

Assessment of Non-Technical Skills Required by Graduates of Electrical Electronics Technology for Employment in Industrial Organisations in Kano State

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Abstract

This study centered on assessing the views of professionals(employers) on the non-technical skills considered as essential recruitment prerequisite among graduates of electrical electronics technology in industrial organisations in Kano State. Specifically, the study assessed employer's perception on the importance of the basic, cognitive and interpersonal non-technical skills considered as essential recruitment prerequisite for the recruitment of graduates of electrical electronics technology in industrial organisations in Kano State. The study made use of descriptive survey research design. three research questions were formulated to guide the study. The population for the study comprised 65 industrial professionals(employers) in Kano State, Nigeria. A twenty-seven (27) items questionnaire was the instrument used for data collection. The instrument was validated by two experts from the Federal University of Technology Minna and one expert from Bayero University Kano Department of Science and Technology Education. The reliability of the instrument was determined using Cronbach Alpha and the reliability index which stood at 0.79. The data collected were analysed using mean statistic and standard deviation. The study revealed that professionals placed great importance on communication skill, problem-solving skill, decision making skill, planning and organizing skill, dependability, self-confidence, and ability to work without supervision as important recruitment prerequisite of graduates of electrical electronics technology in industrial organisations Kano State. The study revealed that non-technical skills such as communication skill, reading skill, writing skill, numeracy and quantitative literacy, problem solving skill, decision making skill, planning and organizing skill, dependability, self-confidence, and ability to work without supervision are considered by employers as essential recruitment prerequisite among graduates of electrical electronics technology in industrial organisations in Kano State.

Keywords: Assessment, Non-Technical Skills, Electrical/Electronic Technology, Employment, Industrial Organizations

Introduction

In a quest to catch-up with the pace of the dynamic globalization, the industries and business organizations are subject to the after-effects of global changes. The fast changing global business environment, especially in terms of markets and productivity due to technological advancements, with a more demanding and challenging roles of the employees, academic researchers as well as industry practitioners agree to the fact that the twenty-first 21st century engineers and technologists must be capable enough to handle situations which require a complex set of technical as well as non-technical skills (Suhail, *et al.*, 2018). In the past, focus of electrical electronics technology instructors were on providing excellent technological education, but lately the importance of non-

technical skills such as communication skills, teamwork skills, management skills, creative thinking skills, decision making skills, and problem solving skills cannot be overemphasized as it has been widely acknowledged as part of the crucial areas required for employment in industrial work environments (Bakare, *et al.*, 2019). Today's employers require fresh graduates to add immediate value to the process/business, hence graduates must possess both technical and non-technical skills in order to catch up with the current demands of industrial organisations (Jackson & Chapman, 2012). According to Dupre & Williams (2011), the most effective way for graduates to stand out among the crowd is for them to possess Non-technical skills, that is non-industry specific desired skills.

Hence, non-technical skills are those skills which are generic in nature and are relevant across various jobs or professions (Awang, *et al.*, 2018). They are those skills that do not require technical knowledge or technical background. They can also be termed as generic skills, basic skills, soft skills, employability skills, key skills, core skills and essential skills (Nasir, *et al.*, 2011). Non-technical skills are social, cognitive and personal skills necessary for safe and effective performance of technical skills, tasks and procedures in an organisation (Leach, 2021). Conrad and Leigh (2015) classified non-technical skills into four types: problem solving & other cognitive skills; oral communication skills; personal qualities & work ethics; and interpersonal & teamwork skills. Wilson *et al.*, (2012) highlighted various non-technical skills to be; communication, critical thinking, problem-solving, team work; lifelong learning, information management, entrepreneurial skills, moral and professional ethics and leadership skills. Studies on non-technical skills of graduates are either from an employers' perspective or students' perspective in an organisation (Leslie, 2021).

An organisation is a group of people who have united together to pursue and accomplish a common purpose as one team (Komora, 2017). An organisation can also be seen as a group of individuals working together to achieve one or more objectives (Belleflamme & Martin, 2010). They are group of individuals oriented towards achieving collective goals. Industrial organisations are businesses that produce (manufacture) goods as opposed to services (Komora, 2017). These industries being a production organisation requires the services of well skilled workers in both technical and non-technical skills in order to efficiently actualize their outlined organisational goals (Omar, *et al.*, 2012). To be successful in any industrial work environment, the job candidates must distinguish themselves from other candidates with similar qualifications. Non-technical skills play an important role during the differentiation of graduates from one another (Schulz, 2008).

