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ABSTRACT

This study examines approaches for promoting innovations, industrial and infrastructural development through global partnership in technical and vocational education training in north-central, Nigeria. Specific objectives of the study are to demand-driven technical and vocational education training system as a skills development in higher-level colleges, the relevance of technical and vocational education training system, industry-education cooperation integrated into the technical and vocational education training system and determined technical and vocational education training for teacher skills development in North-central, Nigeria. Four research questions and null hypotheses were raised and tested at 0.05 level of significance. The design of the study was a survey research design. The population of the study was 460 respondents. The sample size of the study was 307 respondents. Twenty items of approaches for promotion innovations, industrial and infrastructural development questionnaire (APIIIDQ) was the instrument for data collection. The instrument was validated by four experts. The reliability of the instrument was done by giving out forty copies to the respondents.

Kyewords: innovations, industrial and infrastructural, global partnership, technical and vocational education training.

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Approaches for Promoting Innovations, Industrial and Infrastructural Development Through Global Partnership in Technical and Vocational Education Training in North- Central, Nigeria

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ABSTRACT

This study examines approaches for promoting innovations, industrial and infrastructural development through global partnership in technical and vocational education training in north-central, Nigeria. Specific objectives of the study are to demand-driven technical and vocational education training system as a skills development in higher-level colleges, the relevance of technical and vocational education training system, industry-education cooperation integrated into the technical and vocational education training system and determined technical and vocational education training for teacher skills development in North-central, Nigeria. Four research questions and null hypotheses were raised and tested at 0.05 level of significance. The design of the study was a survey research design. The population of the study was 460 respondents. The sample size of the study was 307 respondents. Twenty items of approaches for promotion innovations, industrial and infrastructural development questionnaire (APIIIDQ) was the instrument for data collection. The instrument was validated by four experts. The reliability of the instrument was done by giving out forty copies to the respondents. The instrument was administered to twenty teachers of Federal and Government Technical Colleges and ten Lecturers of the College of Education in the Department of

Technical and Vocational Education at the College of Education Jalingo, Taraba State and retrieved; the data collected was subjected to reliability analysis using Cronbach (α) technique of estimating the internal consistency of the instrument. The coefficient of 0.86 was obtained. The data collected analyzed using both descriptive statistics of mean and standard deviation and t-test was used for testing hypotheses. The findings revealed that all the demand-driven technical and vocational education training system as a skills development in higher-level colleges, the relevance of technical and vocational education training system, industry-education cooperation integrated into the technical and vocational education training system, technical and vocational education training for teacher skills development. The null hypothesis of no significant difference tested at 0.05 level was not rejected when the P-value was greater or equal to 0.05 while rejected when the P-value was less than 0.05 level of significance. Based on the findings, the following recommendations were made; Technical and vocational education training (TVET) private sector partnership should be encouraged, so as to ensure effective development training programme important for the acquisition of new technologies by TVET students towards causing a home-grown industrial revolution like other developed countries. The sharing of tools and equipment between TVET institutions and industries will

help the students keep abreast of the changes taking place in the world of work. There should be period staff and student exchange programme between TVET institutions and the workplace to equip students and staff with practical skills while the workplace benefit from the theoretical knowledge of the staff and students of TVET. TVET private sector partnerships should be encouraged in order to address the rising rate and poverty among youths in Africa. There should be collaboration between TVET institutions and the workplace during curriculum development to address the needs of the industries, north-central, Nigeria.

Keywords: innovations, industrial and infrastructural, global partnership, technical and vocational education training.

