

Research Article

Assessment of Skills Required By Electrical Electronics Graduates as Determinant Of Work Readiness in Mobile Communication Companies in North-Eastern Nigeria

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Abstract—This study focused on the assessment of skills required by electrical electronics graduates as determinant of work readiness in mobile communication companies in North-Eastern Nigeria. Based on the aim and objectives of the study, two research questions were raised inline with the two hypotheses formulated and tested at 0.05 level of significance. The design of this research adopted for the study was descriptive survey research design. The population of the study was Ninety-nine (99) electrical electronics lecturers and technologists from State and Federal Universities in North-Eastern Nigeria. The entire population Ninety-nine (99) electrical electronics lecturers and technologists were used as a manageable sample. The instrument named ASREEGDWRMC was used for instrument collection. The instrument was validated by experts in electrical electronics technology education. While Cronbach alpha was used to establish the reliability of the instrument at 0.87. Findings of the result revealed that, all the respondent required that, graduate of electrical electronics have the ability to possess comparative skills such as technical skills, information and communication skills (ICT), digital communication skills, cognitive skills and entrepreneurial skills in order to motivate their readiness to work in mobile communication companies in North-Eastern Nigeria. It was recommended that; Emphasis should be given on technical skills by graduate of electrical electronics in order to have understanding of electrical engineering applications. Communication companies should also give priority in terms of employment to graduates of electrical electronic engineering for digital communication marketing.

Keywords— Skills, Electrical Electronics, Readiness, Determinants, Mobile Communication

1. Introduction

The readiness to work has long been a key focus in vocational advocacy and career development. However, being prepared to capitalize on opportunities in one's chosen field and having the readiness to work are more crucial than simply selecting a career. Career development is a lifelong journey that spans from childhood through formal education, into one's working years, and eventually through retirement. Skill assessment is a tool used to evaluate whether an individual can demonstrate an understanding of essential skills and processes that are foundational for successful work with participants [1]. Achieving competency in a chosen career field happens over the course of one's life, supported by continuous learning and the development of relevant skills. A career can be seen as a series of interactions between an individual, society, education, and organizations throughout their lifetime. [2]. Developing job readiness is as intricate as personality development, and it is not a one-time event. It is not merely a decision made when entering a job, but involves the entire

spectrum of an individual's psychological, sociological, and educational experiences, which ultimately influence their occupational choices and life roles. The quality of this readiness skill plays a crucial role in shaping the nature and quality of an individual's life, particularly through the earning potential that the acquired skill provides. Competence in this area also determines the social and economic contributions an individual can make to their community and society. Job readiness requires specialized training in a specific field, highlighting the importance of education in career preparation. Technology has transformed how information is created, stored, and shared. With advancements in technology, the roles of employees in communication sectors have shifted dramatically, from tasks like mast maintenance to installing new substations, depending on the situation. Essential ICT skills are necessary for information processing, involving the use of electronic computers, communication devices, and software applications to convert, store, protect, process, transmit, and retrieve information anytime and anywhere. Information and Communication Technology (ICT) focuses on managing and processing information using

electronic computers and software to handle tasks such as converting, storing, protecting, processing, transmitting, and retrieving data. It involves the use of electronic and communication tools, such as computers, cameras, and telephones, for managing information [3]. Graduate of Electrical and Electronics Engineering preparing for a career path in communication industries are required to have skills on information and communication technology, inter-personal communication, socio-psychological skills and entrepreneurial skills [4]. Communication is fundamental to human interaction and learning. Its nature relies on the interaction between two or more individuals, with understanding emerging from these exchanges. Communication skills are essential for employees in communication industries. It is the process of conveying information from one person or location to another. Within an organization, communication plays a crucial role in achieving goals and advancing the organization's objectives [5]. Communication can be classified into oral, written, sign, and electronic forms. It goes beyond simply transmitting information; it involves dialogue and social exchange. For communication to be effective, the intended message must be received, correctly interpreted, understood, accepted, and acted upon appropriately by the receiver, with confirmation provided through feedback. [6].

Mobile Communication involves the use of technology that allows us to connect with others in various locations without requiring a physical link. One of the most common examples of mobile communication is the mobile phone, also known as a cell phone or hand phone, which uses radio waves to transmit and receive signals. Mobile communication companies in Nigeria evolved out of the need to meet the communication demand of globalisation in today's world. Job readiness as described by Integration of College and Career Readiness (ICCR), means that an individual has the requisite knowledge, skills and experiences in the academic, workplace and social domains to successfully complete an economically viable career pathway in the 21st century economy. Association for Career and Technical Education (ACTE), described assessment of readiness as involving a rigorous blend of academic, technical and employability skills. In other word, the technical skills, in term of designing and overseeing the construction of telecommunications networks; ICT skills, in terms of effective utilization of various techniques in system communication; Communication skills, in terms of ability to receive and apply feedback of digital communication appliances; Cognitive skills, in terms of ability to interpret concept and ideas; as well as entrepreneurial skills, in terms of ability to organize ideas and concepts related to trade. All of these are required by undergraduate electrical electronics students to assess their readiness to work in mobile communication companies. These are also part of the measures to the extent at which the students possess the skills and attitudes needed for advancing in communication technologies career path and for a smooth transition from school to work in Digital Communication companies. The fast development and accessibility of information and communication technologies have also raised consumer demand for telecommunications services and