Graduates of electrical electronics technology are those trained in the university or polytechnic to handle job responsibility that requires the application of scientific knowledge and skills in order to bring about job satisfaction in an industrial organisation. The concept of employability can be observed in situations where new graduates are able to make themselves valuable to the organizations by possessing skills, knowledge, and attitude relevant to the requirement of the organizations. Generally, non-technical skills are needed by students to prepare themselves to meet the needs of many different occupations upon graduation. These skills are meant to enable them to have easy access to suitable employment which could later translate to national economic

development (Osami, 2013). However, it has been established in various past studies that unemployment and skills mismatch among graduates are so rampant and critical (Caleb & Udofia, 2014). This has generated worries throughout the world, and particularly among the developing nations. The twin problems of unemployment and skills mismatch may not be unconnected with the ill-preparation of graduates with the skills demanded by employers for them to be relevant and employable.

Electrical electronics technology education is one of the fields of study that is particularly concerned with equipping its recipients' with the practical skills and knowledge required for them to be self-reliant and be employable in any given industrial organisation. These skills are meant to enable them to have easy access to suitable employment which could later translate to national economic development in the country (Osami, 2013). However, it has been established in various past studies that unemployment and skills mismatch among graduates are so rampant and critical (Caleb & Udofia, 2014). This has generated worries throughout the world, and particularly among the developing nations. The existing gap between the skills acquired by graduates and those required by employers has been revealed to be so wide that most of the graduates are finding it difficult to get employed (Bakare, 2019). The skills of graduates do not match with the requirements of employers. It has also been reported by many scholars that fresh graduates of electrical electronics technology face problems to secure suitable employment in industrial organization due to the fact that they were found being deficient in non-technical skills which the organisation considered crucial for employment. According to Kathleen (2005), the employers in America are not pleased with many job applicants, particularly those who graduated from technical institutions. This problem occurs mostly because the applicants do not possess enough non-technical skills (Suhail, *et al.*, 2018). Rahmah and Wei (2014), specified that graduates lack employability skills (non-technical skills) in Malaysia, which resulted in a low performance in the place of work. Rasul and Mansor (2016), also revealed that there is a mismatch between the skills that graduates acquired and the prerequisite demanded by employers that can make them perform effectively at work. Technical skills development alone without non-technical skills cannot provide assurance for employment in modern industrial and business organisations. In order to overcome this difficulty, it is imperative for this study to consider the non-technical skills prerequisite for employment of graduates of electrical electronics technology in industrial organisations in Kano State.

Purpose of the Study

The main purpose of this study was to assess the views of professionals(employers) on the non-technical skills considered as important recruitment prerequisite among graduates of electrical electronics technology in industrial organisations in Kano State. Specifically, the study sought to assess:

11. The basic skills considered as important recruitment prerequisite among graduates of electrical electronics technology in industrial organisations in Kano State.
12. The cognitive skills considered as important recruitment prerequisite among graduates of electrical electronics technology in industrial organisations in Kano State.
13. The interpersonal skills considered as important recruitment prerequisite among graduates of electrical electronics technology in industrial organisations in Kano State.

Research Questions

1. What are the basic skills considered as important recruitment prerequisite among graduates of electrical electronics technology in industrial organisations in Kano State?
2. What are the cognitive skills considered as important recruitment prerequisite among graduates of electrical electronics technology in industrial organisations in Kano State?
3. What are the interpersonal skills considered as important recruitment prerequisite among graduates of electrical electronics technology in industrial organisations in Kano State?

Methodology

A descriptive survey design was adopted for this study. In the view of Shona (2021), a descriptive survey design deploys the use of questionnaires, interviews and direct observation to ascertain the opinions, attitudes, perception and preference of individuals under study. A well-structured questionnaire consisting of fifteen items was used to ascertain the view of professionals (employers) on the non-technical skills that are considered as important recruitment prerequisite among graduates of electrical electronics technology in industrial organisations in Kano State. The population of the study consisted of sixty-five (65) professionals (employers) in industrial organisations who were purposively sampled to determine their perceptions on the non-technical skills considered as essential recruitment prerequisite among graduates of electrical electronics technology in industrial organisations in Kano State. The questionnaire which consisted of twenty-seven items were structured using Likert five-points rating scale with response choices that range from the most important (MI), very important (VI), important (I), slightly important (SI), and not important (NI) respectively for the research questions. The instrument was validated by two experts from the option of Electrical Electronics Technology in the Department of Industrial and Technology Education and one expert from Bayero University Kano Department of Science and Technology Education. The data obtained from the questionnaire were analysed with Cronbach Alpha Coefficient to determine the reliability index which stood at 0.79. The data were collected and analysed by using SPSS statistical tool. The data were analysed using mean and standard deviation.

