

Re-equipping Academic Research for Sustainable Technical and Vocational Education to Accelerate National Development

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Abstract

Developing relevant skills for economic transformation is the key issue facing many developing nations. This study aims to re-equip academic research for sustainable technical vocational education for national development. Therefore, conducting knowledge sharing through academic research brings together practitioners around sustainable technical and vocational education to accelerate national economic development. The research focuses on academic research as a best practice for supporting long-term technical vocational education to improve technical vocational education in a rapidly changing world. Therefore, this study examines the challenges and strategies to revitalize academic research for sustainable technical vocational education. There were also suggestions to improve academic research for long-term technical and vocational education to accelerate national development.

Keywords: academic research, sustainable technical vocational education, and national development.

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1. Introduction

The transition to a new society is visible in most of the developed nations in the world because of the role played by technical vocational education TVE in the knowledge of innovation and technological achievement in the development of recipients. The key issues in the innovative transformation in Africa include a lack of structured technical vocational education and academic research with access to production (Odo, Okafor, Odo & Ugwuoke, 2017; Yongabo & Göransson, 2020). To this end, students become a focus of the TVE educational system to support a practice-oriented system of training for competitive professionalism. Therefore, re-equipping academic research in the context of technical vocational education is to enable educators to make a good decision about the technological activities and experiences that will serve as superb for students. Thus, academic research is important for sustainable TVE to accelerate national development in the following ways (Pavlova, 2014; Lander et al., 2019):

i. Academic research facilitate students' learning

Academic research is a tool that both increases knowledge and facilitates learning because the arguments framed by researchers provide a path to the minds of scholars. Scholars look beyond their own experiences to gather evidence of facts. However, academic research opens the gate for further discourse and discussions.

ii. Research highlights issues

Academic research frequently highlights societal issues, such as raising awareness and promoting research-based standards of instruction, cutting-edge technology, and cutting-edge procedures for refining TVE programs that will produce an innovative workforce. Similarly, identifying relevant indicators that will develop thinking and problem-solving skills through active learning.

iii. Research helps in the growth of the TVE for sustainability

In the field of TVE, research is critical for identifying current trends and projects. Academic research generates novel ideas for demonstrating the potential for relevant skills and capabilities to improve TVE products' skills, knowledge, attitudes, and competencies to build a stable society that ensures individual well-being.

iv. Academic research leads to the development of students

Academic research helps students in their personal growth as well as in the development of skills, where students learn to identify problems and work towards possible solutions.

However, researchers undertake academic research as a mission of understanding and focus on the application or use of concepts and ideas, and their applicability in practice. (Chankseliani, 2021). In a nutshell, academic research focuses on the analysis of concepts to explore and explain a phenomenon to solve TVE educational problems. Agha, Adam & Ujebe (2018), viewed academic research as introducing students to relevant and newly developed ideas and demonstrating the research to evaluate work for future development. Lander et al. (2019), affirmed that academic research seeks the truth and new knowledge that will benefit social development, as well as to provide young people with the skills necessary for a successful transition from the classroom to the workplace. Oviawe (2018), asserted that research is an integral responsibility of TVE educators working in institutions, and a critical aspect of their performance in problem-solving and critical thinking