devices that make life easier. The skills gap between the classroom (theory) and the work (practical) is a major source of worry. Graduates have been observed to struggle with the transition from academic life to the workplace, despite the fact that the school is supposed to offer the experiences and training that will enable electrical and electronics graduates to make wise occupational decisions that will advance their careers [7]. She also pointed out that many graduates are unemployed or working part-time because they lack the necessary abilities to work in profit-driven, result-oriented organisations. In summarising the situation in Nigeria, [8] stated that the issue is not unemployment per se, but rather the inability of Nigerian graduates to find job after graduating and their unsuitability for modern employment. Graduates of electrical electronics find it challenging to accept their employment when engaged in the telecom industry [9]. There is need for them to go through extensive training before they are deemed ready for work as discussed in the literature [10]. It is against this backdrop that this study seeks to assess the readiness of undergraduate electrical electronics students to work in mobile communication companies in North-Eastern Nigeria. The aim of this study is to assess the skills required by electrical electronics graduates as determinant of work readiness in mobile communication companies in north-eastern Nigeria Specifically, the objectives of the study sought to assess:

- i. The technical skills required by electrical electronics graduate as determinant of work readiness in mobile communication companies in North-Eastern Nigeria.
- ii. The ICT skills required by electrical electronics graduate as determinant of work readiness in mobile communication companies in North-Eastern Nigeria.

The following research questions were raised to guide the study.

- i. What are the technical skills required by electrical electronics graduate as determinant of work readiness in mobile communication companies in North-Eastern Nigeria?
- ii. What are the ICT skills required by electrical electronics graduate as determinant of work readiness in mobile communication companies in North-Eastern Nigeria?

The following null hypotheses were formulated for the study:

- H₀₁: There is no significant difference in the mean responses between lecturers and technologies on technical skills required by electrical electronics graduate as determinant of work readiness in mobile communication companies in North-Eastern Nigeria
- H₀₂: There is no significant difference in the mean responses between lecturers and technologies on ICT skills required by electrical electronics graduate as determinant of work readiness in mobile communication companies in North-Eastern Nigeria.

2. Related Work

2.1 Overview of Work Readiness

Work readiness is a relatively recent concept in the fields of career development and training, and it is still in the early

stages of development. There is no universally accepted definition of work readiness, nor is there agreement on the specific skills and attributes that demonstrate it [11]. Despite this lack of consensus, work readiness is commonly seen as an important criterion for assessing a graduate's potential in the workforce. [11,12]. Work readiness as the level to which graduates are perceived as possessing attitudes and attributes that will enable them to be prepared for success in the workforce [1]. Graduate students as used here refer to students who have completed their undergraduate degrees or graduate degrees and are going to the workforce to work. These groups of students fall into the category referred to as adult students (that is students above age 20).

A work-ready individual is defined as someone who possesses "the basic skills necessary to meet the minimum qualifications for a particular occupation, as determined through a job analysis or occupational profile." The report further suggests that the skills needed for employment are "both foundational and specific to the occupation." This forms the basis for creating a work readiness inventory, [13] defined work readiness to mean those personal attributes, workers' traits, and coping mechanisms needed not only to get a work, but to keep that work. He further distinguished between these work readiness's attributes and academic or technical competencies acquired in reading, writing and arithmetic. Following this chain of thought, one would not be wrong to say that there is disconnection between students' readiness to work and that of hiring personnel from many of these recruiting organizations. This disconnect is reflected in the student skills index [13]. The study found that students tend to prioritize school prestige more than hiring managers do when considering factors that influence their work readiness. Additionally, students tend to overvalue the importance of professional or personal connections (networking) compared to hiring managers. They also place significant emphasis on having high GPAs as a key indicator of their readiness for employment, even though this factor is not considered particularly important by recruiting managers. These discrepancies are not confined to the gap between students and employers; they also reflect the fragmented nature of the work readiness construct within the research field.

