Journal of Electronics, Computer Networking and Applied Mathematics
ISSN: 2799-1156
Vol: 03, No. 01, Dec 2022-Jan 2023
http://journal.hmjournals.com/index.php/JECNAM
DOI: https://doi.org/10.55529/jecnam.31.16.26

Tools and Equipment Utilization in Radio Television and Global System Mobile Servicing in Vocational Training Centres in Gombe State, Nigeria

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Received: 18 September 2022 **Accepted:** 01 December 2022 **Published:** 02 January 2023

Abstract: ***Determining the tools and equipment use in Radio Television and Global System Mobile Servicing at Vocational Centers in Gombe State, Nigeria, was the major goal of the study. The study used a descriptive survey research approach and was carried out in Gombe State, Nigeria. 55 respondents made up the study's population, including 42 teachers and 13 administrators (principals). There was no sampling because the population was of a manageable size, hence the entire population was employed for the study. A structured questionnaire called the "Tools and Equipment Utilization Questionnaire (TEUQ)" was the instrument used to gather the data. The instrument was evaluated by three professionals, and Cronbach Alpha yielded a reliability value of 0.72. The mean statistics were utilized to answer the research questions, and the null hypotheses were tested using a t-test with a 0.05 threshold of significance. Equipment in RTV and GSM servicing trade workshops at the Vocational Training Centers in Gombe State, including workstations, multimeters-digital, multimeters-analog, Booster meters, white lights, various phone panels, Tornados (soft wire boxes), television training modules, probe/logic pulsar, oscilloscopes, pattern generators, picture tube testers, isolation transformers, vector scopes, signal strength meters, black and white television, colored television, and TV. The study also showed that the tools used in the RTV and GSM servicing Trade workshop at the Vocational Training Centers in Gombe State, including (Set of flat Screwdrivers, (large, medium, and small), Asterics, a Set of Allen keys, Set of Star Screwdrivers, Set of Spanners and Soldering Iron) is sufficient. It was suggested that in order for the schools to succeed, the Gombe State Ministry of Education should supply them with the necessary training materials and apparatus. Additionally, the government has to provide all trainers with greater technical training so they can use new technology in the workshop.***

Keywords: ***Utilization, Tools, Equipment, Radio and Television, Global System Mobile Servicing, Vocational Training Centres.***

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1. INTRODUCTION

As one of Nigeria's 36 states, Gombe was established on October 1, 1996. Eleven local government areas make up the state (Dabara, Ankeli, Akinjogbin, Omotehinshe, & Omoyosi, 2017). With the intention of preparing young people for occupations and for successful participation in the workforce, the state government established eleven (11) vocational training facilities in 2003, one in each of the local government areas with the goal of preparing young people for certain occupations and for successful participation in the workforce. Thirteen (13) sets of craftsmen in the following vocational trades were graduated from the vocational training centers between 2003 and 2019: Agricultural Equipment and Implement, Animal Husbandry, Automobile and Mechanic Work, Bricklaying and Concrete, Electrical Installation and Maintenance Work, RTV and GSM Servicing, Fabrication and Welding, Fisheries, Basic Catering and Foot Services, Cosmetology, Leather Trade, Carpentry &Joinery and Computer Works. According to Industrial Training Fund (2014), in response to the high rate of unemployment, the Federal Government established the National Directorate of Employment (NDE) in 1986 with the goal of reducing unemployment and providing the unemployed with employable skills through Vocational Training Centers (VTCs).

The goal of the Mobile Communication and GSM module is to give the students the fundamental understanding and practical expertise needed to service mobile phones. After completing this module, the learner should be able to: Understand the fundamental concepts underlying mobile communication systems; be familiar with the fundamental concepts underlying mobile phones; Know the various mobile phone models, their features, and service providers in Nigeria, as well as the fundamental parts and uses of mobile phones (National Board for Technical Education [NBTE], 2007).

