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Technicians' Literacy, ICT Proficiency and their Job Performance In Calabar, Cross River State, Nigeria

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ABSTRACT
The predominant method of training technicians in Nigeria is the apprenticeship system. The system lays emphasis on the acquisition of practical skills alone. The near absence of cognitive learning in this system leads to the production of technicians with inadequate literacy and ICT competence. In this era of Information and Communication Technology, there are new trends in various technical areas. Most machines and tools imported into the country are accompanied with manuals that are designed to introduce technicians to the processes of installation, operation and maintenance. These are also loaded into the web for free access. To function effectively, technician trainees need the ability to read, understand and apply the content of such manuals. It is common to see technicians in the streets of Nigeria, with little or no reading ability and the ability to download such information from the web. Thus, a greater part of what they operate on is trial and error method of maintenance. This study is concerned with the literacy and ICT proficiency of technicians vis-à-vis their performance on the job. The study used the expost facto research design. The population is made up of all technicians in Calabar South Local Government Area of Cross River State, Nigeria. The sample size was 100 technicians. Data was collected with the use of a questionnaire, the data analyzed for result and recommendations proffered which includes, among others, a government policy making Senior Secondary School Certificate (SSCE) a mandatory minimum requirement for entry into apprenticeship training programmes in all trades.

Keywords and phrases: Technicians, reading ability, technicians' performance, on the job

Aims Research Journal Reference Format:
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1. INTRODUCTION

There has been lots of changes in the design and composition of modern machines and equipment. This has created a need for regular update of skills on the part of technicians, both practicing and those in training, to help them cope with such changes. Some examples of changes in automobiles include Hybrid-cars that use inverters making them more fuel efficient, analog to digital display dash boards and built-in diagnostic systems, to mention a few. These changes require technicians who have a good knowledge of and can effectively use digital fault detection machines. According to Auto Alliance (2016), today's leading automakers are also developing cars that park themselves, brake at the sign of danger and stay in lanes without drivers' assistance. According to the author, what once only existed in the imaginations of science fiction writers is now being developed and tested by carmakers in laboratories and on roadways across the globe.

Similar to computer and smart phones, electronic parts like sensors and microprocessors comprise the backbone of today's cars and machines. With such innovations, the composition of modern automobiles, machines and building structures has become more complex than ever. This implies that technician training may be needed in all areas of technology. It is common knowledge that in the past, technicians entered their careers with minimal training often received in a technical school workshop or through apprenticeship training. With advances in technology today, post secondary education is considered a minimum requirement with some apprenticeship training in the workshop for entry level technicians in developed countries.

A technician, according to the Collins English Dictionary (2012) is a person skilled in mechanical or industrial techniques or in a particular technical field. According to the Michael Teaching (n.d), the nature of the technician is to express himself through invention, creation, machine repair, manufacture, and manipulation of things. They said that these can be artistic master pieces, technological crafts or mechanical devices and that virtually everything made by man, seen and used is the work of technicians. As observed by the authors, the cars we drive, the houses we live in, the television we watch, the telephone we talk on, the cloths we wear, the furniture and appliances in our homes and the decorations are things that technicians have invented, designed, drawn plans for and built.

Technicians are also concerned about how things work. As children, they satisfy their inquisitiveness by dismantling things to see the content and then mounting them back. They have good psychomotor abilities and high mechanical aptitude. They can be excellent artists, inventors, musicians, actors, writer, surgeons, architects, interior decorators, landscapers or essentially any occupation that generates something new, different and unique. They also excel in occupations that involve fixing and operating things that already exist. This group of technicians is made up of the draftsmen, machinists, assemblers, mechanics, homebuilders, construction workers, painters, automakers, manufacturers, repairmen, electricians, plumbers, carpenters and cabinetmakers.

