ABSTRACT

The non-functional nature of Technical Vocational Education and Training (TVET) has been the bane of adequate supply of skilled workforce into the industrial sector of the Nigerian economy. Thus, graduates of tertiary institutions are seen roaming the streets of Nigeria in search of jobs for which they are ill-prepared. In recognition of this, the Nigerian government at federal and state levels have, in recent times, paid attention to TVET as a tool for cutting down on unemployment. To be functional, it is believed that TVET needs adequate infrastructure, human resources and funding. How government attention translates into physical activities that will improve the current status of TVET in Cross River state of Nigeria, is the crux of this study. The need for up-scaling TVET using collaborative capacity building technique was also highlighted. The ex post facto research design was adopted for the study. Four hypotheses were formulated to guide the study. A twenty-item 4-point Likert-type scale questionnaire was administered to a sample of 100 Technical Education teachers. The Pearson’s product moment correlation was used for analysing all the hypotheses. Based on the results of data analysis, collaboration with local industries, NGOs and international donor agencies among other things, were recommended.

Keywords: Up-Scaling, TVET, Collaboration, Capacity Building, Sustainable Employment, Poverty Alleviation

1. Introduction

The growth of any nation depends on her industrial base. The sustainable growth of this industrial base is predicated on specialization of work and adequate production of requisite manpower. According to Obadara and Oyebolu (2013), the growth of tangible capital stock of a nation depends to a considerable degree on human capital development. The authors argued that without adequate investments in developing her human capital, the possibility of growth of a nation might be minimal. This human capital can be developed through the process of increasing knowledge, skills and capacities of citizens of the country. Ibeneme (2009) maintains that no nation can develop beyond the level of the human resources it possesses.

For production industries to function effectively there is need to feed them with adequate manpower and the sure means of training this manpower is through Technical, Vocational Education and Training (TVET). Vocational training is that aspect of education that leads to the acquisition of practical and applied skills. The primary purpose of this training is to prepare youths for gainful employment in government establishments, companies or self-employment. Such education can be given to in-school students, school drop-outs and unemployed youth. Vocational training is job specific and designed to prepare individuals for entry into the job market as craftsmen and master craftsmen because of its emphasis on practical activities. This type of education enables learners to meet the needs of employers for qualified labour or own needs for the production of goods and services (UNESCO, 2009).

Obadara and Oyebolu (2013) agreed that occupational skills can be provided by Technical and Vocational Education since this type of education involves the acquisition of techniques and
application of the knowledge of science for the improvement of human life. TVET has been recognized the world over as the road map to technological advancement. As observed by Aworanti (2013), TVET is an integral part of national development strategies in many societies because of its impact on productivity and economic development. There is need to ensure alignment, coordination and integration between TVET and the various national development strategies and policies if a country must develop industrially. The lack of this type of integration has been the bane of industrial development in Nigeria.

TVET is an important element in any national education system as the workforce needed for the production of goods in many areas is increasingly dependent on specialized labour. As products and production processes are developed and mechanized, access to qualified labour is necessary for the efficient utilization of national resources, and for global economic competitiveness. Successful economies in general, have access to a broad variety of qualified labour and corresponding education and training opportunities at different levels, including technical and vocational knowledge and skills.

The high presence of expatriates in most African countries shows that developing country, though rich in natural resources, have populations that suffer from lack of necessary knowledge and skills for extracting and processing local natural resources in their own countries. Lack of qualified labour could be a major reason why foreign direct investments in such countries may be very difficult (source). It could also be the reason for the close-down of many foreign firms in such countries. Thus, unprocessed resources are rather exported for processing abroad, thereby leaving significant profits and other positive effects to foreign companies and people (source). A good example is the case of petroleum refining in Nigeria. It is common knowledge that for some years, local crude oil has continually been exported out of the country, refined in foreign lands and imported back into the country, thus, pushing the pump prices higher than normal.

The need for TVET is not peculiar to Nigeria. South Africa has also appreciated the need to solve unemployment problem through TVET. The South Africa Ministry of Education in 2014, noted that unemployment which stands at about 25% in South Africa, remains one of the most pressing challenges and that South Africa education and training systems are not adequately aligned with the needs of South Africa’s modern and fast changing economy. The Minister further indicated that government was aware of the importance of appropriate human resource development to overcoming the country’s poverty, inequality and unemployment problems.