2.2 Philosophy of career readiness

The Association for Career and Technical Education (ACTE) defines career readiness as a comprehensive combination of academic, technical, and employability skills. For undergraduate students in electrical electronics technology education, career readiness is the extent to which they possess the necessary skills and attitudes for advancing in the field and making a smooth transition from education to employment. The National Board for Technical Education (NBTE), in its curriculum document for electrical electronics technology education, identifies several core skills that the program aims to impart to students, preparing them for careers in the field. These skills include managerial, entrepreneurial, ICT, communication, and socio-psychological skills. While these competencies are reflected

in the courses offered to students, each course may contribute to the development of multiple skills [15].

Every person's path through life revolves around their career, which has long been studied in the social sciences and is understood to be the order and diversity of jobs (both paid and unpaid) one engages in over a lifetime. More broadly, a career encompasses responsibilities, interests, learning, and employment [16]. A career is a pattern of employment experiences that spans a person's whole life and is typically viewed in terms of a number of phases or stages that indicate the passage from one period of life to the next. The interaction of people with organisations and society gives birth to the word career. This interaction is now more than simply a list of occupations; it is also a narrative that individuals who are employed create for themselves [17]. It covers a range of jobs, abilities, and information that one picks up over the course of a lifetime. Many studies define a career as a person's lifetime interactions with society, institutions of higher learning, and organisations [18]. Careers are not just picked; they are also built. It is constructed piece by piece during the course of life and via a series of decisions on education and employment. However, it is important to emphasise that most of the responsibility for someone is career advancement lies with that person.

A career in electrical electronics starts with a progression of education from secondary schools to higher education institutions with the goal of preparing people with the abilities, information, and practical experience needed for practise in industries. Electrical electronics technology education programme was created in response to the requests of electrical electronics technology education students and professionals. Additionally, the curriculum should be changed to place greater focus on technology, entrepreneurial [19], and information and communication technology (ICT) skills in order to broaden students' understanding and provide them the tools they need to succeed in the modern telecom sector. [20] noted that electrical electronics technology education is a comprehensive activity-based educational programme that is concerned with the acquisition of technology skills, understandings, attitudes, work habits and competencies that are requisite to success in occupation. A person pursuing a career in electrical electronics technology education must complete training in subjects that will enable him to use technologies effectively in day-to-day business operations. The person is ready to be proficient in socio-psychological, ICT, communication, and technological abilities. In order to pursue a profession in electrical and electronics technology education, a person must have completed the necessary training to be prepared for the workforce. The ability to use such information through higher order skills to demonstrate success in one's job path is a component of career preparedness. This encompasses the capacity for critical thought and problem-solving, effective communication, teamwork, and self-directed learning.

Someone who is career-ready has the necessary academic, professional, and personal/social knowledge, abilities, and experiences to effectively navigate and complete a career

track that is economically viable in a 21st-century economy [21]. More precisely, a student who is prepared for the workforce should be able to recognise prospective professional goals and comprehend the actions necessary to reach them. They should also have the communication skills necessary to ask for help when necessary, including financial aid for students. According to Integration of College and Career Readiness (ICCRA) a person is considered career-ready if they have the essential knowledge, skills, and experiences across workplace, personal, and social contexts, enabling them to successfully pursue and complete a financially sustainable career pathway.

2.3 Career Education: A Requisite as determinants of work readiness

Career education is essential for equipping individuals to thrive in their chosen fields, with schools playing a crucial role in this preparation. The primary aim of career education is to help individuals realize their full potential, allowing them to apply their skills for the benefit of society. It is an integral part of the broader educational and training framework. Career education encompasses a comprehensive program that focuses on the individual, preparing students for careers in various industries or commercial sectors. This approach emphasizes the development of knowledge, skills, and attitudes through a structured learning experience, enabling students to make informed decisions about their educational paths and future careers while facilitating effective participation in the workforce. [22]. Career education focuses more on preparing people for the transition within school and the transition from school to work. This goes beyond choice of subjects, but includes acquisition of skills necessary for performing the roles along one's career path [23].

The need for career education is part of the reasons, the Nigerian Educational System was restructured to a more work and vocation oriented 9-3-4 system. Career education for electrical electronics technology education students in the universities is to effectively prepare them for smooth transition from school to work. This, basically, is to ensure that graduates of electrical electronics technology education are career ready; in the sense that they have the requisite knowledge, skills and experiences needed for transition from school to work. Career education is a description of the totality of experience by which a person acquires knowledge and attitudes about self, work and the skills by which to identify, choose, plan and prepare for work and other life options. Career education helps all students to gain the knowledge, skills, and behaviours to interact with others, set goals, and make decisions related to career, college and citizenship. He further noted that every individual has certain abilities, interests, personality traits and other characteristics which need to be properly developed and addressed. This he said, is a general consensus among career expert that when these characteristics are properly identified and related to job markets, their values can be put into appropriate use and the individual is more likely to become a happier person. The National Policy on Education (FRN, 2014) reiterated the need for career education in schools. The document stated that in