abilities, as well as good communication and interpersonal skills. Consequently, the effectiveness of academic research in TVE is placed on skills development to assist in the development of research skills. This is because quality research contributes to the advancement of new knowledge that is relevant to current problems and the betterment of society (Hager et al., 2016; Lander et al., 2019). Specifically, researchers must demonstrate initiative, creative and/or critical thinking, as well as a process of relevant knowledge and skills required by society. Thus, if TVE educators are active and use current teaching materials, they will be able to meet the needs of our rapidly changing technologies (Oviawe et al., 2017). However, the TVE training emphasizes a strong disciplinary pillar through research to promote skills acquisition that provides job skills for young people. Maret (2018), also asserted that TVE products need to be exposed to training courses for the skill creation and application of knowledge, and changing mindsets to empower researchers to initiate problem-solving skills that will accelerate national development. More so, there has been an emergent acknowledgement of the cessation that exists and the challenges of increasing academic research into more context-specific and relevant TVE for sustainable technological development (Kajaste, 2018; Agha, Adam & Ujebe, 2018). Above that, research in technical vocational education in developing nations, especially Nigeria, has generally appeared to have limited influence on current technological development practices (Odo, Okafor, Odo & Ugwuoke, 2017). This is due to insufficient funding and the low value placed on technical vocational education by many societies, indicating a failure of commitment on the part of technical vocational education teachers. Furthermore, Oviawe et al. (2017), argue that prejudice against technical vocational education programs is a problem because policymakers have not committed to improving technical vocational education beyond paying lip service to technological education. As a result, the majority of the prevailing circumstances surrounding academic research in TVE are a lack of internet connectivity, ICT centers, and a poor electrical power supply, which result in lower utilization and satisfaction, as well as a higher defection rate in technology research (Obierika, 2016; Ngor & Tambari, 2017). More so, technical vocational education is rarely implemented because technological practices have stamped out academic research as evidence of no support from the government (Nwosu & Micah, 2017). Therefore, the underutilization of the knowledge and skills of academic scholars and TVE practitioners is a cause of concern that needs to be addressed. Academic research in the area of TVE is generally found to be of little relevance to technological practices. Therefore, a gap needs to be bridged between academic research and the relevance of the technological activities needed for national development. Thus, this study is set to find out the relevance of academic research and technological practices in technical vocational education programs. Technical vocational education, on the other hand, is a learning program that promotes academic and life skills to meet academic standards for a specific job. The program gives individuals the skills to live and work as productive citizens. And, as such, the neglect of the TVE is socially and economically injurious to the TVE's contributions to national development. More so, according to Okorafor & Nnajiifo (2017), the development of any nation hinges on the knowledge economy, and TVE plays a significant role in promoting intensive activities that contribute to rapid advancement in technical and scientific innovation. As a result, technological national development revolves around the integration of research and TVE to eradicate poverty and unemployment in countries. Also, it creates sustainable economic growth, productive employment, and appropriate work for men and women (Nwosu, & Micah, 2017; Agha, Adam & Ujebe, 2018). Therefore, it is pertinent for the global leadership role in TVE to position TVE as a learning pathway to contribute effectively to lifelong learning through improving TVE policies and systems. More so, encouraging academic research in the TVE field would aid in the development and formation of a competent workforce. According to Agha, Adam & Ujebe (2018), research in TVE helps to develop practical tools that assist in the design and implementation of strategies by policymakers to modernize TVE qualifications, curricula and reinforce learning skills in workplace settings. Academic research promotes and facilitates learning experiences, which in turn promotes the acquisition of applied skills and basic scientific knowledge. Lisetskii et al. (2015), and Agha, Adam & Ujebe (2018), academic research is used by teachers and useful in the classroom because it provides valuable knowledge that, when applied to students in the classroom, helps to translate theory into practice. As a result, the application of research practices enables the translation of a theory into reality, and scholars have a profound influence on TVE to strive for the acquisition of knowledge and skills for improved competency. Hence, the direction of perfecting the TVE system to ensure the development of innovative thinking in the TVE profession is by integrating research, knowledge and skills generation. And with advancements in technology and innovations, the TVE's role has increasingly become more remarkable in providing the needed manpower for the country's economy. In this regard, the development of intellectual capacity has become important in technological development, which could be aided by TVE best practices. In a developing nation, particularly Nigeria, people require knowledge, skills, and organized research to become productive in society. And one way to achieve this, according to Lisetskii et al. (2015), is to re-equip academic research for sustainable technical and vocational education to accelerate national development.

2. Academic Research and Technical Vocational Education for Sustainable Development

Academic research provides a platform for investigation in the field of TVE, comparing the effectiveness,