According to Bolaji and Adeoye (2022), if training methods, equipment, and devices are not adjusted to the needs of the technological and scientific age in which trainees must live and work, it will be impossible for trainees to develop the capacity, potentials, self-actualization, appreciation, and application of knowledge necessary to solve practical problems in this rapidly changing technological society. The primary goal of providing vocational training facilities and equipment is to help instructors teach trainees and encourage them to use the resources to learn (Olojuolawe & Adeoluwa, 2022). As a result, this would provide pupils the information, abilities, and experiences they need. Therefore, suitable equipment must be supplied so that students may use it to apply theoretical concepts to practical design for problem-solving and functional gadget usage (Umunadi, 2010).

According to Umar and Ma'aji (2010), the presence of suitable facilities improves student learning by enabling students to participate in demonstrations and continue to hone their abilities via practice. In order to teach students practical skills, equipment and tools are employed in the workshop. According to Colak, Memisoglu & Gercek (2020), the selection and effective use of learning facilities and resources can support the development of practical skills. These facilities include building for the workshops, tools and equipment for the

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workshops, and working and instructional materials. According to Ndomi (2009), offering sufficient workshop space will improve the graduates' acquisition of practical skills.
The minimal requirement for operating vocational education programs in this trade was defined by NBTE in order to guarantee quality in the graduates of the Vocational Certificate in Radio, TV, and GSM Servicing. The Board has listed a number of consumable items that must be supplied in adequate quantities to the various student groups (trainees) in order for the RTV and GSM Servicing Trade to run well (NBTE, 2007).

Tools are materials used to transfer knowledge in the field or in the workshop. Tools, according to Mtshali, Ramaligela and Makgato (2020), are the instruments or gadgets that are simple to use while performing particular procedures as well as instrumental and educational tasks. They are employed in skill demonstration for learning as well as skill assessment in particular fields. Lack of sufficient resources, including equipment, machinery, tools, and other instructional materials, is a key issue in vocational training (Sehsah, El-Gilany & Ibrahim, 2020). The upkeep of the machinery and equipment is also flawless. According to Umar and Ma'aji (2010), the presence of suitable facilities improves student learning by enabling students to participate in demonstrations and continue to hone their abilities via practice. Ndomi (2009) contends that the current status of technology education facilities in Nigeria is very inadequate; there are no planned methods to fix damaged tools and equipment or ways to buy new tools and equipment to highlight this growing scenario. This study examines the tools and equipment usage in Radio Television and Global System Mobile Servicing at Vocational Centers in Gombe State, Nigeria, in light of the backdrop mentioned above.

Statement of the Problem

It is disappointing that the skill level is still poor and unemployment is rampant in Nigeria despite the efforts of people, organizations, Local, State, and Federal Governments to create Vocational Training Centers (Industrial Training Fund, 2014). This was corroborated by the National Bureau of Statistics report from 2021, which showed that the country's unemployment rate rose from 8.39% in 2017 to 23.4% in 2020. The data progressively reflect diminishing usage of the nation's available human resources, which worries many analysts and economists. The ability of program graduates to apply their newly acquired skills in solving societal problems, being entrepreneurial, and being self-reliant is the program's primary concern, so it is important to note that enrolling in a vocational training program, graduating from it, and receiving a paper certificate are not the only things that matter. As such, the paper evaluated the tools and equipment available for teaching/learning in Radio Television and Global System Mobile Servicing in Vocational Centres in Gombe State, Nigeria.

Purpose of the Study

The main purpose of the study was to determine the tools and equipment utilization in Radio Television and Global System Mobile Servicing in Vocational Centres in Gombe State, Nigeria. The specific objectives of the study is to determine:

1. The availability of equipment for RTV and GSM servicing trade at the Vocational Training Centres in Gombe State
2. The adequacy of tools and equipment for RTV and GSM servicing at the Vocational Training Centres in Gombe State

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3. The level of utilization of training tools and equipment in RTV and GSM servicing Trade in Vocational Training Centres in Gombe State.