view of the apparent ignorance of many young people about career prospects and in view of the personality maladjustment among students, career officers and counsellors will be appointed and posted to institutions of learning, to provide career education to the students which will in-turn, enhance their student's readiness to make a career in their chosen vocation. Career education in schools is predicated on the rationale that nobody can choose what he knows nothing about. Career education should cover occupational opportunities, job descriptions, project job demands, future prospects and current career manpower needs if it would enhance the readiness of the individual to work in his chosen vocation. The mission of higher education institutions is to provide students with quality education while also preparing them to be problem solvers in the real world after graduation. Readiness to work for student means there is an open mind and willingness to learn in addition to the necessarily basic skills that will allow them to learn and discharge their responsibilities in their new task with confidence. In addition to students' declarations of whether or not they are receiving high-quality education, they should understand that "work ready" individual possesses the foundational skills needed to be minimally qualified for a specific occupation as determined through a job analysis or occupational profile. Students seldom evaluate their own preparedness for life after graduation, particularly for the world of employment.

2.4 Electrical Electronics

Electrical Electronic is the study and application of electricity, electronics and electromagnetism. It is the largest branch of engineering technology and includes a diverse range of sub-disciplines, such as applied design, electronics, embedded systems, control systems, instrumentation, telecommunications, and power systems. Electrical electronic technology education plays a prominent role in nation building. This role is identified in areas like skilled manpower, electric power use and employment generation. The skills required from this type of education have been useful in entrepreneurship practice. Class room instruction has been enhanced using the computer. The GSM hand set has not only generated employment for our teaming youths; it has also enhanced communication and business among families. Explicitly, development, seen from adequate provision of electric power, is untenable without undertaking functional education [24]. The more functional education which has the capacity to lead Nigeria out of the economic doldrums is vocational /education (VTE).

Electrical Electronic Technology (EET) plays a lot of roles in national development especially in Manufacturing Activities. A nation's development is viewed in terms of manufacturing activities that go on in its industries and the amount of goods turned out". Manufacturing is however, impossible without the skills and knowledge which electrical/electronic technology education provides. The life blood of any manufacturing industry is electric power. Machine tools industries, electrical and electronic appliances and systems industries and a host of others, depend a great deal on electric power supply. Electrical electronic technology education and skill training are therefore, indispensable in the production of goods and services.

Electrical electronic technology education is a vital component of VTE in Nigeria. By the acquisition of useful skills, knowledge and attitude, individuals are able to fit very well in the society and contribute their quota in nation building. The skills acquired by this type of education will not only make individuals to be well adjusted in the society but it will contribute to nation building in areas like electric power generation, transmission and distribution, communication and employment generation. Graduates of EET programs work in a wide range of career fields. Some examples include: Aerospace and avionics, Computers, Electrical power and power distribution, Optics and optoelectronics, Signal processing, Telecommunications, Medical technology and devices among others.

The EET degree is different from an electrical engineering degree because EET class and laboratory work is focused on applications rather than on advanced theory. In an EET degree program, as you learn the theories of how things work, you'll apply them in immediate, relevant ways. EET professional focuses on application, theory, applied design, implementation, and maintenance, while electrical engineers focus more on theory and conceptual design. EET professionals determine when machines and parts need to be replaced, and determine the costs of doing so; they also assist electrical engineers in activities such as process control, electrical power distribution, and instrumentation design. Foundational skills needed by EET professionals include: Communication skills, Math skills, Mechanical skills, Problem-solving skills, and Writing skills. Advanced skills needed by EET professionals may include: Autodesk AutoCAD Electrical design software, Computer-aided drafting and design (CADD) Electronic troubleshooting, electronic equipment installation, Engineering design and Systems troubleshooting.

2.5 Technical Skills

Technical skills refer to the specialized knowledge and expertise needed to perform specific tasks and utilize particular tools and programs in real-world contexts. These skills are essential across a wide range of fields and industries, including IT, business administration, healthcare, and education. Often called hard skills, technical skills encompass the practical knowledge required to complete various tasks [22]. They represent a set of abilities or knowledge applied in practical activities within science, the arts, technology, engineering, and mathematics. Typically, technical skills involve using specific tools and the technologies associated with them. They provide foundational expertise that can enhance efficiency, boost confidence, and increase an individual's appeal to potential employers. Professionals with technical skills often command higher salaries compared to those with more general qualifications. Furthermore, these skills encourage innovation, problem-solving, and critical thinking, enabling individuals to tackle complex challenges, think creatively, and develop technological solutions. They provide essential knowledge that can enhance your efficiency, increase your confidence, and make you a more attractive candidate to employers. Technical specialists typically earn higher salaries than those

in more general roles. Since technical skills are based on knowledge, they are usually learned through formal education or professional training. Often called hard skills, these technical abilities involve the practical expertise needed to perform specific tasks. Examples of technical skills that undergraduate electrical and electronics students may need to work in mobile communication companies include: 1. knowledge of Signal processing which is an electrical engineering subfield that focuses on analyzing, modifying and synthesizing signals, such as sound, images, potential fields, seismic signals, altimetry processing, and scientific measurements. Signal processing techniques are used in a wide range of applications, including telecommunications, audio and video processing, image processing, speech recognition, and control systems.