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I. INTRODUCTION

Over the last two decades, Sub-Saharan African countries experienced significant growth because of the rapid transformations and foreign investments, which helped, boost the demand for greater technological skills (Oviawe, 2018). The author conceded that there remains a large challenge as countries continue to observe a large gap in the demand and supply of technical and vocational skills. United Nations Education, Scientific and Cultural Organisation (UNESCO, 2016) revealed that industries often identify the shortage of the adequately educated workforce as a major constraint to further growth and development. However, the technical and vocational education training (TVET) if adopted in the educational system at all levels will reduce the constraint of societal development and growth of the developing countries (Agbulu & Olaintan, 2002). In the context of this study, TVET is the awkward education sector, integrating components of general education, task-based learning and worlds of work and

school where many countries are unable to implement of the curriculum for effective development of skills in individuals to be useful to themselves as well as workforce in industries. In this study, TVET is a system that creates a job for sustainable living and provides training to individuals to become self-reliance to catch up with the dynamic and ever-changing living standard in a fast-growing technological world. According to the European Commission in Ekele (2019), technical and vocational education training in African countries has been underinvested and faced considerable challenges, with little enrolment rates, low quality and relevance across most countries. It further explains that as part of the partnership for skills in applied science, engineering and technology (PASET) in the developing countries aim to revitalize the TVET systems with support from the World Bank. Oviawe (2018) states that TVET education professionals from Sub-Saharan African countries and the World Bank participated in the second Africa World Bank education partnership forum on TVET, financed by the developed countries. The author further explains that during the forum, participants learned first-hand of the conducive policy environment as designed by the government, the methods and support designed by local government to cultivate interest around TVET to build the necessary skills and practices that help answer real, tangible market demands.

In view of United Nations Education, Scientific and Cultural Organisation (UNESCO, 2019), explain demand-driven TVET system as skills development and the higher levels colleges is an important component of the massive developing countries (Nigeria) educational system and will have a profound impact on enhancing national employment and competitiveness. Yusuf and Soyemi (2012) viewed that over the last two decades, the world government has set an overall vision for a modern TVET system that is on one handled by the government but works closely with the productive sector and responds directly to the changing competence needs and

qualification requirements in the labour market. The authors maintain that the integration of top-down and bottom-up approaches in conjunction with the growing economy has produced remarkable results in the TVET sector in developed countries. National Board for Technical Education (2013) explains that programmes, which are less relevant and with lower employment rates, are either closed or modified. Thus, new programmes, which are highly relevant to local industries and have high employment or self-employment rates should be developed with industry involvement in the institutions that integrated TVET programmes. Ochu (2006) posits that TVET institutions should be motivated to work with industries and a multitude of school industry collaboration mechanisms have well embedded in the delivery of TVET. Okoye and Chijioke (2013) contended TVET institutions are increasingly using technology in the delivery of pieces of training to meet the demand for skilled-trained personnel in information communication technology (ICT), capable labour force needed by advanced manufacturing technologies industries. Forster (2016) states that graduate from vocational colleges could find jobs, including self-employment, soon after graduation due to favourable conditions created with rapid industrialisation and urbanisation, which gives quality and relevance services in the world market. According to Oviawe, Uwameiye and Uddin (2017), Quality and relevance in technical and vocational education and training, which help many skills development systems, emphasise the training part in TVET and skills development that are prevalent in other East Asian countries integrate education and training thus, promoting both general foundational skills as well as specific technical and vocational education, at secondary and tertiary levels. Oviawe et.al (2017) asserts that for technical and practical skills, there is a system of occupational standards, assessment and certification. The authors further explain that training programs and curricula are developed based on the occupational standards that

consider specific requirements of a labour market need. Companies are actively involved both in setting standards and in designing curricula. International Labour Office (2018) ensures that vocational colleges produce competent trainees with the necessary skills, knowledge and attitudes relevant to the market. It is of particular significance and the fact that the curricula emphasise college-based practical training as well as practical training in an industry setting, integrating work and learning together. National Board for Technical Education (2013) contended that TVET colleges have a good amount of autonomy in developing institute specific curricular to meet the overall occupational standards set by the Ministry of Human Resources and Social Security and the education standards in the Ministry of Education. Akhuemonkhan and Raimi (2013) state that the Ministry of Education conducts compliance evaluations on vocational colleges to ensure quality in the industry education cooperation.