efficiency and equity of different TVE systems. In that regard, academic research stimulates the interest of technical vocational educators in investigating technical and vocational education systems at both basic and higher education institutions. Academic research contributes greatly to the areas of teaching and learning in TVE, such as pedagogy practices, validation of test instruments and assessment, challenges to the labour market's demands, and classroom experiences. Evidence and reports according to Kajaste (2018), and Oviawe (2018), offer an appeal to academics and researchers in the field of TVE, and also to policy-makers, policy planners and administrators and students. This is to transform the world of work with skills and qualifications in TVE systems through research as it is valued to help youths from education to employment. Agha, Adam and Ujebe (2018), affirmed academic research as a tool that inspires teaching, instruction that draws commencement stages to increase students' learning, and the use of the evidence-based practice. As a result, the emphasis is on integrating knowledge and practice. Agha, Adam and Ujebe (2018), suggested students' learning process as the application of knowledge and reflecting on it, and driving principles for effective practices. He further reported students' opinion that integrating research and practices helps teachers' impact positive and inquisitive approach to learning. Therefore, technical vocational education being a key issue in teaching and learning requires effective teaching and learning methods, research that motivates and empowers learners to change their behaviours and take action for sustainable development. Okorafor and Nnajiifo (2017), stated that technical vocational education for sustainable development promotes competencies, critical thinking, imagining the future, and making decisions in collaborative ways. More so, technical vocational education is the engine of economic growth. It needs to be well equipped to generate knowledge and skills through research and practices for sustainable development. Technical vocational education in Nigeria has been described as a missing link in development policy, owing to the country's low productivity in all areas of economic and technological development (Okorafor & Nnajiifo, 2017). This factor stands as a rising rate of unemployment and poverty in the country and, as such, the growing rate of unemployment has contributed greatly to the problem of poverty amongst the citizens of the nation (Oviawe, 2018). This is because training graduates lack the necessary skills to exploit the nation's available natural resources. Scholars such as Chinwokwu & Michael (2019), have stated that unemployment causes frustration and disillusionment, which can lead to criminal behavior. Therefore, efforts need to be made to evolve the acquisition of skills, knowledge and attitudes relating to occupations in various sectors of economic and social life. However, TVE, if given the required attention and encouragement, can transform the nation economically and technologically, because of the achievements generated from technical vocational education, as stated by (Pavlova, 2014; Odo, Okafor, Odo & Ugwuoke, 2017) below:

- i. **Revenue generation:** TVE economically develops a nation and empowers teaming youths who can contribute to a nation's socio-economic development.
- ii. **Creation of employment:** TVE stands as a tool for fighting the high unemployment rate. This could be achieved through knowledge and skills in different productive activities to earn a living.
- iii. **Enhancing the standard of living:** TVE engaged people in productive work to improve lives and drastically reduces poverty in the nation.
- iv. **Country's self-independence:** When the TVE concept is applied with all relevance by the recipients, it develops critical thinking and problem-solving skills, allowing the recipients to function well in their careers. This will benefit the country technologically and economically and address embarrassing situations.'

3. Challenges of Academic Research for Sustainable Technical Vocational Education

Research is a systematic and detailed gathering of information to boost knowledge of technical and vocational education. Given Nigeria's abundant resources and population, one might wonder what the challenges are. Therefore, the challenges below serve as a hindrance to the research, acquisition of knowledge, skills, and competencies expected from technical vocational education (Agha, Adam & Ujebe, 2018; Oviawe, 2018; Yongabo & Göransson, 2020). Even though there is a strong commitment on paper, the progress made has been meagre compared to the expectations required by the vision and goals of the TVE. However, the progress in using research to deliver the vision and goals of TVE has not been satisfactory in many African countries. Therefore, there are some policy actions that the government will need to address if they desire to reduce the challenges of TVE and make academic research careers more attractive to promote the workforce. The challenges have caused TVE institutions to lag across Africa, particularly Nigeria, due to a lack of implementation of functional academic research as called for by the TVE policy. Therefore, the challenges associated with the research that limits the acceleration of sustainable national development in technical vocational education are as stated by (Oviawe, 2018; Agha, Adam & Ujebe, 2018; Maret, 2018; Sokwane & Adekanmbi, 2019) below:

- i. **Inadequate TVE system:** Adequate training in an effective technical vocational education system is the most important tool needed to address the challenges of academic research for long-term technological development. However, there is inadequate training in the TVE educational system.

- Therefore, there is a myriad of problems facing the TVE educational sector, such as inadequate funding from the government. As such, there is a need to overhaul the current TVE system through research to disseminate adequate progressive knowledge for its promotion. More so, most of the TVE programs are taught theoretically without practical skills and there is a need to relate the theory to practice to meet the needed technological development (Oviawe, 2018).
- ii. **Poor infrastructural management:** most of the TVE workshops and laboratories are under-equipped. This heaps more load on academic research financially.
 - iii. **Low accessibility to the internet system:** There is a lot of information on the internet, but getting the information is not cheap due to the ineffective educational and library system. This poses challenges for researchers when carrying out a study. The lack of a database for information also stands as a barrier to academic research to boost sustainable TVE systems to contribute effectively to national development (Sokwane & Adekanmbi, 2019).
 - iv. **Lack of funds for academic research:** To carry out academic research, one wants to have research facilities and materials well equipped. For this to be achieved, one must prepare to spend a lot on the purchase of research equipment, transportation, books etc.
 - v. **Poor technological advancement:** the materials needed to carry out research are stored in the technological database. Lack of understanding of how the database works can lead to spending a lot of time surfing the internet for information without good results. Therefore, to combat the challenges, technological training needs to be incorporated into the TVE system to train potential researchers in technological advancement (Agha, Adam & Ujebe, 2018). According to Maret (2018), the organization for the management of TVE policies has to be satisfactory and there has to be a commitment to progress in using research to deliver the vision and targeted goals of TVE for sustainable national development. This could only be achieved through combating the challenges associated with research to enable sustainable TVE to accelerate national development.
 - vi. **TVE training:** emphasis on preparing people for active commitment to trades of functional value and an effective source of a skilled workforce that has transferable skills that can be used in a variety of economic sectors.
 - vii. **Employment status:** TVE educators and researchers must be abreast of new technologies, as this will lead to the production of graduates that have saleable skills and competencies required by employers of labour.
 - viii. **Tracking the careers of TVE holders:** by having a functional curriculum that will develop critical thinking and problem-solving skills and monitoring the graduates through publishing data on their TVE careers. This provides evidence to underpin the development, implementation and effectiveness of humans and materials.
 - ix. **Human resource management:** improving institutional human resource management includes funding for institutions and researchers to support researcher career development, as well as improving institutional human resource policies and practices to demonstrate best practice and excellence awards.