In Nigeria, though, there are technical schools that train technicians, most of the practicing technicians that litter the streets of the cities are trained through apprenticeship with little or no in-school training. An apprentice is a person who studies under a qualified employer in the trade for a certain period of time to learn the skills of a chosen occupation (Padgett, 2015). Apprenticeship is a kind of job training that involves following and studying a master at the trade on the job instead of in-school. Carpenters, masons, mechanics and many other professionals often learn their trades through apprenticeship. Historically, an apprentice was a young person employed by a master craftsman to learn a trade or skill, while working for the master in exchange for lodging and food (The Dictionary, 2015). Typically, apprenticeship lasts seven years. In modern times, apprentice programmes are often four to five years in length and the apprentices are usually paid employees. However, the apprenticeship mode of training technicians may not be adequate for the changing technological society we live in today. The increasing technological innovations in vehicles require technicians who are solidly trained in advanced automotive and other technological skills. The composition of automobiles, machines and indeed modern structures today, is becoming more complex than ever, including all areas of technology.

With advances in technology today, technicians require more than just apprenticeship training. For instance, an advertisement for job placement in electrical electronics listed technicians' job requirement to include experience of up to three to four years of apprenticeship training in order to perform on the job; educational attainment involving training in vocational schools related to their job experience, an associate degree, and training of one or two years involving both on-the-job experience and informal training with experienced workers (Myplan.com, LLL, 2014). Those in mechanical trades required knowledge of machines and tools, including their designs, uses, repair and maintenance. While requirements for service engineers include among others, a recognized degree from a vocational school with a focus on mechanical and electrical fields plus three years of apprenticeship or equivalent experience; ability to read and understand mechanical/electrical drawings; good communication skills, which include basic English communication skills; proven language skills in English; and industrial literacy (Search Job Careers, 2014).

From the foregoing, it is evident that the apprenticeship mode of training, which does not expose technicians to formal education, will not adequately fit them into modern vocational jobs. This does not give technicians balanced training which is made up of training in the cognitive, affective and psychomotor domains. As far back as 1984, Campbell and Sechier observed that to function effectively in today's world of work, employers expect workers in entry level positions to be more than functionally skilled in the areas of reading, writing and computation. Necessary literacy skills, according to them, include reading to infer meaning, to generalize and to detect fallacy and persuasive intent and reading for facts, information and ideas.

In the area of writing, employees are expected to have knowledge of the rudiments of grammar, to be able to complete reports, fill forms and write applications; and to possess the basic skills of grammar, sentence structure and paragraphing. Myplan.com (2015) listed some top skills and abilities needed by technicians to include:

- Critical thinking: Using logic and reasoning to identify the strength and weaknesses of alternative solutions, conclusions or approaches to problems.
- Reading comprehension: Understanding written sentences and paragraph in work related documents.
- Complex problem solving: Identifying complex problems and reviewing related information to develop and evaluate options and implement solutions.
- Operation monitoring: Watching gauge dials indicators to make sure a machine is working properly.
- Quality control analysis: conducting tests and inspecting of products, services or processes to evaluate quality of performance.
- Written comprehension: The ability to read and understand information and ideas presented in writing.
- Oral expression: The ability to communicate information and ideas in speaking so others will understand.
- English language: Knowledge of the structure and content of the English Language including the meaning and spellings of words, rules of composition and grammar.

It can be seen from this listing that literacy dominates the list of requirements for functionality of technicians. Theil (1985) observed that because of the changing nature of work in our society, a high level of basic skills in reading, writing and computation is required in the growing occupational areas of high technology and service industry than is required of workers in the declining areas of farm labour and home child care. Even those jobs not related to high technology, the author concluded, are requiring a high level of basic skills. Industry report indicates increased economic problems due to low literacy skill of workers (Hymowytz, 1981).

In the information age we find ourselves modern times, several factors have led to a growing concern about the vocational literacy of workers. These factors include low academic level of those entering the work force, the changing nature of work in our society and economic problems resulting from workers' failure to acquire the basic skills required on the job. In a survey conducted by the United States Centre for Public Resources ((Henry & Raymond, 1982), employers indicated that 50% of the secretaries in their study had difficulty reading at the level required of their job, 50% of the managers and supervisor were unable to write paragraph free of mechanical errors and 50% of the managers and supervisors were unable to solve mathematics problems using decimals and fractions. How is job performance related to basic literacy skills?