2. Developing wireless network which refers to a computer network that makes use of Radio Frequency (RF) connections between nodes in the network. Wireless networks are a popular solution for homes, businesses, and telecommunications networks.

3. Understanding of radiofrequency (RF) principle which refers to the use of electromagnetic radiation for transferring information between two circuits that have no direct electrical connection.

Technical skills are essential for economic growth and development for any nation. Vocational and Technology Education program is aimed at preparing youths for employment and self-reliance after school. Adequately trained tech employees can help companies achieve growth goals, improve efficiency and keep entire organizations safe from hackers and cyber-attacks.

2.6 Information and Communication Technology skills

Information and communication technology (ICT) stands for 'information and communication technology'. Information and communication technology is the electronic means of facilitating the capture, storage, processing, transmission and display of information. Information and Communication Technology (ICT) in its widest sense are technological tools and resources used to communicate, create, organize, disseminate, store and manage information. ICT skills are abilities that help you understand and operate a wide range of technology software. This can include helping users with tasks on computers, such as making video calls, searching on the internet or using a mobile device like a tablet or phone, technical, information management, collaboration, and problem solving among others., Information and communication technology applications in education can be considered as an effective enabler to create access, store, transmit and manipulate different information in audio and visual form, due to the capability of ICT in providing proactive environment. With the rapid rate at which ICT has evolved since mid-20th century, the integration of ICT reflects a strong role in education globally [23] opines that ICT contribute effectively to the administration, coding, storage and processing of a huge amount of digital information created.

Information and communication technology encompass many different things, and can address multitude challenges; in fact,

to teach and to learn with ICT remains partially understood, and all its benefits are still not fully exploited [24]. The role of ICT is to improve concentration and comprehension. The activities carried out through digital and interactive tools increase student concentration and, therefore, they assimilate concepts more quickly, enhancing learning. Many countries, including Malaysia, have formulated ICT strategies and policies for their education systems administration and management. [24] explains education as a discipline that has been influenced by ICT devices, which undoubtedly makes teaching, learning, school management and research more serious. [24] acknowledges that the introduction of information technology updates many aspects of activities in the educational community. These ICT devices are necessary in educational development. Information and communication technology devices useful to students include: automated computers, internet cell phones, interactive multi-media, digital tools for schools' development, projectors, compact discs, flash drives, telescopes, magnetic boards, and interactive boards.

Some examples of ICT skill required by graduates that determines their readiness to work include:

1. Skills in word processing in communication which refers to the act of using a computer to create, edit, save and print document.
2. Skills in power point which refers to a type of presentation software that allows one to show coloured text and images with simple animation and sound.
3. Skills in programming language for Internet which refers to a way for programmers (developers) to communicate with computers.

3. Design

The study adopted the descriptive survey research design. The survey design is preferred because it is the most appropriate design where self-reported belief and opinions of participants were sought.

3.1 Area of the Study

The area of the study is north-Eastern Nigeria. The North East is one of the six geopolitical zones of Nigeria. It comprises of six states – Adamawa, Bauchi, Borno, Gombe, Taraba, and Yobe state. Geographically, the North East is the largest geopolitical zone in the nation, covering nearly one-third of Nigeria's total area. In terms of the environment, the zone is primarily divided between the semi-desert Sahelian savannah and the tropical West Sudan savannah eco-regions.

3.2 Population of the Study

The population of the study comprised of ninety-nine (99) electrical electronics lecturers and technologists in faculty of engineering and technology education from State and Federal Universities in North-Eastern Nigeria.

3.3 Sample and Sampling Techniques

The entire population of ninety-nine (99) EE lecturers and technologists in the universities under the study area were used as a sample because the population was manageable using purposive sampling technique. The reason for

purposive sampling technique is because not all the universities in North-Eastern Nigeria are offering electrical electronics engineering courses.

3.4 Instrument for Data Collection

The instrument for data collection was structured questionnaire that has two parts, part A and B. Part A- deals with the personal data of the respondents. Part B elicited information on the Assessment of skills required by Electrical Electronics graduates as determinant of Work Readiness in Mobile Communication Companies in North East Nigeria (ASREEGDWRMC). This was further divided into section A-D. The instrument was weighted on a four (4) point modified Likert rating scale for the respondents to make their responses as follows: Very Highly Required (VHR), Highly Required (HR), Moderately Required (MR), and Less Required (LR).