Research Question 1: What are the basic skills considered important recruitment prerequisite among graduates of electrical electronics technology in industrial organisations in Kano State?

The mean ratings for items on the basic non-technical skills considered important recruitment prerequisite are given in Table 1

Table 1: Mean and standard deviation responses of employers of electrical electronics technology on the basic non-technical skills considered important for employment in industrial organisations in Kano State.

S/N	Items for basic skills	Mean(x)	SD	Remark
1.	Ability to speak clearly with purpose	3.43	0.67	Very Important
2.	Ability to write good report	3.75	0.50	Very Important
3.	Ability to listen and comprehend	3.21	0.61	Very Important
4.	Ability to make good presentation	3.75	0.50	Very Important
5.	Ability to read very well	3.37	0.64	Very Important

6.	Numeracy and quantitative literacy	3.43	0.67	Very Important
7.	ability to acquire knowledge and grow continuously	3.75	0.50	Very Important
8.	ability to acquire skills continuously	3.21	0.61	Very Important
9.	ability to contribute ideas in a team work	3.75	0.50	Very Important
	Average Mean	3.50	3.37	Very Important

Source: Fieldwork, 2021 SD-Standard Deviation

Analysis of the result presented in Table 1 above indicates employer's opinion on the importance of basic non-technical skills for the recruitment of graduates of electrical electronics technology in industrial organisations in Kano State. The result of the data presented above revealed that all the 5 items are needed by the employers of graduates of electrical electronics technology in industrial organisations in Kano state. The table showed that the mean value of each item was above 2.50 which is the mean cut off point for the basic non-technical skills required by the professionals (employers) for the recruitment of graduates of electrical electronics technology in industrial organisations in Kano State. The table also showed that the standard deviations (SD) of the items are within the range of 0.50 to 0.67; which indicates that the opinions of the employers were not far from one another in their responses.

Research Question 2: What are the cognitive skills considered important recruitment prerequisite among graduates of electrical electronics technology in industrial organisations in Kano State? The mean ratings for items on the cognitive non-technical skills considered important recruitment prerequisite are given in Table 2

Table 2: The Mean and standard deviation responses of employers of electrical electronics technology on the cognitive non-technical skills considered important for employment in industrial organisations in Kano State.

S/N	Items for cognitive skills	Mean(x)	SD	Remark
4.	ability to imagine solution	3.22	0.66	Very Important
5.	ability to create ideas	3.40	0.62	Very Important
6.	ability to solve work related problems	3.43	0.73	Very Important
7.	ability to acquire knowledge and grow continuously	3.40	0.62	Very Important
8.	Ability to make decisions	3.51	0.60	Very Important
9.	ability to evaluate decision	3.40	0.62	Very Important
10.	ability to implement recommendation	3.43	0.73	Very Important
11.	ability to identify problem and the causes	3.40	0.62	Very Important
12.	ability to establish clear project goals and objectives	3.51	0.60	Very Important
	Average Mean	3.40	0.65	Very Important

Source: Fieldwork, 2021 SD-Standard Deviation

Data presented in table 3 above, showed the mean score of the data from employers' view about the importance of cognitive skills on the recruitment of graduates of electrical electronics technology in industrial organisations. it was evident that all the five items were rated above 2.50. Grand 3.30 average mean was obtained the items which indicated that all employers agreed to the opinion that the cognitive non-technical skills are essentially required for the recruitment of graduates of electrical electronics technology in industrial organisations in Kano State. The results also showed the standard deviation ranged from 0.62 to 0.73 indicating that all the professionals (employers) were not too far one another in their responses, proving that the items were valid. The employers totally agreed that cognitive non-technical skills are essential for the recruitment of graduates of electrical electronics technology in industrial organisations in Kano State.

Research Question 3: What are the interpersonal skills considered important recruitment prerequisite among graduates of electrical electronics technology in industrial organisations in Kano State?

The mean ratings for items on the interpersonal non-technical skills considered important recruitment prerequisite are given in Table 3

Table 3: The Mean and standard deviation responses of employers of electrical electronics technology on the interpersonal skills considered important for employment in industrial organisations in Kano State.