According to Davis (2003), reading is important for a variety of reasons:

1. Reading is fundamental to functioning in today's society. Literacy can improve people's ability to acquire and use information, enlighten their understanding of themselves and the world around them.
2. If adults cannot read well, they may be unable to understand instructions on imported machines; filling out application becomes impossible without help; reading road or warning signs is difficult, even following a map becomes a chore. Day-to-day activities that many people take for granted also become a source of frustration, anger and fear.
3. Reading is a vital skill in finding a good job. Many well paying jobs require reading as a part of job performance. There are reports and memos which must be read and responded to. Poor reading skills increase the amount of time it takes to absorb and react in the work place. People are limited in what they can accomplish without good reading and comprehension skills.

4. Teaching young children to read, helps them develop their language skill. It also helps them learn to listen. Lack of listening skills can result in major misunderstandings which can lead to job loss, doing the wrong things on machines, and other disorders, small and great. Reading helps people focus on what someone else is communicating.
5. Reading helps us discover new things. Books, magazines and even the internet are great learning tools which require the ability to read and understand what is read. People who know how to read can educate themselves in any area of life they are interested since we live in an age that overflows with information but reading is the main way to take advantage of it.
6. In line with the above, reading develops the creative side of people. Reading what other technicians have achieved can help technicians improve their creative skills through innovation.

Unemployment has become a household phenomenon in Nigeria where degree holders are seen roaming the streets looking or seeking for non-existent jobs. Unemployment in Nigeria falls within the ambit of what Economics on-line (2016) called structural and deficient unemployment. Structural unemployment occur when the unemployed do not possess the skills required by the expanding industries even when demand for labour is high, while deficient unemployment is caused by lack of jobs. Nigerian technicians are mostly exposed to structural unemployment. As technologies change, newer and more efficient machines are produced creating a need to update knowledge and skills. Nigerian technicians may not have access to facilities for such up-dates. Even when they do, illiteracy and ICT incompetency can pose a set-back.

Information and Communication Technologies (ICTs), as observed in a Microsoft White Paper (2004), is changing humanities and driving the development of a worldwide economy and that ICT holds incredible potential for communal and economic progress. The paper observed that computing technologies and other ICTs have the potential to help overcome many challenges facing developing countries. Another important feature of ICT is the ability to help people collect, store, retrieve and distribute knowledge. It can also help level the playing field between firms in the developing and the developed world thereby enabling developing nations to compete more favourably in the global economy. The paper concluded that ICTs can help underserved populations like technicians, obtain, manage and disseminate knowledge and to tap into the global network of information and services.

People increasingly use ICTs to tap into the networks of people and gather information for various functions. ICT networks are indispensable elements of the world development equation as they provide users in developing countries with access to information, resources, distribution mechanisms and technical effectiveness. Markel Foundation (2003) observed that because many of the challenges facing traditionally underserved communities results in part from inadequate access to knowledge and information, ICTs can help surmount these challenges by making it easier and less expensive to collect, analyze, and disseminate information to the people who need it. The Internet is one of such tools available today. Although certain forms of ICTs like telephone can be and are being used effectively without widespread digital literacy, it is equally clear that digital literacy is vital to enabling users unlock the full potentials of ICTs.

Most Nigerian technicians, by virtue of their apprenticeship training, may not have the prerequisite literacy to benefit from ICTs advantage. The ability to perform adequately on jobs may be determined to some extent by the individual's reading and digital abilities. The content of many job manuals and other technical material presupposes that technicians possess as high as college level literacy. Workers who are below that level may be expected to experience difficulty in using written and digital materials in training for performing their jobs. With technological development, new standards are set in the job market. Technicians may be assigned to jobs which may demand literacy skills that far exceed their abilities.

This may lead to job failures. However according to Fenando and King (2013) there are disconnects between literacy levels, educational attainment and the actual skills required for labour market attachment and adaptability. This study therefore, sought to identify the influence of literacy and ICTs proficiency on technicians' job performance in Calabar South Local Government Area of Cross River State, Nigeria.

1.1 Hypothesis

1. There is no significant relationship between Technicians' literacy skills and job performance.
2. There is no significant relationship between technicians' ICT proficiency and their job performance.

