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Necessary Employability Skills Required Of Automotive Electrical System Technicians in Kebbi and Sokoto States, Nigeria

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***Abstract*— The study was conducted with the aim of identifying the skills appreciated by employers for the employment of automotive electrical system technicians in Sokoto and Kebbi states in North Western Nigeria. It specifically determined the generally required employability skills and rankings in terms of their perceived importance by participants. To achieve this, two (2) research questions, as well as one null hypothesis was formulated and tested at 0.05 level of significance, as a guide to the study. Appropriate answers were sought through descriptive survey design which involved a population made up of automotive electrical/electronic technicians, automotive electrical/electronic teachers, and automotive electrical/electronic lecturers in some institutions in the targeted states. A structured questionnaire was used to generate data, which was analysed based on frequency count, mean, and analysis of variance. The findings of the study suggested that all the identified employability skills were necessary, but with different levels of importance. Specifically, the study discovered that integrity/honesty was considered the most necessary skill, while competency in planning was regarded as the least required skill by the respondents. The study, therefore, recommended that the curriculum for technical colleges and vocational centres, should include graduate employability skills and attributes as well as strong synergy between employers, technical education training providers, educators and all other stakeholders in technical education, in order to enshrine, sustain and develop the necessary employability skills training in to the technical education program.**

***Index Terms*— Automotive, Electrical/Electronic; Employability; Technician.**

I. INTRODUCTION

The automotive is made up of several systems that work together for it to provide the required services of movement, luxury, safety and security to the user. One of these systems is the automotive electrical system. The system adequately and appropriately provides the electrical/electronic needs of the automotive in order to start, operate, monitor and control the components as well as those of the auxiliary such as the headlamps, the car radio, horns, brake and trafficator lights, interior lights, etc.(Idris, A. M, Saba , T. M, 2015).Globalisation and sophistications in modern automotive, have brought about more challenges on the electrical/electronic system making it more complex with additional facilities for efficiency, safety and luxury for passengers and other road users. This has therefore necessitated the need for a corresponding expertise in the skills of the technicians in monitoring, maintaining and repairs of the components that make up the system.

The electrical system derives its main source of energy from the lead acid battery which is connected to a series of independent and interdependent systems such as the charging system, fuel injection system, ignition system, starting system, as well as lighting and accessories.

The complexity of the automotive electrical/electronic system, coupled with the rapid dynamism in the design, production and operation of the system, according to(Pavitt, 2001), has made it both fearful and fascinating, thus, a challenge in the functionality of the system or any of its components, most often, requires the attention of an expert automotive electrician.

The automotive electrical system technician is a person who should be able to use an assorted range of sophisticated tools and equipment to test, diagnose, service and effect complete repairs of a fault in the automotive electrical system, while consciously observing all the safety rules, in line with the specifications of the manufacturers. The technician, according to, Idris, A. M, Saba , T. M, (2015), may operate in small shops on a wide range of repair works or in larger workshops where they may specialise in repairing, rebuilding and servicing the electrical units of the automotive. The automotive electrician job involves reading and interpreting the job order, physical examination/inspection of components to establish faults by the use of sight, sound, feel and smell, selecting the appropriate tools and determining the action to be taken. A professional automotive electrician should be able to carry out these functions efficiently based on manufacturer specification and the satisfaction of the customer. To achieve this, the automotive technician must acquire certain skills, such as honesty, team work, responsibility, adaptability, communication, resourcefulness, and decision making. These required skills, in the opinion of Idris, A. M, Saba , T. M, (2015), are those abilities that enables an automotive electrician to do his job well, and they are normally acquired through training and experience. However, researchers are of the opinion that most school levers do not possess the pre-requisite employability skills required of them to secure, retain and develop in appropriate jobs after graduation, (Idris, Ali & Rajuddin, 2012). Unfortunately, they end up unemployed, since modern employers of labour lay great emphasis on graduates who possess those skills that make them viable assets to the

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employer.