According to Abubakar (2010), industry-education cooperation in China, there is strong cooperation between vocational colleges and enterprises. The author maintains that TVET institutions are motivated to develop their own brand and produce employable graduates. Adeniyi (2012) views that companies cooperate with vocational colleges in planning, course development and teaching, allowing students to acquire practical training and industry exposure (apprenticeship) and evaluation of the programmes. While local governments provide incentives to companies to encourage such cooperation, the companies themselves feel they have a stake in producing competent and qualified personnel. Competition for skilled labour can be quite fierce in China. Lawlor (2017) states that many companies directly entrust local TVET colleges to develop specific training programmes and order a certain number of graduates with specifications in the industrial training programme. The author explains that small and medium-sized enterprises, in particular, recognise the value of the TVET

faculty and the students provide solutions to the technical challenges the companies have, hence are enthusiastic in collaboration. In the context of this study technical vocational education and technology in high schools, also known as industrial schools have been extremely useful to educate a large portion of students in some very valuable skills needed to pursue specific units of work in fields like construction, mechanics and agriculture among others. This therefore, required professional knowledge and development of skilled teachers for effective delivery of the knowledge, skills for a high level of efficacy, not just in producing knowledgeable high students, but also by making them engaged throughout their course as to become self-reliance.

According to Bashir (2015), TVET teacher development, in Nigeria like many other developing countries, most TVET teachers have only academic qualifications. The author suggests that the government could now incentivise the teachers to also get skills qualifications themselves, so that all TVET teachers would be double qualified with both academic and skills qualifications. Oguntola (2011) calls for the on-going professional development of teachers in vocational schools that are required to undergo in-service of practical training in companies for their career progression and promotion. The author further explains that practical training at the enterprises equips them with the ability to work with the latest technology and skills for evolving industry needs. Colleges also recruit company experts as part-time teachers for practical courses. However, should teachers adopt student-centered pedagogy, facilitated by information communication technology (ICT) thus, encouraging students to actively engage in and take ownership of their learning experiences to perfect in practical skills in their field of endeavour? Pylvas (2018) emphasis that relentless focus on teaching and instructional excellence also manifests itself at the TVET level. Despite the differences in an economic and

industrial context, there are some lessons, which TVET institutions could draw from developed countries. The author mentioned the lessons as follows; first, the need to create a national TVET enabling environment, including conducive policy framework and quality assurance mechanisms for TVET to effectively contribute to their economic and industrial transformation. Second, TVET institutions, particularly the flagship institutes, need to institutionalise their linkages with industries; to be forward-looking and adjust their programmes to respond to the changing skill needs; use technology in the delivery of training; train their teachers to upgrade their technical knowledge and practical skills and to promote student-centered teaching approach. Thus, it creates worry in the researchers' minds carry-out a study on the approaches for promoting innovations industrial and infrastructural development through global partnership in technical and vocational education training in north-central, Nigeria.

1.1. *Statement of the Problem*

In spite of this seeming advantage, technical education has always been restrained to some few numbers of institutions. In addition, while there are many reasons for this, as the lower demand for this kind of education than for traditional schooling, there is the issue of costs, which make operating these schools far more expensive than others do. However, as the world becomes technology-wise; computers are also enabling these schools to venture into fields that were inaccessible before. Hence, most mid-range laptops nowadays can now run advanced modelling software that allows students to gain experience designing everything from homes and buildings to cars and even hi-tech components in a professional way. In other fields like video and audio editing, schools can cheaply create labs where students can learn using virtually the same tools used in the professional world. Despite, technical and vocational education training is the pivot of industrial and infrastructural development of the developing country like ours-Nigeria- it has

been under-emphasised. It is on this note that the researchers deemed it necessary to carry out a study on approaches for promoting innovation, industrial and infrastructural development through global partnership in technical and vocational education training in North-Central, Nigeria.