2. METHODOLOGY

The researchers adopted the survey research design in this study. The appropriateness of this research design is to ascertain the relationship between the independent and dependent variables. The population of the study was two hundred (200) respondents randomly selected from Calabar Municipal environment based on the variables under investigation. The research area covered was Calabar Municipality and Calabar South Local Government Areas of Cross River State, Nigeria. The research instrument adopted for eliciting information for this study was a researcher designed questionnaire based on a modified four (4) likert type scale reflecting statements on technicians/artisans literacy skills and the their job performance (QTALSP).

Purposive random sampling technique was adopted. This sampling technique was appropriate because the population is not formally organized. . The researcher intentionally used technicians/artisans found within the study area. The reliability of the instrument was established using split-half Method to obtain a reliability coefficient of 0.89. Data collected was subjected to analysis using Pearson Product Moment Correlation analysis to establish the relationship between technicians' literacy skills and their job performance.

3. DATA ANALYSIS

Data analysis was done hypothesis-by-hypothesis at 0.05 level of significance and with 198 degrees of freedom.

3.1 Hypothesis one

The null hypothesis sought to examine the relationship between technicians' literacy skills and their job performance. Data was analysed using the Pearson Product Moment Correlation analysis technique. The result of the analysis is presented in Table 1.

TABLE 1
Pearson Product Moment Correlation analysis of the relationship between technicians' literacy skills and their job performance

Variable	$\bar{x}$	SD	$\sum x^2 (\sum y^2)$	$\sum xy$	r-value
Technicians/artisans literacy skills	29.62	14.26	983421.64		
				3166.421	0.05*
Technicians/artisans job performance	20.50	10.93	76311.61		

P < 0.05, df = 198, critical r = 0.183

Result of data analysis revealed that there is a strong relationship between technicians' literacy skills and their job performance. The calculated r-value of 0.05 was significantly less than the critical r-value of 0.183 using SPSS. Therefore, the null hypothesis which states that there is no significant relationship between technicians' literacy skills and job performance was rejected at 0.05 level of significance and with 198 degrees of freedom, while the alternate hypothesis was retained. This implies that there is a significant relationship between technician literacy skills and their job performance. This shows that the more literate the technicians are, the better their proficiency in their job delivery, quality and performance.

Hypothesis two
There is no significance relationship between technicians/artisans' ICT proficiency and their job performance. Data was analyzed using the Pearson Product Moment Correlation analysis technique. The result of the analysis is presented in Table 2.

TABLE 2
Pearson product moment correlation analysis of the relationship between technicians ICT proficiency and their job performance

Variable	$\bar{x}$	SD	$\sum x^2 (\sum y^2)$	$\sum xy$	r-value
Technicians/artisans ICT proficiency	24.61	11.26	6976211		
				597.32	0.098*
Technicians/artisans job performance	20.50	10.93	476340		

P < 0.05, df = 198, critical r = 0.96

Hypothesis two sought to examine the relationship between technicians' ICT proficiency and their job performance. Result of data analysis showed that the calculated r-value of 0.098 was less than the critical r-value of 0.96 . Therefore, there is a positive relationship between technicians' ICT proficiency and their job performance. Thus, the null hypothesis was rejected at 0.05 level of significance with 198 degrees of freedom, while the alternate hypothesis was retained. This means that a significant relationship exists between technicians' ICT proficiency and their job performance.

4. DISCUSSION OF FINDINGS

Result of analysis of the first hypothesis showed a strong relationship between technicians' literacy skills and their job performance. Educated technicians can read, understand and source for solutions in handling technical jobs better than those who are not educated or did not attend formal school. Lack of literacy can lead to lack of these basic skills which would have enabled them to handle some complex technical jobs. Most researchers reported on the effectiveness of using basic skills in reading and understanding computed manuals and the application of the knowledge to work on modern digital machines. Educators claim that efficiency prone from mastering their vocations and seeking relevant information relating to their jobs from other sources. DFID (2002) found that the skills of reading and numeracy are the keys that unlock the range of literacy that people need in an increasingly global world.

The result of the analysis of second hypothesis showed a relationship between ICT proficiency and technicians' job performance. This result is in line with a Microsoft White Paper (2004) which observed that ICTs can help underserved populations like technicians, obtain, manage and disseminate knowledge and tap into the global network of information and services. With globalization and advances in technology, it is expected that technicians should demonstrate continuous growth in their technical skills. This growth can be facilitated using their knowledge of current and emerging ICT applications within their trade areas.