3.5 Validation of the Instrument

The research instrument was validated by three experts from Abubakar Tafawa Balewa University Bauchi faculty of Technology Education in order to ensure its validity. The instrument was subjected to both face and content validity to check for the clarity of the language used in the instrument and adequacy of the items in terms of measuring what they were expected to measure. The experts' corrections and suggestions were incorporated in the final draft of the instrument.

3.6 Reliability of the Instrument

To ascertain the reliability of the research instrument, Pilot test was conducted with thirty copies of the instrument which was administered to the electrical and electronics lecturers and technologies in Federal University of technology Minna, Niger State. The reason for the choice of the school was that, the respondent has similar characteristics with those in the study area and was not in any way involved in the main study. The Cronbach alpha co-efficient was adopted. Analysis of the scores obtained from the pilot testing of the instrument established the reliability coefficient for the test instrument at 0.87.

3.7 Method of Data Collection

The researcher collected an introductory letter from the Head of Department of Vocational and Technology Education, Abubakar Tafawa Balewa University, Bauchi so as to officially introduce the researcher to the field and to have an access to the research respondents. The questionnaire was administered by the researcher and two trained research assistants, which assisted the researcher to collect data from the respondents. Arrangement regarding the dates on when to come and administer the questionnaires to the respondents was made with the Head of Departments. The instrument was administered to the respondents and were given some time to respond before retrieving the questionnaire by the researcher and the assistants.

3.8 Method of Data Analysis

In data analyses, the, mean scores and standard deviation (SD) were used to answer the research questions. Upper limit

and lower limit of numbers was used for interpreting the data: The independent sample t-test was used to test the five null hypotheses at 0.05 level of significance. The decision rule is that, any hypothesis which p-value is greater than the confidence level ($p > 0.05$) was accepted, while any hypothesis which p-value is less than the confidence level ($p < 0.05$) was considered rejected

4. Results and Discussion

4.1 Research question

Research Question One: What are the technical skills required by electrical electronics graduate as determinant of work readiness in mobile communication companies in North-Eastern Nigeria?

Table 1: Mean and standard deviation of the respondents on technical skills required by electrical electronics graduate as determinant of work readiness in mobile communication companies in North-Eastern Nigeria

S/N	Items	N	Mean	S. D	Decision
1	Graduate electrical electronics students are required to have an Understanding of signal processing to enable them work in mobile communication companies.	99	3.98	0.141	VHR
2	There is need for graduate electrical electronic students to be able to design and oversee the construction of telecommunications networks.	99	3.96	0.244	VHR
3	Graduate electrical electronics students are required to develop and manage wireless networks that enable mobile phone and data services.	99	3.07	0.824	HR
4	Graduate electrical electronics students are required to have Strong understanding of electrical engineering applications.	99	3.97	1.72	VHR
5	Strong understanding of radiofrequency (RF) principles is required from graduate electrical electronics students.	99	3.91	0.289	VHR
6	Experience of designing, deploying, and troubleshooting wireless networks is required by electrical electronics students.	99	3.62	0.489	VHR
7	Understanding the operation of voice or internet protocol (VoIP) is necessary for electrical electronics students.	99	3.58	0.497	VHR

8	Graduate electrical electronics students are required to be familiar with telephony in order to design and maintain telephone systems.	99	3.78	0.464	VHR
9	Knowledge and application of Fiber optics technology is required from graduate electrical electronics students.	99	3.78	0.418	VHR
10	Adequate Knowledge and application of cable type of wiring that is used to transmit data or electricity is required from graduate electrical electronics students.	99	3.95	0.220	VHR

Source: Fieldwork, 2024

Key: N= Number of Students, SD= Standard Deviation, VHR=Very Highly Required, HR= Highly Required

The data on the technical skills required by electrical electronics graduate as determinants of work readiness in mobile communication companies were analysed and presented in table 1 above, items 1-10 have the mean scores of 3.98, 3.96, 3.07, 3.97, 3.58, 3.91, 3.62, 3.78, 3.78, and 3.95 with standard deviation 0.141, 0.244, 0.824, 1.72, 0.289, 0.489, 0.497, 0.464, 0.418, and 0.220 respectively, indicating that, the respondents required all the items that were used in measuring technical skills. The result of this analysis revealed that, technical skills is required by electrical electronics graduates as determinants of work readiness in mobile communication companies in North-Eastern Nigeria.

Research Question 2: What are the ICT skills required by electrical electronics graduate as determinant of work readiness in mobile communication companies in North-Eastern Nigeria?