Employability skills are described as the knowledge, skills, abilities, behaviours and such other characteristics or qualities a worker requires to enable him perform his duties or occupational functions successfully. These skills may include ability to read and write, information and technology skills, research skills, time management, leadership skills, critical thinking skills, initiative and enterprise, ethics, self-confidence, amongst others, (Mansour and Dean, 2016).On this basis, employability skills can be viewed as necessary not only for employment, but also to fit-in well in a job, progress in the job and contribute meaningfully to the job. They are succinctly described byMacher *et al.*, (2019), as those non-technical skills that are as important as core technical skills, and hence, ought to be acquired by graduates for useful employment. He further averred that although graduates acquire core technical skills, employers often express dissatisfaction on the absence of motivational skills, communication skills, interpersonal skills, critical thinking skills, problem solving skills, as well as entrepreneurial skills. Furthermore, Rowe, (2019), portrays employability skills as those enabling skills that are also competences, that allow a worker to execute activities appropriately and also to impact positively on the work environment.

Meanwhile, globalisation of the world economy, knowledge, commerce, industry upgrade, and rapid changes in workplace mobility, demands that graduates most possess the employability skills that would make them meet up with today's complex workplace challenges. They must in fact, be able to demonstrate these skills at the point of their graduation. Consequently, the commonwealth of Australia, (2006), suggested that employability skills framework is centred around eight (8) skill classes that define and demonstrate employability skills as follows; Communication Skills; this is the ability to receive, and transmit information without any ambiguity and thus avoiding misunderstanding. This leads to harmonious worker relationship and improved production. Team work skill was also listed in the framework, and it encompasses ability to relate with co-workers harmoniously in order to achieve the goals of an enterprise. This relationship is highly recognised and appreciated by employers. As a fact, he added, although there may be few tasks and roles that occur in the workplace, even these require some degree of relationship with customers/supervisors, or even in understanding of how the work being done contributes to an overall goal or target. Problem solving skill is also a part of the framework, ad it involves reflective skills to proffer solutions to problems across different disciplinary situations, and hence enhance productive outcomes. Initiative and entrepreneurial as part of the framework, concerns with the continuous generation of innovative solutions that could contribute positively, to the workplace success by translating ideas into real actions. Meanwhile, Planning and Organising skills is concerned with the ability to manage time, prioritize events, initiate and make decisions, collect, analyse and evaluate information for short and long term strategic planning. Another identified skill in the framework is the self- management skill. This aspect concerns the ability to self- evaluate and monitor performances, bring responsible, ability to sell an idea and vision, as well as effectively manage time based on identified priorities. The ability to initiate and take appropriate decisions, as well as mould self towards expected work environment roles is also considered as part of the framework. Learning skills that incorporates ability to accept new ideas and challenges, acquire new knowledge using multiple modern media outlets, apply new knowledge on technical issues and operations, and also make meaningful contributions for the improvement and expansions in workplace operations and management. Another important element in the framework is the acquisition of IT skills. This, is described as the ability to apply new technology as a management tool to contribute to the effective execution of tasks.

In another development, (Inyang and Enuoh, 2009), observed that the modern work environment requires worker to exhibit skills other than technical competence in their professional lines of work, hence, the world of employment highly emphasises on good management as well as entrepreneurial abilities. Furthermore andregrettably, however, scholars such asIsmail and Mohammed, (2015)and Salleh *et al.*, (2016), lamented that the present school system is not tailored towards instilling the necessary employability skills required by the employers, most especially as applied to engineering and technology, thus, leading to graduates not possessing these skills through the formal school system. This has made it absolutely necessary for an enhanced synergy between the school and industry in order to identify and incorporate same, especially for the automotive electrical system technician trainees.

In view of these, therefore, this study makes attempts at identifying the necessary employability skills for automotive electrical system technicians that would enhance their employability after college training.

II. Main Purpose of the Study

The main purpose of the study is to basically identify the employability skills required of the automotive electrical system technicians during training, which would enable them gain appropriate employment after training. In specific terms, however, the study identified, through the opinions of teachers, lecturers and employers;

i. The overall employability skills required by automotive electrical system technicians and
ii. Profiled the employability skills required in order of importance for the employability of automotive electrical system technicians.