5. CONCLUSION

The implication of the results of this study is indicative of the fact that literacy and ICT proficiency are necessities for effective job performance of technicians. To qualify technicians for performance on modern automobiles, machines and structural construction works, literacy and ICT proficiency are must requirements. Thus, the implementation of the following recommendations is strongly advocated.

6. RECOMMENDATIONS

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

1. The Nigerian government should as a matter of policy make Senior Secondary School Certificate (SSCE) a mandatory minimum requirement for entry into apprenticeship training programmes for all trades.
2. There should be a national certification process to qualify technicians for a license to practice any trade in Nigeria, thus, eliminating quacks, especially, without literacy.
3. Evening education programmes for literacy and ICT proficiency should be organized for serving technicians who need to qualify to practice their trades.
4. Adequate and comprehensive evaluation processes free of bias should be put in place to ensure that the certificates issued to graduates from apprenticeship programmes are a true reflection of trainees' acquired technical skills including adequate literacy and ICT ability.
5. All training of technicians should give adequate emphasis on the 3 Rs (reading, writing and arithmetic) and Information and Communication Technologies (ICTs) to enable them fit into the advances in technology in their different trades.
6. Institutions should collaborate with governments and international donor agencies for sponsorship of free reading and ICT training for technicians in Cross River State, Nigeria.

REFERENCES

1. Auto Alliance (2016). Alliance of automobile manufacturers. *Advanced Technology.* Available at mautoalliance.org/auto.
2. Campbell, R. & Sechier, (1984). *Adult literacy skills required for training for the workplace.* Columbus, Ohio: The National Center for Research in Vocational Education.
3. Collins English Dictionary(Digital Edition) (2012). Technician. Available at http://dictionary.reference.com/browse/technician.
4. Davis, G. (2003). Why is reading important? Available at www.learn-to-read-prince-george.com.
5. DFID (2002). Improving livelihood for the poor: The role of literacy. Accessed 20t December, 2011 from www.dfid.gov.uk.
6. Economics on-line (2016). Types of unemployment. Available at http://www.economicsonline.co.uk/Managing_the_economy/Unemployment_types_and_causes.html.
7. Fenando, S. & King, A. E. (2013).Winners and losers: Literacy and enduring labour market inequality in historical perspective. *Revue Interventions economiques,* 47.
8. Henry, J. F. & Raymond, S. (1982). *Basic skills in the U. S. workforce*. New York: Center for Public Resources.
9. Hymowitz, C. (1981). Employers take over where school failed to teach the basics. *Wall Street Journal,* 22, 1.
10. iCould.com (2012). Getting practical in science, engineering or technology. Retrieved September, 26, 2012 from http//icould.com/article/what-is-a-technician.
11. *Markel Foundation (2003). The State of American Jobs. https://www.markle.org/*
12. Microsoft white Paper (2004). White Paper. Accessed 2nd March, 2004 from https://technet.microsoft.com/en-us/library/dd879261(v=bts.10).aspx
13. MyPlan.com LLL (2014). Electrical electronic engineering technicians' job requirements. Available at www.myplan.com/careers/electrical-engineering.
14. Myplan.com. (2015). Sound Engineering Technicians. Available at http://www.myplan.com/careers/sound-engineering-technicians/requirements-27-4014.00.html.
15. Padget, C. (2015). What is the meaning of apprentice. Available at www.ehow/facts5792784meaning-apprenticeship.
16. Search Job Careers (2015). Job offer: Senior service technicians in u.k.helme hempst. Available at www.amazon.co.uk.
17. The Dictionary (2015). Apprenticeship. Available at www.vocabulary.com/dictionary/apprenticeship.
18. The Michael Teaching (N.D). The artisan role/personality/Michael Teaching. Available at www.michaelteachings.com/artisan_role.htm.
19. Theil, K. K. (1985). *Job-related basic skills: Overview*. Columbus, Ohio: Eric Clearing House on Adult Career and Vocational Education.