It is heart-warming to note that in recent times, the Nigerian governments at state and federal levels had recognized TVET as holding the key to attaining the Millennium Development Goals (MDGs) 2015. This is an indication that TVET will also be relevant in the attainment of the Sustainable Development Goals (SDGs) number 4, 2030, which has to do with quality education. Achieving these goals, according to Wikipedia (2015), requires economic growth that will provide the resources for achieving the range of goals that are considered. Hanushek and Woessmann (2015) maintained that the most important determinant of economic growth is the knowledge capital of nations, which they defined as the aggregate skills of the country’s population. To this extent, the governments have made attempts at improving the quality of education. For instance, the Lagos State Technical and Vocational Education Board in 2013, made plans to revive TVET in recognition of its role in the country’s development by up-grading the quality of course content and infrastructure to be made available to learners. The aim of this up-grading was to attract and raise a new breed of work force and also to correct the public perception of vocational education. Also, the Cross River State government has joined the race by establishing an ultra-modern Institute of Technology and Management at Ugep. The government also facilitated the establishment of a Central Bank of Nigeria (CBN) skill acquisition centre in Calabar, the capital of the state.
Cross River State is fast becoming the future industrial hub of Nigeria. Thus, the State government has a vision to grow TVET to the extent of:

- Building a vibrant state economy through active involvement of TVET stakeholders.
- Developing a curriculum driven by more of practice than theory, to produce adequate manpower in relevant socio-economic sectors.
- Provision, distribution and installation of modern user friendly and relevant equipment to enhance skill acquisition practice.
- Establishing a production unit in each of the institution to provide simulated industrial environment for the learner.
- Provision of ICT equipment to promote e-learning driven TVET system.
- Provision and distribution of training materials to support practical training in the institutions.
- Employment of adequate number of technical teachers to meet the National Board for Technical education (NBTE) teacher/student ratio of three teachers per trade area in each school.
- Yearly capacity building of teachers through retraining programmes and workshops to be in tune with current global trends in technology.
- Timely release of adequate funds to implement projects and programmes.

(Cross River State Technical Education Board, 2012)

If the desire of government to achieve all these is to become a reality, in the light of the lean financial resources of the state, then there is need for better options for filling the existing gaps. One of the plausible options to close up this gap is through collaboration. Thus, the need for this study on up-scaling TVET through collaborative capacity building strategy for sustainable employment and poverty alleviation in Cross River State of Nigeria.

2. Objectives of the study
The main objective of this study is to identify necessity for up-scaling TVET for quality workforce in Cross River State. Specifically, the study sought to determine if

1. Funding for TVET is adequate for the production of quality workforce.
2. Quality of human resources in TVET is adequate for the production of quality workforce.
3. Available infrastructure and equipment for TVET is adequate for production of quality workforce.
4. There is collaboration between TVET institutions and stakeholders for the production of quality workforce.

3. Problem of the study
The specific goals of education in Nigeria as encapsulated in her National Policy in Education (FGN, 2008) include, among others, the following: (i) ensure high quality education at all levels (ii) promote functional education for skill acquisition, job creation and poverty reduction, and (iii) collaborate with development partners, the private sectors and local community to support and fund education. These are quite laudable goals, which if adequately implemented, can contribute to the economic growth of Nigeria. To realize these goals of education, the Nigerian government promised to take necessary measures to ensure that teaching shall be practical, activity based, experimental and ICT supported.

In spite of the contributions of vocational education to the development of many nations of the world, Nigeria as a nation has not given this aspect of education the attention it deserves. Aworanti (2013) sees this as one of the reasons for the nation’s underdevelopment and as a result, accounts for the acute short supply of knowledgeable and competitive skilled workforce in Nigeria today. Existing literature reveal that the consequences of this neglect of TVET include:
Short supply of knowledgeable and competitive skilled workforce into the economy. As noted by Omeife (2013), the scarcity of qualified personnel in the technical spheres of the nation’s development has reached an alarming situation.

Unemployment or under-employment as millions of Nigerian youth, school leavers and graduates of tertiary institutions are seen roaming the streets of Nigerian cities in search of jobs (Osoral, 2013).

Technicians that are half-baked apprentices who either graduate from the hands of unskilled masters or graduate themselves midway in their training. Some have the technical skills but no knowledge of the cognitive content of their trades.

Absence of qualified technicians, which leads to a proliferation of roadside unskilled and semi-skilled technicians who may be more destructive than productive when given the opportunity to exhibit their skills.

Unemployment which breeds youth restiveness as seen in most parts of Nigeria in recent times.

Thus, the questions that this study sets out to answer are, is the funding for TVET adequate for providing quality training; are human resources for TVET adequate for quality training; are available infrastructure and equipment for TVET adequate for quality training and is there collaboration between stakeholders and TVET institutions for quality training in Nigeria?