Research questions

To effectively attain the purpose of the study, attempts were made to provide convincing answers to the following research questions;

i. What general employability skills are highly necessary for the employment of automotive electrical system technicians by the employers?
ii. Which employability skills are considered the most required as well as the least required by the employers of automotive electrical system technicians?

Research Hypothesis;

The following null hypothesis was formulated to guide the study and tested at 0.05 level of significance.

Ho1;There is no significance difference between the mean responses of automobile technicians, automobile teachers and automobile lecturers with regards to the general employability skills by technicians of theautomobile electrical system.

Research Methodology

In order to obtain a credible and sufficient data for the study, the study adopted the descriptive survey approach. This approach is considered the most suitable in gathering credible information from a sample drawn through a population using the questionnaire as instrument,(Kelley *et al.*, 2003). The population of the study included some targeted industries and institutions of instruction in Sokoto and Kebbi states, Northern Nigeria, with a total number of 130 participants. The population of the study is made up of 45 automotive electrical system technicians, 30 automotive electrical/electronic teachers and 55 automotive electrical/electronic lecturers. Random sampling technique was employed to draw a sample of 89, this was to enable each of the respondents to have a fair chance of participation in the study, (Mathew J. Salganic, 2004). The questionnaire comprised of 40 test items, while the reliability coefficient of 0.83 was used in the study.

To analyse the data, the frequency count, mean and analysis of variance (ANOVA) was employed. While the mean helped in determining degree of acceptance or no acceptance, the ANOVA aided in testing the research hypothesis. The four-point Likert scale was adopted and taking a mean of 2.00 as decision point of research question. Implying, any item with a mean response of 2.00 and above is considered a needed skill, and any item with a mean response of 1.99 and below is viewed as not needed skill. Furthermore, the item with the highest mean is sequentially taken as 1st, next item as 2nd and so on. On the ANOVA, the hypothesis is tested at 0.05 level of significance in order to compare the mean response of the groups. In addition, the F-ratio of 3.26, 3.35 and 3.62 were selected based on the degree of freedom at 0.05 level of significance. As such, an item with an ANOVA calculated value less than the critical was regarded as not significant, and an item with calculated value equal or greater than the critical, is regarded as significant.

Responses to the Research Questions

The two Research Questions for the study are;

i. What general employability skills are highly necessary for the employment of automotive electrical system technicians by the employers?
ii. Which employability skills are considered the most required to the least required bythe employers of automotive electrical system technicians?

Table 1 indicates the responses of the participants.

Table 1: The mean and rankings of the perceived employability skills required of automotive electrical system technicians based on the perceptions of the respondents.

N_1. 40; N2, 26; N3, 23

S/N	Required Skills	$\overline{X}_1$	$\overline{X}_2$	$\overline{X}_3$	$\overline{X}_{IMP}$	Rmks	RK
1	Communication competences	2.85	2.78	2.80	2.81	Needed	3rd
2	Efficient in Planning	2.13	2.24	2.41	2.26	Needed	26th
3	Knowledgeable in report Writing	2.40	2.26	2.35	2.34	Needed	23rd
4	Ability to write comprehensively	2.38	2.04	2.57	2.33	Needed	24th
5	Skills in computer Operations	2.74	2.69	2.79	2.74	Needed	5th
6	Positive Attitude to Learning	2.43	2.65	2.39	2.49	Needed	20th
7	Skills in Conflict Management	2.74	2.42	2.57	2.58	Needed	16th
8	Prompt detection of Problems	2.48	2.81	2.54	2.61	Needed	13th
9	Problem Prioritizing Skills	2.63	2.73	2.40	2.59	Needed	15th
10	Ability to Analyse Problems	2.68	2.51	2.61	2.60	Needed	14th
11	Appreciable Leadership Qualities	2.85	2.81	2.86	2.84	Needed	2nd
12	Knowledge and Appreciation of Professional Ethics	2.58	2.78	2.67	2.68	Needed	8th
13	Prompt and Accurate Decision Making	2.44	2.85	2.65	2.65	Needed	10th
14	Critical and Self Critical Capabilities	2.49	2.80	2.59	2.63	Needed	11th
15	Effective Responsibility Sharing Skills	2.65	26.5	2.57	2.62	Needed	12th
16	Creativity	2.83	2.88	2.70	2.80	Needed	4th
17	Effective Time Management	2.25	2.58	2.78	2.54	Needed	18th
18	Team Work	2.78	2.76	2.57	2.70	Needed	7th
19	Initiative and Entrepreneurial Skills	2.56	2.38	2.65	2.53	Needed	19th
20	Visualisation	2.86	2.70	2.80	2.45	Needed	22nd
21	Self-Management	2.75	2.77	2.65	2.72	Needed	6th
22	Integrity/Honesty	2.95	2.96	2.77	2.89	Needed	1st