1.2 Purpose of the Study

The general purpose of the study is the approaches for promoting innovation, industrial and infrastructural development through global partnership in technical and vocational education training in North-Central, Nigeria. Specifically, the study sought to determine;

1. Demand-driven technical and vocational education training system as a skills development in higher-level colleges
2. The relevance of technical and vocational education training system
3. Industry-education cooperation integrated into the technical and vocational education training system
4. Technical and vocational education training for teacher skills development

1.3 Research Questions

The following research questions were raised to guide this study:

1. What is the demand-driven technical and vocational education training system as a skills development programme?
2. What is the relevance of technical vocational education and training programme?
3. What is the level of industry-education cooperation integrated into the technical and vocational education training programme?
4. What is the extent of technical and vocational education training for the teacher skills development programme?

1.3 Research Hypotheses

1. There is no significant difference between the mean ratings of the TVET teachers of technical colleges and lecturers of public colleges of education on demand-driven TVET as a skills development programme.
2. There is no significant difference between the mean ratings of the TVET teachers of technical colleges and lecturers of public colleges of education on the relevance of TVET programme
3. There is no significant difference between the mean ratings of the TVET teachers of technical colleges and lecturers of public colleges of education on the industry-education cooperation integrated into TVET programme
4. There is no significant difference between the mean ratings of the TVET teachers of technical colleges and lecturers of public colleges of education on the TVET for teacher skills development programme.³

II. METHODOLOGY

This study adopts survey design technique. The study was carried out in North-central, Nigeria using teachers and lecturers of the Department of Technical And Vocational Education Training of public technical colleges and colleges of education located in the study area. The population of the study was 460 respondents consisted of 275 teachers of technical colleges and 185 lecturers respectively. This study utilised purposive sampling to select the one technical college and one college of education from the North-central, Nigeria. The teachers from the selected Technical Colleges were 215, while lecturers of Colleges of Education in the Department of Technical And Vocational Education were 103. Thus, the sample size of the study was 307 respondents. Twenty items of Approaches for Promotion Innovations, Industrial and Infrastructural Development Questionnaire (APIIIDQ) was the instrument for data collection with a four-point rating scale with the response options of Strongly Agree (SA), Agree (A), Disagree (D) and Strongly Disagree (SD) Respectively. The researchers through the

literature review developed the instrument. The instrument was face validated by four experts; one in Department of Science Education, one in the Department of Measurement and Evaluation and two in the Department of Agricultural Education, all of the University of Agriculture, Makurdi. Forty copies of the instrument were administered to twenty teachers of Federal and Government Technical Colleges and ten Lecturers of the College of Education in the Department of Agricultural Education at the College of Education Jalingo, Taraba State and retrieved. The collected data was analysed using the split-half technique to determine the stability and internal consistency of the instrument. The coefficient of 0.86 was obtained. This has shown that there is an internal consistency of the instrument and valid for use. Therefore, the instrument administered to 103 respondents and the data collected were analysed using weighted means to answer research questions using 2.50 as the benchmark, whereas, the item with a mean of 2.50 or above was considered agreed, while item with less than 2.50 was considered disagreed.

The statistical tool used for testing null hypotheses at 0.05 level of significance was the t-test. The null hypothesis was not rejected when the t-calculated was greater or equal to the P-value at 0.05 level of significance, while the null hypothesis was rejected when the t-calculated was less than the p-value at 0.05 level of significance.

III. RESULTS

The results of the study were obtained from the research questions answered and the hypotheses of the study were tested.

Research Question 1: what is the demand-driven technical and vocational education training system as a skills development programme?

Hypothesis 1: There is no significant difference between the mean ratings of the TVET teachers of technical colleges and lecturers of public colleges of education on demand-driven TVET as a skills development programme

Table 1: Mean and t-test Analyses of the Responses of the Teachers and Lecturers on demand-driven for technical and vocational education training system as a skills development programme

