Non-Technical (Soft skills) | 109 | 91/109 = 83.48 | 91/109 = 83.48 | 103/109 = 94.49 | 87.15% | Almost perfect agreement |
| Motives | 5 | 5/5 = 1 | 5/5 = 1 | 5/5 = 1 | 100% | Perfect agreement |
| Self-Concept | 4 | 4/4 = 1 | ¾ = 0.75 | 4/4 = 1 | 91.66% | Almost perfect agreement |
| Lifelong Learning | 5 | 5/5 = 1 | 5/5 = 1 | 5/5 = 1 | 100% | Perfect agreement |

The table indicates that the level of agreement among the three experts is generally very good for the employability construct findings from the document analysis and the interview. Out of the 193 items, the experts had agreement on 154. Thus, 39 out of the items failed to meet the expectations of the three experts and were dropped from the list of constructs and sub-constructs for the employability of Electrical Technology students in Colleges of Education in Nigeria. For expert (Rater 1), the proportion agreement is 173/193 =89.63; Expert (Rater 2), proportion agreement is 166/193 = 86.01, and for Expert (Rater 3), the proportion agreement is 158/193 = 81.86. The result of the mean average for the raters is 85.83%. the overall percent agreement is perfect for the constructs and sub-constructs retained in the instrument for the unanimous agreement of “0s” (Fleiss, 1973).

IV. CONCLUSION AND RECOMMENDATION

The study clearly shows that both hard skills and soft skills are generally needed by electrical technology. This implies that the five constructs and the sub-constructs, having eliminated the 39 misfit items through the analysis of the responses of the three experts are valid and reliable

for ensuring the employability of Electrical Technology graduates from Colleges of Education in Nigeria. The study shows that the 5 main constructs of technical skills, Non-technical skills, Motives, Self-concept, and Lifelong learning which were commonly mentioned in the document analysis and interview also received good appraisal rating from the 3 raters. The results obtained from the equation shows the Fleiss Kappa Coefficient values using Excel calculator to arrive at 85.83 percent for the Electrical Technology experts. This indicates a very good level of agreement in the constructs identified by the Academics and the employers (research participants). Above all, the constructs from document analysis, interview protocol indicate that technical skills inform of electrical specific skills, non-technical skills, motives, self-concept, and lifelong learning are important for the employability of Electrical technology students in 21st-Century. The significance of this study is its ability to deviate from the general norm of producing final framework at the end of triangulation without subjecting the result for experts’ further assessment. This is in agreement with one of the recommendations made by Jollands (2015) for narrower framework.

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