Table 2: Mean and standard deviation of the respondents on ICT skills required by electrical electronics graduate as determinant of work readiness in mobile communication companies in North-Eastern Nigeria

S/N	Items	N	X	S.D	Decision
1	Adequate ICT skills enhance graduate electrical electronics students to work in mobile communication companies.	99	4.00	0.000	VHR
2	The skills and knowledge of word processing/excel is required by graduate electrical electronics students to work in mobile communication companies.	99	3.65	0.480	VHR
3	Graduate electrical electronics students are required to have the skills and knowledge of power point for them to work in mobile communication	99	3.45	0.594	HR

4	companies. Lack of software knowledge graduate electrical electronics students to work in mobile communication companies.	99	3.75	0.437	VHR
5	The knowledge and skills of the internet strengthen the chances of graduate electrical electronics students to work in mobile communication companies.	99	4.00	0.000	VHR
6	Insufficient Knowledge of programming system weakens graduate electrical electronics students to work in mobile communication companies.	99	4.00	0.000	VHR
7	Graduate electrical electronic students are required to have ability to install new software development to enable them work in mobile communication companies.	99	4.00	0.000	VHR
8	Effective Utilization of various techniques in system communication is required by graduate electrical electronics students.	99	4.00	0.000	VHR
9	Use of information and communication technology is an opportunity for graduate electrical electronics students to work in mobile communication companies.	99	4.00	0.000	VHR
10	Graduate electrical electronics students are concerned only in practical skills rather than theoretical aspect.	99	3.70	0.562	VHR

Source: Fieldwork, 2024

Key: N= Number of Students, SD= Standard Deviation, VHR=Very Highly Required, HR= Highly Required

The data on the ICT skills required by electrical electronics graduate as determinants of work readiness in mobile communication companies were analysed and presented in table 2 above shows that, a list of items 1to10 have the mean scores of 4.00, 3.65, 3.45, 3.75, 4.00, 4.00, 4.00, 4.00, 4.00 and 3.70 having standard deviation 0.000, 0.480, 0.594, 0.437, 0.000, 0.000, 0.000, 0.000, 0.000 and 0.562 respectively, indicating that, the respondents required all the items that were used in measuring information and communication (ICT) skills. The result of this analysis shows that, information and communication (ICT) skills are required by electrical electronics graduates as determinants of work readiness in mobile communication companies in North-Eastern Nigeria.

4.2 Testing the Null Hypothesis

Null Hypothesis One There is no significant difference in the mean responses between the lecturers and technologies on technical skills by electrical electronics graduates as determinant of work readiness in mobile communication companies in North-Eastern Nigeria.

Table 3 shows the independent t-test of the mean responses between lecturers and technologies on technical skills by EE graduates as determinant of work readiness in mobile communication companies in North-Eastern Nigeria. The lecturers have the mean scores of 37.28 and the standard deviation of 2.612 while the technologies have the mean scores of 38.54 with the standard deviation of 3.106 respectively. The table revealed that the t-value of -1965 and p-value of 0.052 is greater than confidence level (P>0.05) for a right-tailed t-test at 0.05 % (5%) level of significance at 97 degree of freedom (df). The null-hypothesis one is hereby accepted for the alternative one because there was not statistically significant difference between the lecturers and that of technologists.

Table 3: Independent sample t-test analysis of the mean responses between lecturers and technologies on technical skills by EE graduates as determinant of work readiness in mobile communication companies in North-Eastern Nigeria

Group	N	X	SD	Df	t-value	P-Value	Dec Value
Lecturers	75	37.2	2.61	97	-1965	0.052	Acp
Technologist	24	38.5	3.10				

Source: Fieldwork, 2024

Key: N= Number of Students, SD= Standard Deviation, DF= Degree of Freedom, Acp= Accepted

4.2.2 Null Hypothesis Two: There is no significant difference in the mean responses between lecturers and technologies on ICT skills by electrical electronics graduates as determinant of work readiness in mobile communication companies in North-Eastern Nigeria.

The result of the independent t-test is presented in Table 8 which shows that, there is no significant difference in the mean responses between lecturers and technologies on ICT skills by electrical electronics graduates as determinant of work readiness in mobile communication companies in North-Eastern Nigeria within the degree of freedom (df) of 97, t-value =-4.178, and p = 0.000. Since the p value is less than the confidence level (P<0.05) for a right-tailed t-test at 0.05 % (5%) level of significance. therefore, the null hypothesis was rejected. This implied that, the significant difference exists in the mean responses between lecturers and technologists on ICT skills by electrical electronics graduates as determinant of work readiness in mobile communication companies in North-Eastern Nigeria.