S/N	Item Statement	\bar{X}_1	SD ₁	\bar{X}_2	SD ₂	t-cal	Remarks	Ho
1	TVET system is a skills development programme in the higher levels colleges	3.30	1.00	3.00	1.00	0.97	Agreed	NR
2	It is a component to enhance skills in developing countries educational system	2.49	1.50	2.50	1.51	1.10	Agreed	NR
3	It will have a profound impact on enhancing national labour force competitiveness	2.49	0.50	2.50	0.50	0.95	Agreed	NR
4	The system needs qualification requirements in the labour market	2.50	0.50	2.50	0.50	0.80	Agreed	NR
5	Integration of top-down and bottom-up approaches in conjunction with the growing economy has produced remarkable results	2.51	1.50	2.50	1.51	0.99	Agreed	NR
6	TVET institutions should be motivated to work with industries as collaboration mechanisms which have well embedded in the delivery of the system	2.50	0.51	2.60	0.52	0.87	Agreed	NR
7	TVET programme soon after graduation will create rapid industrialisation and urbanisation to give quality services in the world market	2.47	0.60	2.53	0.32	0.76	Agreed	NR

Key: \bar{X} = Mean; SD=Standard Deviation; NR=Not Rejected; R=Rejected; t-cal=Calculated t-value

Table 1 revealed that all the seven items had their mean values ranged from 2.47 to 3.30, which was above the benchmark of 2.50. Thus, it means that respondents agreed on the seven items as demand-driven technical and vocational education training system as a skills development programme of students in Technical Colleges and Colleges of Education in the study area. The standard deviation of the responses of the respondents on the seven items ranged from 0.32 to 1.51, indicating that respondents were not far in their opinions of responses from one another. The data on the hypothesis in table 1 has shown that all the seven items had the p-value ranged from 0.76 to 1.10, which was greater than the alpha value of 0.05 level of significance. This indicated that there was no significant difference in the mean

rating of teachers of Technical Colleges and lecturers of public Colleges of Education on the demand-driven technical and vocational education training system as a skills development programme in North-central Nigeria. Therefore, the null hypothesis of no significant difference between the two groups was not rejected on the seven items.

Research Question 2: what is the relevance of technical vocational education and training programme?

Hypothesis 2: There is no significant difference between the mean ratings of the TVET teachers of technical colleges and lecturers of public colleges of education on the relevance of TVET programme

Table 2: Mean and t-test Analyses of the Responses of the Teachers and Lecturers on the Relevance of Technical and Vocational Education Training System

S/N	Item Statement	\bar{X}_1	SD ₁	\bar{X}_2	SD ₂	t-cal	Remarks	Ho
1	TVET help learners in the development of many skills	2.59	1.35	2.70	1.50	0.36	Agreed	NR
2	TVET promote both general foundational skills development at secondary and tertiary levels	2.97	0.51	2.64	0.72	0.80	Agreed	NR
3	Technical and practical skills are a system of occupational standards, assessment and certification	2.62	0.56	3.50	0.55	0.69	Agreed	NR
4	TVET curricula are developed based on the occupational standards with specific requirements of labour market needs.	2.70	1.53	2.50	1.76	0.86	Agreed	NR
5	TVET curricula designing actively involved companies in setting standards	2.80	1.48	2.60	0.75	0.57	Agreed	NR
6	TVET produces competent trainees with the necessary skills, knowledge and attitudes relevant to the market needs.	4.23	0.86	3.50	0.52	0.69	Agreed	NR
7	The curricula emphasise college-based practical training in technical colleges	3.49	0.56	2.50	0.50	0.94	Agreed	NR
8	The curricula considered practical training in an industry setting, integrating work and learning together	2.93	1.48	2.51	1.32	0.36	Agreed	NR
9	TVET is programme-based have a comparative advantage and labour market needs over other programmes	3.00	1.04	2.99	1.22	0.65	Agreed	NR
10	Ministry of Human Resources and Social Security in conjecture with the Ministry of Education has the sole right of designing the curricula of TVET programme	3.00	1.00	2.93	1.02	0.79	Agreed	NR

Key: \bar{X} = Mean; SD=Standard Deviation; NR=Not Rejected; R=Rejected; t-cal=Calculated t-value

Table 2 has shown that all the ten items had their mean values ranged from 4.47 to 2.50, which was above the benchmark of 2.50. This means that respondents agreed on the ten items as the relevance of technical vocational education and training programme in Technical Colleges and Colleges of Education in the study area. The standard deviation of the responses of the respondents on the ten items ranged from 0.36 to 1.53, indicating that respondents were not far in their opinions of responses from one another. The data on the hypothesis in table 2 has shown that all the ten items had the p-value ranged from 0.36 to 0.94, which was greater than the alpha value of 0.05 level of significance. This indicated that there was no significant difference in the mean rating of teachers of Technical Colleges and lecturers of public

Colleges of Education on the relevance of technical vocational education and training programme in North-central Nigeria. Therefore, the null hypothesis of no significant difference between the two groups was not rejected on the ten items.