Research Questions

The following research questions were raised to guide the study:

1. What are the available of equipment in RTV and GSM servicing Trade workshop at the Vocational Training Centres in Gombe State?
2. How adequate are the tools and equipment in RTV and GSM servicing Trade workshop at the Vocational Training Centres in Gombe State?
3. What is the level of utilization of training tools and equipment in RTV and GSM servicing Trade in Vocational Training Centres in Gombe State?

Hypothesis

The following null hypothesis was tested at 0.05 level of significance.

1. There is no significant difference between the mean responses of Administrators and that of Trainers on level of utilization of training tools and equipment in RTV and GSM servicing Trade in Vocational Training Centres in Gombe State.

2. METHODOLOGY

This study adopted a descriptive survey research design and was conducted in Gombe State, Nigeria. Gombe State is located in the geopolitical zone of northeast Nigeria, between 10° 15° north latitude and 11° 10° east longitude. The study population was 55 respondents, including 42 instructors and 13 principals. Sampling was not performed due to manageable population size. Therefore, the entire population was used for the study. The tool used for data collection was a structured questionnaire developed by the researchers called the Tool and Equipment Use Questionnaire (TEUQ). The instrument was divided into two sections A and B. Section A was a checklist containing the list of tools and equipment used in VTCs and Section B was a questionnaire with 23 items. The responses on the questionnaire were structured on a 5-point Rating scale of Highly Utilized (HU), Utilized (U), Moderately Utilized (MU), Slightly Utilized (SU), and Not Utilized (NU). The questionnaire was validated by three experts from the Department of Electrical Technology Education, Modibbo Adama University Yola, Adamawa State, Nigeria. A reliability co-efficient of 0.72 was obtained for the instrument using Cronbach Alpha reliability method after a trial test of the instrument was conducted on 8 instructors and 3 administrators in Government Vocational Centre Yola, Adamawa State. Data for the study were collected by the researcher with the assistance of three research assistants. Mean simple percentage, mean and standard deviation statistics were used to answer the study's three research questions, and z-tests were used to test the study's null hypothesis only.

For the decision on each item, real limit of numbers was used as shown below:
Highly Utilized (HU) = 5.0-4.50;
Utilized (U) = 4.49–3.500.,
Moderately Utilized (MU) = 3.49–2.50,
Slightly Utilized (SU) = 2.49–1.50,

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Not Utilized (NU) = 1.49–0.00.
The null hypotheses were tested at 0.05 level of significance, and when the z-calculated is greater than the z-critical, the null hypothesis was accepted and if otherwise rejected.

3. RESULTS

Research Question 1. What are the available of tools and equipment in RTV and GSM servicing Trade workshop at the Vocational Training Centres in Gombe State?

Table1: Percentage Availability of Equipment in RTV and GSM servicing Trade at the VTCs in Gombe State

S/N	EQUIPMENT	NR	NAv	%NA	REMARK
1.	Work station(Whaler)	25	5	20	N
2.	Multi meter-Digital	25	9	36	N
3.	Multi meter-Analogue	25	9	36	N
4.	Booster/Meter	25	5	20	N
5.	White Light	25	5	20	N
6.	Assorted phone panels	25	5	20	N
7.	Magnifying glass	25	11	44	MA
8.	Computer (Desk or Laptop)	5	7	100	A
9.	Tonado(software box)	5	1	20	N
10.	Radio training module	5	2	40	MA
11.	Television training module	5	1	20	N
12.	Probe/Logic pulsar	25	3	12	N
13.	Transformer Training Module	5	1	20	N
14.	Oscilloscope	5	1	20	N
15.	Pattern generator	5	1	20	N
16.	Frequency converter	5	1	20	N
17.	Variable power supply	5	2	40	MA
18.	Picture tube Tester	5	1	20	N
19.	Isolation Transformers	25	3	12	N
20.	Vector scope	5	1	20	N
21.	Signal strength Meter	5	1	20	N
22.	Signal generator	5	1	20	N
23.	Black and White TV	5	1	20	N
24.	Coloured TV	5	1	20	N
25.	TV Training Module	5	1	20	N
26.	Radio sets	5	1	20	N
27.	Video cassette recorder	5	1	20	N
28.	Video CD Machine	5	1	20	N