S/N	Items for Interpersonal skills	Mean(x)	SD	Remark
1.	ability to work without supervision	3.22	0.71	Very Important
2.	ability to maintain positive image	3.40	0.61	Very Important
3.	ability to take responsibility	3.20	0.69	Very Important
4.	ability to manage time proficiently	3.43	0.77	Very Important
5.	ability to maintain personal integrity	3.25	0.68	Very Important
6.	ability to adapt and be flexible at work	3.22	0.71	Very Important
7.	ability to maintain positive attitude	3.40	0.61	Very Important
8.	ability to maintain professional work ethics	3.43	0.77	Very Important
9.	ability to maintain good interpersonal relationship	3.25	0.68	Very Important
	Average Mean	3.30	0.69	Very Important

Source: Fieldwork, 2021 SD-Standard Deviation

Based on the data presented in table 3 above, it was evident that all the five items were rated above 2.50. 3.30 average mean was obtained the items which indicated that all employers agreed to the opinion that the interpersonal non-technical skills are essential for the recruitment of graduates of electrical electronics technology in industrial organisations in Kano State. The results also showed the standard deviation ranged from 0.61 to 0.77 indicating that the professionals (employers) were not too far one another in their responses, proving that the items were valid.

The employers totally agreed that interpersonal non-technical skills are essential for the recruitment of graduates of electrical electronics technology in industrial organisations in Kano State.

Discussion of Findings

Data obtained from employers' view about the importance of basic non-technical skills on the recruitment of graduates of electrical electronics technology in industrial organisations in Kano state, showed that the grand mean of 3.30 was obtained meaning that all employers agreed to the items on the basic non-technical skills that are considered essential prerequisite for the recruitment of graduates of electrical electronics technology in industrial organisations in Kano State. This study is in line with the study of Maripaz *et al.*, (2013) who in their revealed that employers offer special consideration to non-technical skills over to specific job skills. Caleb and Udofia, (2014) in their study revealed that recruitment the conditions of the employers in the contexts of TVE fall into three major categories: professional skills, non-technical skills and entrepreneurial skills. Osami (2013), also revealed that graduates in technical education with both professional skills and non-technical skills/soft skills have more advantage to secure suitable employment.

The findings of the study in research question 2 revealed that all the items have mean score of 3.22- 3.51. This clearly showed that employers require interpersonal skills for the recruitment of graduates of electrical electronics technology in industrial organisations in Kano State. This finding was supported by Bakare *et al.*, (2019) who in their study indicated that the following non-technical skills: communication, teamwork, learning, creative thinking, decision-making, self-management and problem-solving skills are essential to metalwork technology graduates from technical colleges in Nigeria to be employable. Hence, cognitive skills are required for the recruitment of graduates of electrical electronics technology in industrial organisations in kano state.

The findings of the study in research question 3 revealed that all the items have mean score of 3.20- 3.43. This clearly showed that employers view interpersonal skills for the recruitment of graduates of electrical electronics technology in industrial organisations in Kano State. This is also in alignment with a study by Rasul and Mansor (2016) who found that employers are very particular, and they need graduates who are Self-confident with positive image and can work on pressure without supervision. This finding conform to the findings of Caleb and Udofia (2014), who found that the students of Electrical installation in technical colleges of Akwa Ibom State in need generic skills which interpersonal skills are part of for employability.

Conclusion

Based on the findings from the opinions of employers on the basic, cognitive and interpersonal non-technical skills considered as essential recruitment prerequisite among graduates of electrical electronics technology in industrial organisations in Kano State, this study therefore concludes that non-technical skills such as communication skill, reading skill, writing skill, numeracy and quantitative literacy, problem solving skill, decision making skill, planning and organizing skill, dependability, self-confidence, and ability to work without supervision are required by the employers for the recruitment of graduates of electrical electronics technology in industrial organisations in Kano State.

Recommendations

Based on the findings of the study, the following recommendations were made;

1. Communication skills should be integrated into the curriculum of Nigerian universities and polytechnics offering electrical electronics technology programmes to ensure that the graduate's technical skills are balanced, thereby making them to stand a better chance of being employed in industrial organisations and also in the labour market.
2. Students sent on SIWES or industrial attachment should be given roles that will help their intra-personal and problem solving skills.
3. Electrical Electronics Technology students whose dream is to work in industrial organisations after their graduation should seek for more non-technical skills training and certifications from professional training institutes outside the academic environments.
4. Electrical Electronics Technology Teachers in Universities and Polytechnics should use more problem-based learning(PBL) approach in instructional delivery to create more opportunities for students to develop problem-solving abilities together with technical skills development.