Table 4: Independent sample t-test analysis of the mean responses between lecturers and technologies on ICT skills by EE graduates as determinant of work readiness in mobile communication companies in North-Eastern Nigeria

Group	N	X	SD	Df	t-value	P-Value	Dec
lecturers	75	38.3	1.97	97	-4,178	0.000	Rej
Technologist	24	39.8	0.38				

Source: Fieldwork, 2024

Key: N= Number of Students, SD= Standard Deviation, DF= Degree of Freedom, Rej= Rejected

4.3 Discussions of the Findings

Based on the answers to research questions and result of the null hypotheses, the following are the discussions of the findings:

The finding of research question one revealed that, the respondents required all the items in measuring technical skills by electrical electronics graduate as determinants of work readiness in mobile communication companies in north eastern Nigeria. This finding is line with that of [26] who reported that graduate of electrical electronics is required to possess additional skills not only technical alone. Furthermore, the finding agrees with [27] who also reported that in north eastern Nigeria especially graduate of EE lack technical skills to explore their practical experiences which is in line with the findings of this research. The similarly confirmed that most graduate of electrical electronics students are required to develop and manage wireless networks that enable mobile phone and data services and. The recommend that graduate of electrical electronics students are required to have Strong understanding of electrical engineering applications.

Findings of research question two shows that respondents required all the items in measuring ICT skills by electrical electronics graduates as determinants of work readiness in mobile communication companies in north eastern Nigeria. This finding agrees with the work of [28] who opined that there is lack of students readiness in information and communication technology (ICT) set up in Nigeria that can sustain the current inadequate ICT experiences more especially in engineering sector in the country and the findings is also in agreement with the work of [29] which observed lackadaisical attitude of Nigerians graduate of electrical electronics students ICT practice has negatively affected current development which is critical and essential to a Nation's development. Furthermore, the findings concord with the work of [30] who noted that, adequate ICT skills enhance graduate of electrical electronics students of work in mobile communication companies. The skills and knowledge of word processing/excel is required by graduate of electrical electronics students and also required to have the skills and knowledge of power point for them to work in mobile communication companies. The findings above gave credibility of the findings of this study.

5. Conclusion and Future Scope

5.1 Conclusion

The following conclusions were arrived at;

The respondents required that, electrical electronics graduate should have the ability to possess comparative skills such as technical skills, information and communication skills (ICT), digital communication skills, cognitive skills and entrepreneurial skills in order to motivate their readiness of work in mobile communication companies in north eastern Nigeria. However, adequate skill is necessary for smooth transition from school to work in communication companies, positive attitudes and work habits for sustainable employment in mobile communication companies, and Self – confidence and maturity in students' career goals are required by graduate electrical electronics students to work in communication companies.

Moreover, the results from hypothesis one, revealed that, the null hypothesis was accepted for the alternative one since $p > 0.05$ level of significance. It implies that, a significant difference does not exist in the mean responses of electrical electronics graduate as determinant of work readiness in mobile communication companies in North-Eastern Nigeria. While, hypothesis two was rejected. Therefore, a significant difference exists in the mean responses of electrical electronics graduate as determinant of work readiness in mobile communication companies in North-Eastern Nigeria. These findings serve as a critical resource for educators, employers, and policymakers aiming to improve workforce readiness among electrical and electronic engineering graduates in northeastern Nigeria. By addressing these areas, stakeholders can contribute to a more skilled and prepared workforce that meets the demands of the mobile communication industry.

6.2 Recommendations

Based on the findings of this study, the following recommendations were made:

1. Emphasis should be given on technical skills of electrical electronics graduate in order to have a Strong understanding of electrical engineering applications.
2. knowledge of ICT are very essential; therefore, Curriculum planners configure the relevance of ICT more especially at a university level to successfully accomplish the set-out objectives.

6.3 Contribution of the Study

This study has made significant contributions that can be highlighted as follows:

1. Evaluating the skills of electrical and electronic engineering graduates as determinants of work readiness in mobile communication companies in northeastern Nigeria:
2. The findings can inform the development of educational curricula in technical colleges, ensuring that the training provided aligns with industry needs and enhances the employability of graduates.
3. Serves as a critical resource for educational institutions to tailor their programs and training modules accordingly.
4. The study provides a framework for assessing work readiness, which can be utilized by employers in the mobile communication sector to evaluate potential hires more effectively.

5. This research acts as a reference point for future studies on employability and skill development in Nigeria and beyond, encouraging further exploration into the effectiveness of technical education.

Data Availability

The data used to cover this study will be supported if it is inquired all the way through the author's address.

Conflict of Interest

The authors of the paper hereby declare that, there is no conflict of interest

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Authors' Contributions

Author-1 contributed in finding of the research gap and the literature development including empirical studies in related to research work.

Author-2 & 3 participated in the proposal writing in related to methodology aspect of the research which involves modifying research instrument and validation, data collection and analysis.

All the authors received the final draft of the paper and make all the necessary input and were able to come up with good results in other to improve the students' performances and retention by means of technology package.

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