Key: NR-Number Recommended. NAv- Number Available, %NA- Percentage of Number Available, A—Available, MA- Moderately Available

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Table 1's data analysis findings reveal that 24 out of 28 items' percentages of sufficiency range from 0% to 39%. (from 1-6,8-9,11-16,18-28). The 24 items are all between 0% and 39%. This shows that there is no equipment accessible in the RTV and GSM service trade workshops at the Vocational Training Centers in the Gombe state. 3 out of 28 items fall in the (40–49%) range (from 7, 10, 17). Each of the three items has a 40% to 49% score. This shows that there is a modest amount of equipment in the RTV and GSM service trade workshops at the Vocational Training Centers in Gombe state. However, just one item, No. 8 (computers, - desk or laptop), had a proportion that was 50% or higher (100%) and fell above 50%. This indicate that only 1 item is adequately available.

Research Question 2. How adequate are the tools and equipment in RTV and GSM servicing Trade workshop at the Vocational Training Centres in Gombe State?

Table 2: Percentage Adequacy of tools in RTV and GSM servicing Trade workshops at the Vocational Training Centres in Gombe State

S/N	TOOLS	NR	NA	%NA	RMK
1.	Set of flat Screwdrivers (large, medium and small)	5sets	3	60	A
2.	Asterics	5 sets	3	60	A
3.	Set of Allen key	5 sets	4	80	A
4.	Set of star screwdrivers	5 sets	5	100	A
5.	Set of spanners.	5 sets	3	60	A
6.	Soldering iron	25 Pcs	13	52	A
7.	Soldering iron stand	25 Pcs	10	40	MA
8.	Lead sucker	25 Pcs	9	36	N
9.	Long nose pliers	25 Pcs	10	40	MA
10.	Pair of pliers	25 Pcs	12	48	MA
11.	Side cutters	25 Pcs	11	44	MA

Key: NR-Number Recommended. NA- Number Adequate, %NA- Percentage of Number Adequate, A—Adequate, MA- Moderately Adequate and N – Not Adequate %NA = Percentage of Number Adequate= (NA/NR ×100), Pcs = Pieces

Table 2's data analysis findings demonstrate that, out of the 11 items, all of the 6 items (from 29 to 34) had availability percentages of 50% or above. These tools (a set of flat-head screwdrivers in sizes big, medium, and tiny), asteroids Set of flat and box spanners, set of spanners with an Allen key, and set of screwdrivers. Soldering iron) at the vocational training centers in Gombe State's RTV and GSM service Trade are sufficient; out of 11 items, 4 (from

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35,37-39) fall between (40-49%). This shows that 4 things (a soldering iron stand, a pair of pliers, a lead sucker long nose pliers, and side cutters) are only somewhat acceptable, while 1 item (36 out of 11) falls between 0 and 39%. This shows that 1 item (Lead sucker) is insufficient.

Research Question 3: What is the level of utilization of training tools and equipment in RTV and GSM servicing Trade in Vocational Training Centres in Gombe State?

Table 3. Mean and Standard Deviation on the level of Utilization of Training Tools and Equipment in RTV and GSM servicing Trade in VTCs