Research Question 3: What is the level of industry-education cooperation integrated into the technical and vocational education training programme?

Hypothesis 3: There is no significant difference between the mean ratings of the TVET teachers of technical colleges and lecturers of public colleges of education on the industry-education cooperation integrated into TVET programme

Table 3: Mean and t-test Analyses of the Responses of the Teachers and Lecturers on the Industry-education cooperation integrated into the technical and vocational education training system

S/N	Item Statement	\bar{X}_1	SD ₁	\bar{X}_2	SD ₂	t-cal	Remarks	Ho
1	TVET create enabling environment, as conducive policy framework and quality assurance mechanisms	3.70	0.70	3.50	0.30	0.87	Agreed	NR
2	TVET effectively contribute to the economic and industrial transformation	3.49	0.45	3.40	0.55	0.96	Agreed	NR
3	TVET institutions, especially the flagship institutes, need to institutionalise her linkages with industries	3.50	0.51	3.60	0.56	0.83	Agreed	NR
4	TVET institutes adjust her programmes to respond to the changing skill needs	3.00	0.62	3.00	1.00	0.77	Agreed	NR
5	Vocational-technical//industrial high schools educate students in skills needed in technical fields like construction, mechanics and agriculture	2.77	0.51	2.90	1.58	0.69	Agreed	NR
6	Universities and institutes of technology such as polytechnic institutes, often provide vocational education	3.40	0.52	2.59	1.48	0.36	Agreed	NR
7	The high level of efficacy for producing knowledgeable, high skilled students in keeping them engaged throughout their course of study	2.60	1.06	2.62	1.07	0.67	Agreed	NR
8	Companies nor higher education institutions expect technical high	2.80	0.50		0.55	0.76	Agreed	NR

	school students to master computer tools/to be advanced programmers					2.61			
9	These acts focused on basic support, providing funds for teacher training, encouraging vocational education via extensive funds-matching requirements	2.97	0.60	2.50	0.25		0.86	Agreed	NR

Key: \bar{X} = Mean; SD = Standard Deviation; NR = Not Rejected; R = Rejected; t-cal = Calculated t-value

Table 3 has shown that all the ten items had their mean values ranged from 3.70 to 2.50, which was above the benchmark of 2.50. This means that respondents agreed on the nine items on the level of industry-education cooperation should be integrated into technical and vocational education training programme. The standard deviation of the responses of the respondents on the ten items ranged from 0.25 to 1.58, indicating that respondents were not far in their opinions of responses from one another. The data on the hypothesis in table 3 has shown that all the ten items had the p-value ranged from 0.36 to 0.96, which was greater than the alpha value of 0.05 level of significance. This indicated that there was no significant difference in the mean rating of teachers of Technical Colleges and lecturers of public Colleges of

Education on the level of industry-education cooperation integrated into a technical and vocational education training programme in North-central Nigeria. Therefore, the null hypothesis of no significant difference between the two groups was not rejected on the nine items.

Research Question 4: What is the extent of technical and vocational education training for the teacher skills development programme?