4. Methodology

The main purpose of the study was to identify plausible alternatives to improving TVET for better functioning of its products in the job market. The ex post facto research design was used to carry out the study. The area of study was Cross River State of Nigeria with a total of 3 technical teacher training institutions. The population was made up of all trainers and trainees from these institutions, out of which a sample of 100 comprising 20 trainers and 80 trainees was randomly selected. Four hypotheses were formulated to guide the study. A researcher designed, 4-point Likert scale type questionnaire titled, “Up-scaling TVET through collaboration for sustainable employment and poverty alleviation in Nigeria (UTVETCSEPAN) was used to elicit responses from the subjects of the study. The questionnaire was made up of 25 items addressing the issues in the four hypotheses. The questionnaire was administered personally by the researcher and the data analysed using the Pearson’s product moment correlation.

5. Literature review

5.1 Adequacy of funding of TVET for training quality workforce

As explained by Lynch (2000), the Smith-Hugehus Act in America provided for a continuing appropriation for vocational education in agriculture, trades and industries, home economics and teacher training. Funds were also appropriated for the administration of the programmes at national levels which led to the huge success in United States of America economy.

A theory of Funding, Personnel and Facilities as proposed by Prosser & Allen (1925), states that:

While every reasonable effort should be made to reduce per capita cost, there is a minimum below which effective vocational education cannot be given, and if the cost does not permit this minimum per capita cost, vocational education should not be attempted (209).

The implication of this theory to the present study is that a learner is supposed to have access to basic tools and machines appropriate for the job. Students need adequate working materials to enable them have enough class projects in all trades. These requirements make vocational education more costly than general education. Thus, it is better not to mount vocational education programmes than to starve it of adequate funds needed for success. If vocational education is provided, then it should be adequately funded.
a. **Quality of human resources for TVET and training of quality workforce.**

Also, Okolocha (2012) is of the view that for vocational technical education to meet the economic, social and political trends of the time, a nation must use qualified vocational training professionals/teachers in implementing vocational technical education programmes.

On the competency of the personnel for vocational education, Prosser and Allen (1925) theory states that:

> Vocational education will be effective in proportion as the instructor has had successful experience in the application of skills and knowledge to the operations and processes he undertakes to teach (200).

The implication of this theory to the present study is that the personnel or vocational educator must be competent in the skills he is handling or must be a master of those skills theoretically and practically. This is because teachers can only give to the students what they know and what makes up a vocational teacher are the skills and knowledge of the occupation. It will follow therefore that only competent teachers who have been through actual successful employment should be the best for vocational programmes.

5.2 **Available infrastructure and equipment and training of quality workforce.**

On vocational environment, Prosser and Allen (1925) theory of vocational education states that:

> Vocational education will be efficient in proportion as the environment in which the learner is trained is a replica of the environment in which he must subsequently work (194).

Work environment as observed by Olaitan (1978), is determined by the conditions necessary for production. Some of these conditions are physical like tools and machines and the place of work. To the author, the training environment must be identical with the occupational environment. This implies that while on-the-job training provides the exact environment, the schools should aim at approximating it because a school without an organized workshop cannot claim to be providing vocational education. This therefore, calls for supply of adequate facilities and equipment similar to those used in the world of work, for training students in vocational education. Thus, acclimatizing them with what is expected of them during employment and reducing the effort required for transiting from school to work.

5.3 **Collaboration between TVET institutions and training of quality workforce**

Collaboration, according to Marinez-Moyano (2006), is the process of two or more people or organizations working together to realize shared goals. The ultimate goal of collaboration in TVET is to produce a highly competent, skilled and educated work force relevant to the needs of the industries in Cross River State in particular and Nigeria as a whole. This, it is believed, would produce graduates that are competent, skilled and knowledgeable commensurate with industry standards. The emphasis is that in today’s world, an effective TVET system cannot be built if there is a gap between education and the world of work. Institutions of learning can establish partnerships with industries to enhance qualitative training, varied practices, production of goods and services, knowledge of the world of work and opportunity for further training, employment and placement (Umar, 2010).

Collaborative TVET strategy is a plan of action designed to identify processes and propose a system of developing and improving technical and vocational education and training. According to NETWORK TVETipedia (2012), the aim of collaborative capacity building TVET strategy is to formulate programmes to help the expansion of education and training opportunities, to foster
optimization of the use of available resources, to increase the impact of resources allocated for education and training, and to provide for consistent and continuous development of TVET.

5.4 Hypotheses
The following hypotheses were formulated to guide the study:
1. There will be a positive relationship between funding and quality of training.
2. There will be a positive relationship between available human resources for TVET and quality of training.
3. There will be a positive relationship between available infrastructure and equipment for TVET and quality of training.
4. There will be a positive relationship between collaboration of TVET institutions and stakeholders and quality training.