4. Strategy to Revitalizing Academic Research for sustainable Technical Vocational Education

Revitalizing academic research for sustainable technical vocational education is a means of improving research in TVE for economic opportunities. Kajaste (2018), and Oviawe (2018), asserted that revitalization is an absolute step to revamping various aspects of technical vocational education to strengthen academic research. Revitalization is needed because it requires commitment from the TVE system to unite and implement the TVE content to achieve its goal target. Academic research in TVE has to be restructured to improve the quality of its provision and learning outcomes to be sustainable for national development (Maret, 2018). More specifically, academic research is moving into an emerging field of TVE that broadens understanding of how to conceptualize and measure knowledge, skills, and competency development (Calero López & Rodríguez-López, 2020). This is because TVE is often valued to help young people transition smoothly from knowledge and skills to employment. Therefore, despite an increasing amount of research into TVE, many questions about its sustainability remain unanswered. The TVE strategy to revitalize provides sustainable national development of national policies to address the challenges of academic research to support TVE in the creation of knowledge and skills for sustainable development. However, changes in the economy and technology, rising unemployment and government policies towards the desire for support for technical and vocational education have led to revamping the educational sector for manpower development. Many countries around the world, particularly developed nations such as the United Kingdom and the United States of America, have advanced technologically as a result of structured technical vocational education. As such, this can serve as a mirror for developing nations to structure their technical vocational education sector to reduce the worrisome unemployment rate. Concurred with Okorafor & Nnajiifo (2017), who affirmed that the failure of TVE to attain its objectives has created a high unemployment rate in most of the developing nations in Africa, particularly Nigeria. Therefore, the limited skills

in academic research among TVE educators and their poor product quality have contributed to the demise of the skilled workforce in the TVE educational sector. Above that, studies have proved that incapacitation in the implementation of functional academic research as called for by the TVE policy has affected the TVE's sustainability in technological development in Nigeria. The strategies that hinder sound research for sustainable technical vocational education to accelerate national development, as stated by Odo, Okafor, Odo & Ugwuoke (2017), Oviawe (2018), Kajaste (2018), Agha, Adam & Ujebe (2018), Sokwane & Adekanmbi (2019) and Yongabo & Göransson (2020), are:

- i. **Continuing professional development:** professional development stands as a strong challenge that needs to be addressed by the government through employment opportunities for TVE graduates. TVE educators are allowed to develop, update and demonstrate their competence in their profession, especially in academic research and teaching. Furthermore, TVE educators' should be encouraged in research and their salaries should be on par with those of their industry counterparts to boost and encourage their morale toward TVE programs, and students should be given scholarships as an incentive to enrol in the program (Oviawe, 2018).
- ii. **Adequate funding:** national development in academic research in TVE in terms of funding is the fundamental and non-negotiable strategy to revitalize TVE for sustainability, which stands as a major constraint to the nation's technological development. Effective academic research in TVE requires adequate funding to have research facilities and materials in conducting the study.
- iii. **Use of information technology for research:** Information technology is affecting academic research, especially where internet connectivity and power supply are inadequate, especially in African nations, in particular in Nigeria. Information and technology have to be incorporated as part of research, teaching and learning tools in TVE institutions to harness sound educational delivery. Sound educational research can also be provided by the visual library as a platform for sharing knowledge and this is aimed at rejuvenating educators by the provision of current journals, textbooks and other sources of information using digital technology.
- iv. **Training and retraining of technical vocation education teachers:** people are fully aware of the economic value and benefits of technical vocational education that turns around the technological and socio-economic development of any nation. Therefore, educators should be given sponsorship to attain a high ladder in their profession. At the same time, conferences, seminars, and workshops should be organized for TVE educators periodically to acquaint them with recent technological innovations (Kajaste, 2018).
- v. **Campaign towards technical vocational education:** Technical vocational education has been neglected for a long time because of the negative attitudes of many people, especially parents and students. As such, the government should be given an orientation program through research towards encouraging the general public to see the need for TVE towards the nation's socio-economic development and the reduction of the unemployment rate as well as the poverty level in society (Sokwane & Adekanmbi, 2019).
- vi. **Encourage research and innovation:** Knowledge sharing and exchange in research helps to develop creative and innovative thinking skills. Research is generally understood as the sharing of knowledge, culture and ideas among staff and students. Therefore, research is a good opportunity to learn from the values of other countries and knowledge exchanges. Every nation that has a genuine interest in economic growth and sustainable development must encourage and finance research activities and programs, skill acquisition, innovations, and the production of newly invented products. This will help the development of the interest of citizens towards TVE, which stands as a pillar for skills acquisitions to promote technological and socio-economic activities for the sustainable development of a nation (Yongabo & Göransson, 2020).

5. Conclusion

Technical and vocational education has expanded rapidly, because of new technologies that improve people's knowledge and skills, and the quality of the skilled workforce. The enhancement of the TVE of developed nations is seen as a policy instrument that is adequately implemented, but the implementation of such policies in most developing nations, especially Nigeria, has proved to be difficult because of conflicts among education policy-makers. The contradictions among general education policymakers in focusing on technological development values are a source of concern for TVE educators, and academic researchers are increasingly expressing their views and reasons that the TVE did not meet the targeted goals. However, the challenges in academic research surmounted over the years need the collaborative efforts of the government and industry to aid academic research work through training and finance to promote the TVE system in Nigeria to accelerate national development. Thus, the development of an information and research infrastructure for the transfer of technology will boost students' creativity, and improve the quality and efficiency of the TVE educational process

to ensure access to graduates' labor market demands. Academic research is a source of information that significantly improves the efficiency of the TVE educational process in terms of practical application. Academic research and TVE products are being developed to meet the needs of national professional staff in promising scientific fields and technologies. Therefore, the progress of any society hinges on the productivity of its citizens, and such TVE that gives sustainable technological skills requires the help of academic research to speed up the global transformation, economically and technologically. Sustainable technology cannot be achieved except through observing the strategy to revitalize academic research in technical vocational education in Nigeria, with the emergence of strong research activities that are technologically oriented. The revitalization strategies can be done through proper implementation of functional academic research as called for by the TVE policy through the following factors: continuing professional development, adequate funding, use of information technology for research, training and re-training of TVE teachers, campaigning towards TVE and encouraging research and innovation. Hence, without action to turn around functional technical vocational education, the vision and mission of technical vocational education to achieve its objectives as stated in the National Policy on Education 2014 remain a paper lip service. Therefore, re-equipping academic research for sustainable technical and vocational education through innovations for economic development and industrialization remains one of the most onerous sectors of TVE education systems because of funding. So, countries struggle and need to finance the TVE institutions as social benefactors to support research to accelerate national development through labor market demands and the economy.

6. Suggestion

Based on the challenges identified as affecting academic research for sustainable technical vocational education to accelerate national development and the strategies proffered to revitalize sustainable technical vocational education, the following suggestions are made:

1. The federal, state and local governments should assist in encouraging research in TVE institutions through funding to sustain technical vocational education for national development. Necessary research facilities and materials should also be provided at all the TVE institutions.
2. The welfare of technical vocational education teachers should be paramount in the minds of all the stakeholders. Payment of salaries, allowances and other incentives related to academic research should be given and or attended to without delay.
3. The power sector should be overhauled and made reliable for constant electric power supply to stimulate academic research, skills acquisition and industrial growth for sustainable technical and vocational education to accelerate national development.
4. Workshops/laboratories should be adequately equipped at all TVE institutions to facilitate academic research and skills acquisition.
5. Technical and vocational education leadership role should encourage support of research activities that reinforce outstanding in teaching and learning
6. By encouraging experiments on new ideas, the government should implement policies that create a stable framework for the exchange of knowledge and experience.

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