S/N	ITEMS Training tools and Equipment	ADM (N_A=13) $\bar{X}_A$	SD_A	TRA (N_T=42) $\bar{X}_T$	SD_T	$\bar{X}_G$	REMARKS
1.	Work station (Whaler)	2.08	0.56	2.79	0.69	2.67	HU
2.	Multi meter- Digital	1.85	0.45	3.24	0.82	2.95	HU
3.	Multi meter-Analogue	1.85	0.62	2.55	0.43	2.43	NU
4.	Booster/Meter	2.15	0.48	2.60	0.36	2.54	HU
5.	White Light	2.00	0.48	2.45	0.45	2.39	NU
6.	Assorted phone panels	2.23	0.46	2.64	0.48	2.59	HU
7.	Magnifying glass	2.00	0.42	3.00	0.79	2.81	HU
8.	Computer (Desk or Laptop)	2.00	0.70	2.95	0.79	2.78	HU
9.	Tonado (software box)	1.92	0.20	2.40	0.34	2.33	NU
10.	Radio training module	2.08	0.38	2.83	0.55	2.70	HU
11.	Television training module	1.92	0.20	2.86	0.56	2.68	HU
12.	Probe/Logic pulsar	1.92	0.16	2.67	0.40	2.53	HU
13.	Transformer training module	1.92	0.20	2.71	0.43	2.57	HU
14.	Oscilloscope	1.92	0.39	2.29	0.21	2.24	NU
15.	Pattern generator	2.15	0.33	2.81	0.49	2.70	HU
16.	Frequency converter	1.85	0.31	2.38	0.27	2.29	NU
17.	Variable power supply	2.08	0.56	2.88	0.55	2.74	HU
18.	Picture tube Tester	2.15	0.29	2.69	0.49	2.61	HU
19.	Isolation Transformers	1.85	0.35	2.64	0.45	2.49	NU
20.	Vector scope	1.77	0.38	2.38	0.31	2.28	NU
21.	Signal strength Meter	1.85	0.38	2.50	0.51	2.39	NU
22.	Signal generato	1.62	0.39	2.52	0.48	2.35	NU
23.	Black and white TV	1.92	0.39	3.02	0.90	2.81	HU
		1.96	**0.40**	**2.69**	**0.51**	**2.56**	**HU**

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Key: $\overline{X}_A$ =Mean of Administrator, SD_A= Standard Deviation of Administrator, $\overline{X}_T$ = Mean of Trainers, SD_T = Standard Deviation of Trainers, $\overline{X}_G$= Grand Mean, ADM= Administrators, TRA =Trainers. HU = Highly Utilized and NU= Not Utilized

Table 3's findings indicate that 15 of the 23 items (or 65.21%) come under the decision rule of being highly utilized, whereas 8 items (or 34.78%) (i.e., 56, 58, 62, 67, 69, 72, 73, and 74) fall under the decision rule of being little utilized. The 23 items' combined average usage, 2.56, likewise indicates significant utilization. In Vocational Training Centers in Gombe State, this grand mean shows that the training tools and equipment in the RTV and GSM servicing Trade are Highly Utilized, but 8 items (56,58,62,67,69,72,73 and 74) show that some of these training tools and equipment in the RTV and GSM servicing Trade are not Utilized.

Hypothesis 1

There is no significant difference between the mean responses of Administrators and Trainers on the utilization of training tools and equipment in RTV and GSM servicing Trade at Vocational Training Centres in Gombe State.

Table 4: Summary of z-test Analysis of Difference on the Utilization of Training Tools and Equipment in RTV and GSM servicing Trade at VTCs in Gombe State

Respondent Category	N	Mean	SD	z-cal	z-cri	Remark
Administrators	13	1.96	0.02			
				12.42	1.96	Rejected
Trainers	42	2.69	0.06			

From Table 4, the calculated z-test value of -12.42 is less than the critical value of (1.96) at 0.05 level of significance. The null hypothesis was accepted because it is within the normal distribution curve. This therefore means that the mean ratings of administrators and trainers with regard to the utilization of training tools and equipment in RTV and GSM servicing Trade at Vocational Training Centres in Gombe State does not differ significantly.

4. FINDINGS AND DISCUSSION

The results of research question 1 showed that equipment used in RTV and GSM servicing trade workshops at the Vocational Training Centers in Gombe State, including workstations, multimeters-digital, multimeters-analogue, Booster meters, white lights, various phone panels, tonados (soft wire boxes), television training modules, probe/logic pulsar, oscilloscopes, pattern generators, picture tube testers, isolation transformers, vector scopes, signal strength meters, and

Magnifying glass, radio training module, and variable power supply are examples of equipment, however, that is only fairly adequate. Only computers, either desktop or laptop, were sufficient.