6. Analysis and discussions
6.1 Hypothesis 1
There will be a positive relationship between funding and quality of training.
Pearson’s product moment correlation analysis was used to test this hypothesis. The result of the analysis is shown in Table 1.

Table 1
Pearson product moment correlation analysis of the adequacy of TVET funding for quality training

<table>
<thead>
<tr>
<th>Variable</th>
<th>(\sum x)</th>
<th>(\sum x^2)</th>
<th>(\sum y)</th>
<th>(\sum y^2)</th>
<th>(\sum xy)</th>
<th>r-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adequacy of funding</td>
<td>1171</td>
<td>14203</td>
<td>14301</td>
<td>0.028</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Quality training</td>
<td>1220</td>
<td>15440</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Significant at 0.05, df 98, n = 100, crit. r = 0.195

The result of the analysis in Table 1 shows that the critical r-value of 0.195 is greater than the calculated r-value of 0.028 at 0.05 level of significance with 98 degrees of freedom. The result implies that the hypothesis which states that there will be a positive relationship between adequacy of funding and quality of training was retained, while the null hypothesis was rejected. This indicates that funding of TVET by government is significantly related with quality training.

6.2 Hypothesis 2
There will be a positive relationship between available human resources for TVET and quality of training. Pearson’s product moment correlation analysis was used to test this hypothesis. The result of the analysis is shown in Table 2.
Table 2
Pearson product moment correlation analysis of the adequacy of human resources for quality TVET training

<table>
<thead>
<tr>
<th>Variable</th>
<th>$\sum x$</th>
<th>$\sum x^2$</th>
<th>$\sum y$</th>
<th>$\sum y^2$</th>
<th>$\sum xy$</th>
<th>r-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adequacy of human resources</td>
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<td>15335</td>
<td></td>
<td></td>
<td></td>
<td>14925</td>
</tr>
<tr>
<td>Quality training</td>
<td>1220</td>
<td>15440</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Significant at 0.05, df 98, n = 100, crit. r = 0.195

The result of the analysis in Table 2 shows that the critical r-value of 0.195 is greater than the calculated r-value of 0.009 at 0.05 level of significance with 98 degrees of freedom. The result implies that the hypothesis which states that there will be a positive relationship between available human resources for TVET and quality of training was retained, while the null hypothesis was rejected. This result therefore implies that there is a relationship between TVET human resources and quality training.

6.3 Hypothesis 3
There will be a positive relationship between available infrastructure and equipment for TVET and quality of training. Pearson’s product moment correlation analysis was used to test this hypothesis. The result of the analysis is shown in Table 3.

Table 3
Pearson product moment correlation analysis of the availability of infrastructure and equipment for quality TVET training

<table>
<thead>
<tr>
<th>Variable</th>
<th>$\sum x$</th>
<th>$\sum x^2$</th>
<th>$\sum y$</th>
<th>$\sum y^2$</th>
<th>$\sum xy$</th>
<th>r-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Infrastructure and equipment</td>
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<td>22495</td>
<td></td>
<td></td>
<td>17673</td>
<td>0.071</td>
</tr>
<tr>
<td>Quality training</td>
<td>1220</td>
<td>15440</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Significant at 0.05, df 98, n = 100, crit. r = 0.195

The result of the analysis in Table 3 shows that the critical r-value of 0.195 is greater than the calculated r-value of 0.071 at 0.05 level of significance with 98 degrees of freedom. The result implies that the hypothesis which states that there will be a positive relationship between available infrastructure and equipment for TVET and quality of training was retained, while the alternate hypothesis was rejected. This result, therefore, implies that infrastructure and equipment available for TVET has significant relationship with quality training.

6.4 Hypothesis 4
There will be a positive relationship between collaboration of TVET institutions and stakeholders and quality training. Pearson’s product moment correlation analysis was used to test this hypothesis. The result of the analysis is shown in Table 4.
Table 4
Pearson product moment correlation analysis of collaboration between TVET institutions and stakeholders for training quality workforce

<table>
<thead>
<tr>
<th>Variable</th>
<th>( \sum x )</th>
<th>( \sum x^2 )</th>
<th>( \sum y )</th>
<th>( \sum y^2 )</th>
<th>( \sum xy )</th>
<th>r-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Collaboration</td>
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<td>17903</td>
<td></td>
<td></td>
<td>15912</td>
<td>0.049</td>
</tr>
<tr>
<td>Quality training</td>
<td>1220</td>
<td>15440</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Significant at 0.05, df 98, N = 100, crit. r = 0.195

The result of the analysis in Table 4 shows that the critical r-value of 0.195 is greater than the calculated r-value of 0.049 at 0.05 level of significance with 98 degrees of freedom. The result implies that the hypothesis which states that there will be a positive relationship between collaboration of TVET institutions and stakeholders and quality training was retained, while the alternate hypothesis was rejected. This result, therefore, implies that there a significant relationship between collaboration of TVET institutions and stakeholders for quality training.