References

- Awang, Z., Abidin, H., Hafilah, A., Razib, H. & Yahya, A. (2018). Non- technical skills for engineers in the 21st century: a basis for developing a guideline. Retrieved on 3rd September, 2021 from <http://eprints.utm.my/2755/1/74232.pdf>.
- Bakare S., Azlan A. L., Rosmah S., Yusri K., Muhammad S., & Nor F. A. (2019). The non-technical skills needed by graduates of technical colleges in metalwork technology. *International Journal of Evaluation and Research in Education (IJERE)*, 8(4), 654-658
- Belleflamme, P. & Martin P., (2010). *Industrial Organization: Markets and Strategies*. New York: Cambridge University Press.
- Caleb, E. & Udofia, A. (2014). Generic skills and the employability of electrical installation students in technical colleges of Akwa Ibom State, Nigeria, *IOSR Journal of Research & Method in Education*. 1(2), 59-67
- Conrad, C.A. & Leigh, W.A. (2015). Soft Skills: Bridge or Barrier to Employment, The monthly magazine of the Joint Centre for Political and Economic Studies, 27(1), pp. 27-45.
- DuPre, C. & Williams, K. (2011). Undergraduates' Perceptions of Employer Expectations, *Journal of Career and Technical Education*. 26(1), 8-19.
- Federal Republic of Nigeria (2007). *National Policy on Education*, FCT Abuja: NERDC press
- Jackson, D. & Chapman, E. (2012). Non-technical skill gaps in Australian business graduates, *Australian journal of Education and Training*, 54(2),95-113.
- Kathleen, C. (2015). Developing Employability Skills. Regional Educational Laboratory, *School Improvement Research Series (SIRS)*, 3(58), 406-415.

- Komora, Y. (2017). *Organisation and the Working of an Administrative System*. New York: Oxford University Press.
- Leslie, C. (2020). Balancing Technical and Non-Technical Skill Development. Retrieved on 6th September, 2021 from <https://balancing.technical.and.nontechnicalskills/pdf>.
- Lindsay, C., (2016). Long-term unemployment and the “employability gap”: Priorities for renewing Britain’s New Deal. *Journal of European Industrial Training*. 26(9), 411-419,
- Maripaz A., Ombra A. I., & Shuki O. (2013). Employability skills and task performance of employees in government sector, *International Journal of Humanities and Social Science*.
- Nasir, A., Dayana, A. & Muhammad, N. (2011). Technical skills and non-technical skills: predefinition concept, IETEC 2011, Malaysia.
- Omar, M. K., Bakar, A. R., & Rashid, A. M., (2012). Employability skill acquisition among Malaysia community college student. *Journal of Social Sciences. Science Publication*. 8(3), 472-478
- Osami, I. (2013). Implementing vocational and technical education programmes in South-South Nigeria: A case of rivers state. *International Journal of Scientific Research in Education*, 6(2), 128-148.
- Rahmah, I., Ishak, Y. & Wei Sieng, L., (2014). Employers' perception of graduates in Malaysia service sector. *International Business Management*. 5(3), 184-193
- Rail Safety and Standard Board (2021). Improving Safety Health and Wellbeing through Human Factors: Non-Technical-Skills. Retrieved on 6th September 2021 from <https://www.rssb.co.uk/safety-and-health/improving-safety-health-and-wellbeing/understanding-human-factors/non-technical-skills>.
- Rasul, M. S., & Mansor, A. N. (2016). Employability skills indicator as perceived by manufacturing employers. *Asian Social Science*. 9(8), 42-50
- Schulz, B. (2008). The Importance of Soft Skills: Education beyond academic knowledge, *Journal of Language and Communication*. 4(6), 45-56
- Shona, W. (2020). Descriptive Research Design. Retrieved on 6th September 2021 from <https://www.scribbr.com/methodology/descriptive-research>
- Suhail M. G., Monica C., & Sumit G. (2018). A conference paper on the Importance of Non-Technical Skills for Employment Opportunities: A Gap Analysis of Students and Employers Perception. Retrieved on 6th September 2021 from <https://www.researchgate.net/publication/326826438>.
- Wilson, A.J., Ariffian, B.A. & Abu Z. H. (2012). The embedment of soft skills in real estate program via coursework, *Journal of Teaching in Travel & Tourism*. 9(4), 266-287.