Hypothesis 4: There is no significant difference between the mean ratings of the TVET teachers of technical colleges and lecturers of public colleges of education on the TVET for teacher skills development programme

Table 4: Mean and t-test Analyses of the Responses of the Teachers and Lecturers on the Technical and Vocational Education Training for teacher skills development

S/ N	Item Statement	\bar{X}_1	SD ₁	\bar{X}_2	SD ₂	t-cal	Remarks	H ₀
1	TVET use technology in the delivery of training	2.59	0.43	3.00	1.00	0.86	Agreed	NR
2	TVET programme train their teachers to upgrade their technical knowledge and practical skills	3.49	0.51	3.50	0.42	0.76	Agreed	NR
3	TVET programme promotes a student-centred teaching approach	3.50	0.50	3.50	0.50	0.98	Agreed	NR
4	TVET programme enables teachers to create simulated environments where students can not only experience different jobs	4.00	0.42	4.00	0.64	0.56	Agreed	NR
5	Teachers required training and experience for a numbers of years in TVET courses prior to being employed as a teacher	3.00	0.35	3.00	0.44	0.54	Agreed	NR

6	Teachers of TVET programme need focus on high level of efficacy, producing knowledgeable, high skilled students and keeping them engaged throughout their course.	2.57	0.43	2.67	0.34	0.90	Agreed	NR
7	TVET teachers must also be prepared diverse student clientele in a manner that results in higher levels of academic and technical proficiency	4.00	1.00	3.50	0.50	0.34	Agreed	NR
8	TVET teachers should be fund for pre-service and in-service educational programmes for effective deliverance their lessons	3.47	0..50	3.50	0.52	0.68	Agreed	NR
9	The shortage of certified and/or licensed TVET teachers has resulted in the hiring of people from business and industry to fill teacher vacancies	2.50	0.50	2.60	0.50	0.90	Agreed	NR
10	TVET teachers are expected to meet their students' needs for career development, technical and academic achievement, and technology skills	3.00	1.00	3.00	1.05	0.97	Agreed	NR
11	TVET teachers participate in professional development using a variety of techniques.	3.05	1.00	3.00	1.04	0.56	Agreed	NR
12	Expectations and demands required of all teachers, are also faced with the need to refine their pedagogical skills	3.00	0.45	3.00	0.32	0.54	Agreed	NR
13	Expectations and demands required of all teachers, are also faced with the need to refine their pedagogical skills	2.50	0.50	4.50	0.25	0.53	Agreed	NR

Key: \bar{X} = Mean; SD=Standard Deviation; NR=Not Rejected; R=Rejected; t-cal=Calculated t-value

Table 4 revealed that all the ten items had their mean values ranged from 2.50 to 4.00, which was above the benchmark of 2.50. This means that respondents agreed on the thirteen items on the extent of technical and vocational education training for the teacher skills development programme in the study area. The standard deviation of the responses of the respondents on the thirteen items ranged from 0.25 to 1.05, indicating that respondents were not far in their opinions of responses from one another. The data on the hypothesis in table 3 has shown that all the ten items had the p-value ranged from 0.34 to 0.98, which was greater than the alpha value of 0.05 level of significance. This

indicated that there was no significant difference in the mean rating of teachers of Technical Colleges and lecturers of public Colleges of Education on the extent of technical and vocational education training for the teacher skills development programme. Therefore, the null hypothesis of no significant difference between the two groups was not rejected on the thirteen items.

V. RESULTS AND DISCUSSION

The result in table 1 showed that respondents in the study area have agreed that all ten items are the demand-driven technical and vocational

education training system as skills development in higher-level colleges since the responses agreed with all items. The result also indicated that there was no statistically significant difference between the mean ratings. Therefore, there is a need for promoting innovation, industrial and infrastructural development through global partnership in technical and vocational education training. This is in agreement with the United Nations Education, Scientific and Cultural Organisation (UNESCO, 2016) that industries often identify the shortage of an adequately educated workforce as a major constraint to further growth and development. It further explains that the technical and vocational education training (TVET) if adopted in the educational system at all levels will reduce the constraint of societal growth and development of the developing countries.