23	Emotional Intelligence	2.75	2.62	2.65	2.31	Needed	25th
24	Income Generation and Management Skills	2.73	2.58	2.68	2.66	Needed	9th
25	Adaptability/Flexibility	2.55	2.64	2.50	2.56	Needed	17th
26	Coding	2.71	2.44	2.30	2.48	Needed	21st

Key; N_1=Automotive Technicians; N_2=Automotive Teachers; N_3=Automotive Lecturers; $\overline{X}_1$=Mean of Responses by Automotive Technicians; $\overline{X}_2$=Mean of Response by Automotive Teachers; $\overline{X}_3$ = Mean of Response ofAutomotive Lecturers on the general employability skills required by automotive electrical system technicians.

From the analysed responses of the three participating groups in the study as indicated in table 1, it could be deduced that all the items listed were characterised as needed, based on the fact that their mean scores ranged between 2.26 and 2.89, implying that possessing those employability skills was required by automotive electrical system technicians in Kebbi State, for them to be gainfully employed after graduation.

Furthermore, from table 1, it could be read that the rankings of the required employability skills indicated that integrity/honesty is ranked highest (i.e., no.1), while efficiency in planning ranked the lowest, (i.e., no. 26) in the opinions of the respondents. It therefore suggests that integrity/honesty ought to be imbibed in the minds of automotive electrical system technicians in Kebbi state for them to secure appropriate jobs.

Hypothesis One

There is no statistical significance difference between the mean responses of AutomotiveTechnicians, Automotive Teachers and Automotive Lecturers on General Employability skills Necessary for Automotive Electrical System Technicians..

Table 2: One- way Analysis of Variance of the mean responses of the respondents on the General Employability Skills Necessary for Automotive Electrical System Technicians**.**

Sources of Variation	DF	Sum of Squares	Mean Sum of Squares	F-Cal	F-Critical	Significance	Decision
Between Groups	2	0.00001569	0.000007845	0.00001456	3.62	NS	Accepted
Within Groups	114	6.14	0.05385				
Total	116	6.14001569					

From the hypothesis, it is seen that the f- calculated as indicated in Table 2 is 0.00001456. Therefore, with the calculated f- ratio below the f- critical of 3.62, the stated null hypothesis is accepted at 0.05 level of significance, there is no statistical significance difference in the mean responses of Automotive Technicians, Automotive Electrical and Electronic Teachers and Automotive Electrical and Electronic Lecturers on General Employability skills for Automotive Electrical System technicians

III. Research Findings

The findings of the study, based on the collected and analysed data, as a deliberate attempt at answering the research questions and hypothesis, revealed that all the 26 employability skills highlighted, were considered required by automotive electrical system technicians for them to perform optimally. However, the findings also indicated that some of the employability skills were considered highly necessary, while others got lower rankings. Consequently, the top 4 (i.e. 1st-4th) skills with the upper rankings in their order of importance are as follows;

i. Integrity/Honesty
ii. Appreciable Leadership Qualities
iii. Communication Competences
iv. Creativity

In the same vain, the 4 employability skills with the lowest rankings, (i.e. 23rd-26th), include;

i. Knowledge in Report Writing
ii. Ability to Write Comprehensively
iii. Emotional Intelligence
iv. Efficiency in Planning

IV. Discussions of the Findings

Reflecting on the research questions the study tried to answer, 26 items were identified and presented to the respondents that included automotive electrical system technicians, automotive technology lecturers and automotive technology teachers. A careful analysis of their responses indicate that all the items listed had some degree of importance to the automotive electrical system technician. This implies that possession of these skills could be helpful for the acquisition of useful jobs, staying in the job, developing in the job, and contributing to the advancement of the job. This supports the assertion by, Kaur and Singh, (2015), that an employee with the required employability skills is a great asset to himself and to the sector.