7. Discussion of findings

7.1 Adequacy of funding of TVET for quality training
The result of hypothesis one showed that the hypothesis was retained meaning that the current level of funding of TVET is related to the successful execution of technical education in Cross River State of Nigeria. This result is in line with Obadara and Oyebolu (2013) who stated that without adequate investments in developing her human capital, the possibility of growth of a nation might be minimal. Uwaifo (2010) maintained that government funding of technical education programme has not been impressive indicating the unfavourable attitude of the government towards TVET and that this is responsible for the gradual extinction of this programme from the various educational institutions in this country. This goes to show the relationship between TVET funding and quality training.

7.2 Competent personnel for quality TVET training
Hypothesis two which states that there will be a positive relationship between available human resources for TVET and quality of training was retained. This implies that all the spectrum of technical manpower needed in Cross River State relates with quality training. This is in line with Omeife (2013) who affirmed that the scarcity of skilled personnel in the technical sphere of the Nigeria nation’s development has reached an alarming situation. Peek, Furnard, Gantest and Thieler (2008) also observed that the Nigerian oil industry is increasingly facing shortages of skilled personnel. Also, Okolocha (2012) is of the view that for vocational technical education to meet the economic, social and political trends of the time, the nation must use qualified vocational training professionals/teachers in implementing vocational technical education programme.

7.3 Adequacy of TVET facilities and equipment for quality training
The result of hypothesis three showed that TVET facilities and equipment are significantly related to quality training of workforce in Cross River State. This is in line with Uwaifo’s (2010) assertion that most technical education departments in Nigeria universities do not have workshop space let alone usable equipment and facilities and where they exist, they are grossly inadequate quantitatively and qualitatively and some are obsolete, thus, affecting the nature of training in Technical Education. Uwaifo further observed that it is, however, most surprising to know that most technical education departments still depend on engineering workshops to learn technical education concepts in this 21st century and that this is a total shame and a high degree of irresponsibility on the part of the operators of this programme.
7.4 Collaboration between TVET institutions and stakeholders
The result of hypothesis four showed there is a positive relationship between collaboration of TVET institutions and stakeholders and quality training in the study area. Considered against the gains obtainable from collaboration, as observed by Umar, (2010), Schools and collages should establish partnerships with industries to enhance qualitative training, varied practices, production of goods and services, knowledge of the world of work and opportunity for further training, employment and placement. This is because, according to the author, in today’s world, an effective TVET system cannot be built if there is a gap between education and the world of work.

8. Conclusion and recommendations
The findings of this study have shown that using the identified TVET implementation indices, Cross River State of Nigeria, has not fared well largely due to financial constraints on the state. There is therefore the need to seek alternative to government funding.

9. Recommendations
Following the findings of the study the following collaborative strategies are recommended:
1. The funds available to Cross River State government are grossly inadequate to effectively implement TVET programmes. It is therefore recommended that the government should win the confidence of internal and international donor agencies to form a partnership in funding TVET in the state.
2. Institutions should collaborate with industries for the retraining of teachers in the use of modern equipment as most of those that are available in the school today, are obsolete.
3. Provision should be made to involve experts from local industries as guest faculty to conduct practical classes.
4. Curriculum planners should review curriculum at regular intervals in the light of needed skills in modern industries. This is because a three-year old TVET curriculum may be teaching the history of technology and not the skills currently required by industries. For vocational courses, industry representatives should be involved in the curriculum development and review for TVET at state and national levels.
5. There should be collaboration in research between TVET institutions and industries.
6. Government should enact a policy where industries would be encouraged to adopt an institution in their catchment, identify the equipment needs of such institution for possible donation of same and/or opening their doors to the institution for trainees’ work study programmes. This would amount to sharing of modern facilities available in the industries to keep the trainees and trainers abreast of new trends in the various trades.
7. For TVET institutions in the rural areas where industries are not readily available, a novel concept of Production/Training Centres should be introduced where facilitators or resource persons can be brought in to give students industrial experience.
8. Conferences, workshops and seminars can be organized by government to sensitize all stakeholders on the need for collaboration if TVET gains must be made inherent in the state.

10. References