The findings in table 2 showed that respondents have agreed on the relevance of technical and vocational education training system in North-central, Nigeria. Hence, the responses agreed with all the mean values, which are above the benchmark of 2.50. The result also revealed that there was no significant difference in the mean ratings of the responses of the two groups on the ten items, which calculated the t-value is greater than the alpha value of 0.05 level of significance. For the above reason, the null hypotheses were not rejected for the ten items. This has shown that the respondents have agreed on the relevance of the technical and vocational education training system. The above statement supported by Oviawe, Uwameiye and Uddin (2017) quality and relevance in technical and vocational education and training, which help many skills development systems, emphasis the training part in TVET and skills development that are prevalent in other East Asian countries integrate education and training therefore, promoting both general foundational skills as well as specific technical and vocational education, at secondary and tertiary levels.

Table 3 revealed the nine items on the industry-education cooperation integrated into

the technical and vocational education training system. This means that teachers of technical colleges and lecturers agreed that all the nine items on industry-education cooperation integrated into technical and vocational education training system are needed. The responses agreed with all the mean values are above the benchmark of 2.50. The results also showed that there was no significant difference in the mean ratings of the responses of the two groups on the nine items, which calculated t-values are greater than the alpha value of 0.05 level of significance. This affirms that the null hypothesis was not rejected for the nine items. This has shown that the respondents have agreed on industry-education cooperation integrated into the technical and vocational education training system. The findings have agreed with Adeniyi (2012) view that companies cooperate with vocational colleges in planning, course development and teaching, allowing students to acquire practical training and industry exposure (apprenticeship) and evaluation of the programme. While local governments provide incentives to companies to encourage such cooperation. Supported by Lawlor (2017) that many companies directly entrust local TVET colleges to develop specific training programmes and order a certain number of graduates with specifications. The author explains that small and medium-sized enterprises, in particular, recognise the value of the TVET faculty and the students provide solutions to the technical challenges the companies have, hence are enthusiastic in collaboration.

Table 4 revealed thirteen items on technical and vocational education training for teacher skills development. This means that the respondents have agreed with all thirteen items on technical and vocational education training for the teacher skills development system. The responses agreed with all the mean values are above the benchmark of 2.50. The results also have shown that there was no significant difference in the mean ratings of the responses of the two groups

on the thirteen items, which calculated t-values are greater than the alpha value of 0.05 level of significance. The findings have agreed with Bashir (2015), TVET Teacher development, in Nigeria like many other developing countries, most TVET teachers have only academic qualifications. The author suggests that the government could now incentivise the teachers to also get skills qualifications themselves, so that all TVET teachers would be double qualified with both academic and skills qualifications. Supported by Oguntola (2011) who calls for the on-going professional development of teachers in vocational schools are required to undergo in-service of practical training in companies for their career progression and promotion.

VI. CONCLUSION AND RECOMMENDATIONS

Technical and vocational education training (TVET) is essential because it creates a job for sustainable living and provides training that individuals require to catch up with the dynamic and ever-changing living standard in a fast-growing technological world. TVET is training that any nation requires fostering its socio-economic development. The Nations Education, Scientific and Cultural Organisation (UNESCO) intervention with relevant recommendations has in recent times compelled thorough-going reforms globally towards revamping TVET for sustainable skill development. What countries need most is how to successfully enforce implementation of their policy initiatives to make TVET effective through skill development towards reducing unemployment. This requires revamping TVET through Public-Private Partnership (PPP), making a huge investment, showing repeated commitment to the cause of TVET and TVET to gain proper public image. The paper has presented respondents' views on demand-driven technical and vocational education training system as skills, development in higher-level colleges, the relevance of technical and vocational education training system,

industry-education cooperation integrated into the technical and vocational education training system, technical and vocational education training for teacher skills development. Based on the literature reviewed in this paper, the following recommendations are suggested:

1. Technical and vocational education training (TVET) private sector partnership should be encouraged, so as to ensure effective development training programme important for the acquisition of new technologies by students towards causing a home-grown industrial revolution like other developed countries.
2. There should be period staff and student exchange programme between TVET institutions and the workplace to equip students and staff with the practical skills while the workplace benefit from the theoretical knowledge of the staff and students of TVET.
3. TVET private sector partnerships should be encouraged in order to address the rising rate and poverty among youths in Africa.
4. There should be collaboration between TVET institutions and the workplace during curriculum development to address the needs of the industries.

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