On research question 2, which is about the ranking of the employability skills, the responses were suggestive that honesty/integrity was viewed as the most appreciated skill required of the automotive electrical system technician. An honest employee is verily considered a great asset to an employer because of the confidence that would be reposed on him by all stakeholders. The management, co-workers, and

customers normally feel confident that services will be provided to their satisfaction in accordance with contractual agreements. An honest worker provides a quality job, keeps to time, manages resources prudently, and takes adequate care of customer and employer property. This opinion falls in line with,Sackey and Bester, (2016), who expressed the opinion that employers in industry lay great emphasis on employing honest workers and with high level of integrity.

The study also indicates that the second most ranked skill required is appreciable leadership qualities. A person with good leadership skills is an encouragement to his colleagues and hence enhances performance, thus increasing the income of both the employees and the employer. A good leader motivates his subordinates, raises the confidence of his super ordinates, serves as a very good liaison between workers, employers and the customers, and generally encourages harmonious relationship within the company. This was equally attested to by Harris and Rogers, (201h9), who averred that an employee with an appreciable leadership quality improves factory income and is a catalyst to good industrial relationship, which in its way improves income.

The third most ranked skill, according to the study is the communication competences. This is indeed an important skill taking into consideration the fact that the automotive industry is a global industry and it involves communication with a wide range of individuals both within and outside the industry. Ability to efficiently communicate, is therefore an important skill that employers look into a job seeker. This position supports the opinion of, Oviawe *et al.*, (2017)), who expressed that communication helps in removing ambiguity, creating a friendly environment, and improving customer satisfaction. Efficiency in communication also enables an employer to acquire new skills, tactics, and experiences from a wide range of sources globally.

The ranking of the employability skills also indicate thatcreativityis a highly considered skill in the automotive electrical system sub sector. As the automotive industry is a fast revolving industry, there is always an increasing demand for new things that would enhance safety, security, luxury, beauty, speed, performance and even entertainment. An employee that is creative would, therefore, be a vital asset, both as an inventor and a professional electrical system technician who would be able to tackle the challenges of modern electrical and electronic automotive electrical system. This, succinctly, captures the opinion of Yasak and Alias, (2015), who maintained that, as the world of today, and most especially the automotive industry is constantly improving, workers in such industries most me innovative and creative in order to be continuously relevant.

V. Conclusion

The study has been able to identify and rank the necessary employability skills needed by the automotive electrical system technicians for gainful employment in Kebbi state, after a careful analysis has indicated that possessing those skills is absolutely necessary. As such, it is imperative for the school system to comprehensively put up a mechanism that could impact the necessary employability skills on automotive electrical system technicians, so as to make them fully prepared for life after graduation, either as employees or entrepreneurs. The study, has therefore, provided a guidance that could lead to the establishment of modalities for the incorporation of the necessary employability skills in the programs of the training institutions in Kebbi state, so as to facilitate the production of graduates who are fully prepared for the world of work in the 21st century, both in the automotive industry and beyond.

VI. Recommendations

The careful analysis and subsequent findings of the study, leads to formulation of the following recommendations;

i. The existing instructional curriculum for the technology and engineering training institutions should incorporate employability skills training as part of their most important programs.
ii. The automotive electrical system educators at all levels should be specially trained in the application of different instructional strategies that could help in imparting the necessary employability skills in trainees.
iii. Additional relevant instructional facilities should be provided for training institutions that could enhance the teaching and learning of employability skills.
iv. A strong, workable and useful synergy between training institutions and employers of automotive electrical system technicians should be established, maintained and promoted.
v. Programmed sensitization activities should be carried out regularly, as this could help in propagating the usefulness of the employability skills to both the employee and the employer.
vi. The student industrial training scheme should be strengthened such that it could give the learners the adequate first hand practical experience in applying the employability skills in the field.

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