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Table 1 shows this, as can be seen. In concur with the findings, Adebesi and Oni (2012), there wasn't enough training equipment available for the NDE vocational training program. Contrary to this study, Research and Curriculum Development (R&CD) and Industrial Training Fund (ITF) (2014) found that the equipment in the vocational training program was highly accessible. In line with this findings, Ogbuanya, Akintonde, and Bakare (2017) discovered that the vocational training center's electrical and electronics departments lacked suitable training facilities and equipment. The results showed that just two of the twenty-eight things mentioned were available and sufficiently supplied in Osun state, while the remaining twenty-six items were insufficient. This study concurred with Yaduma and Moses (2005) who came to the conclusion that the state of Bauchi lacks training facilities for technical colleges and vocational training institutions. It also agreed with the argument made by Makinde and Bamiro (2022) that vocational and technical colleges had a limited supply of tools and equipment.

The results of research question 2 showed that the tools used in the RTV and GSM servicing Trade workshop at the Vocational Training Centers in Gombe State are sufficient. These tools include a set of flat screwdrivers (large, medium, and small), asterics, a set of Allen keys, a set of star screwdrivers, a set of spanners, and a soldering iron. However, somewhat suitable equipment include a soldering iron stand, long nose pliers, and side cutters. Only the lead sucker wasn't good enough. In contrast to these findings, Okwelle and Kilechukwu (2022) discovered that the workshop at the vocational training center lacked adequate amenities. In line with this study, Research and Curriculum Development (R&CD) and Industrial Training Fund (ITF) (2014) found that the vocational training program had a high degree of equipment and facility availability. The results support the assertion made by Blayi, Skosana and Khoza (2022), who claimed that the quality of education is declining not only in terms of the curriculum but also in terms of the tools, equipment, machinery, and other facilities that are not readily available. According to Olojuolawe and Adeoluwa (2022), the absence of tools, equipment, machinery, or facilities renders teaching inefficient, tiresome, and time-consuming. This study disagrees with Medugu, Abdulkarim, and Bashir's (2017) assertion that there aren't enough training facilities or that those that are there aren't appropriate for the NDE in Adamawa State.

The results of research question number three showed that while most of the training tools and equipment in the RTV and GSM servicing trade workshops at the vocational training centers in Gombe State are heavily used by the trainers, the trainers only use a small percentage of the oscilloscope, frequency converter, isolator transformers, vector scope, multi-meter analogue, white light, tonado (software box), oscilloscope, oscilloscope, oscilloscope, and other training tools, such as the In line with this research, Okwori, Adamu, and Odo (2013) reported that all hand tools were utilized by woodwork graduates of technical institutions and vocational training centers in Niger State. This result supported Nwokedi, et al. (2022) that the Nigerian educational system had failed to instill a sense of independence in its pupils since there was no equipment in the facilities and, when it was, it was not being used. The results support Amadi, Juliet and Cornelius (2022) assertion that educational facilities in Nigerian universities are not being fully used. This is also in line with Ugwoke's (2011) assertion that Nigerian institutions did not make full use of its tools, equipment, and other facilities.

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5. CONCLUSION

Based on the findings of this study the vocational training centres in Gombe state have inadequate availability of tools and equipment and the trainers in their capacity try to utilized the available tools and equipment to teach their trainees RTV and GSM servicing Trade at Vocational Training Centres in Gombe State in other to achieve the set objectives of the programme.

Recommendations

1. The Ministry of education in Gombe State should provide the schools with adequate training tools and equipment so that the school will achieved it goals
2. Government should provide more training to all trainers on the technical skills they required to utilize modern equipment in the workshop.
3. Private organizations should be encouraging by Government to contribute/ intervene by donating training tools and equipment to the school workshops

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