

The Role of Technical and Vocational Education and Training (TVET) and Rail Transportation in the Socio-Economic Development of Nigeria

Onatere-Ubrurhe, Joyce Ogheneruona¹

Department of Technical Education, Alvan Ikoku Federal University of Education, Owerri, Nigeria.

Ubrurhe, Ejiroghene²

Department of Game Technology, University of Gloucestershire, Cheltenham, United Kingdom

doi: <https://doi.org/10.37745/ijyter.15/vol10n21327>

Published May 27, 2024

Citation: Onatere-Ubrurhe, J. O. and Ubrurhe, E. (2024) The Role of Technical and Vocational Education and Training (TVET) and Rail Transportation in the Socio-Economic Development of Nigeria, *International Journal of Vocational and Technical Education Research*, Vol.10, No.2 pp. 13-27

ABSTRACT: *This research delves into the synergies existing between Technical and Vocational Education and Training (TVET) alongside rail transportation within Nigeria and their implications on socio-economic advancement. By conducting an exhaustive literature review, the research delves into how TVET tackles skills deficits, encourages creativity, and supports entrepreneurial activities in the railway industry. Furthermore, it evaluates the role of rail transportation in advancing infrastructure, boosting economic development, enhancing regional connections, and facilitating sustainable urban growth. Barriers such as financial limitations and obsolete infrastructure impede the full exploitation of TVET and rail transportation capacities. The integration of TVET with rail transportation offers prospects for enriching skill acquisition, fostering innovation, and promoting sustainable urban development. Suggestions include allocating resources towards enhancing TVET and rail infrastructure, refining curricula, and establishing collaborations with industry stakeholders. This study underscores the significance of aligning TVET and rail transportation to foster comprehensive growth and innovation in Nigeria.*

KEYWORDS: TVET, rail transportation, socio-economic development, skills development, Nigeria.

INTRODUCTION

Technical and Vocational Education and Training (TVET) alongside rail transportation are integral elements of national development strategies in numerous nations, including Nigeria. TVET equips individuals with essential skills and competencies for employment and entrepreneurship, while rail

transportation plays a crucial role in facilitating the movement of goods and people, stimulating economic growth, and improving connectivity within and between regions. Recognizing the intricate relationship between TVET and rail transportation is imperative for fully leveraging their potential in propelling socio-economic development. The significance of TVET in addressing skills mismatches, reducing unemployment, and promoting inclusive economic growth has gained traction in recent years (Akeem & Najeem, 2020; Allen, 2020; Joseph, 2020; Shefiu & Ayika, 2019, Akanbi, 2017).

Nevertheless, despite its importance, the TVET sector in Nigeria encounters various obstacles, such as insufficient infrastructure, outdated curricula, and limited industry collaboration. These hurdles have constrained the sector's ability to meet the changing demands of the labor market and effectively contribute to national development objectives. Similarly, the rail transportation sector in Nigeria has grappled with substantial infrastructure deficiencies and operational inefficiencies over the years. Despite governmental endeavors to rejuvenate the railway system through initiatives like the Nigerian Railway Modernization Project, challenges like inadequate funding, security issues, and technical capacity constraints persist (Akuesodo et al, 2024; Soretire et al, 2024; Soretire et al, 2024; Obe et al, 2022; Ogochukwu et al, 2022; Onokala & Olajide, 2020; Oraegbune & Ugwu, 2020; Faajir & Zidan, 2016; Onatere et al, 2014; Adesoji, 2010).

Consequently, there is a necessity to explore the synergies between TVET and rail transportation to optimize their impacts on socio-economic development in Nigeria. By enhancing the workforce's skills in pertinent technical domains and aligning training programs with the rail sector's requirements, TVET can play a pivotal role in bolstering the human capital base and fostering innovation within the industry. Furthermore, integrating TVET into the development and functioning of rail infrastructure can enhance the efficiency, safety, and sustainability of transportation systems, thereby advancing economic productivity and social equity (Nwosu & Micah 2017; Onatere-Ubrurhe et al, 2016; Audu et al, 2013).

Hence, this study aims to scrutinize the role of technical and vocational education and training (TVET) in the context of rail transportation and its implications for Nigeria's socio-economic development. Through an examination of the present state of TVET and rail transportation, identification of key challenges and prospects, and formulation of policy suggestions, this research endeavors to offer valuable insights for policymakers, practitioners, and stakeholders engaged in education, transportation, and economic strategy.

LITERATURE REVIEW

Overview of Technical and Vocational Education and Training (TVET) and its Role in Socio-Economic Development

Technical and Vocational Education and Training (TVET) in Nigeria is underpinned by a sophisticated institutional framework that encompasses various government entities, regulatory agencies, and stakeholders at the federal, state, and local levels. The Federal Ministry of Education is tasked with supervising the development and execution of national policies and strategies pertaining to TVET, with the National Board for Technical Education (NBTE) assuming the responsibility for overseeing the regulation and accreditation of TVET institutions and programs. Furthermore, state governments, private sector entities, and non-governmental organizations all play crucial roles in the provision and administration of TVET initiatives, thereby adding to the intricacy and diversity of the TVET landscape in Nigeria (NBTE, 2020; FRN, 2019; FRN, 2013).

The development of Technical and Vocational Education and Training (TVET) in Nigeria illustrates the evolving socio-economic landscape and shifting development priorities of the nation. Historically, the focus of technical education in Nigeria was primarily on fulfilling the labor requirements of colonial administrators and supporting industries like agriculture, mining, and construction. However, with the move towards independence and the emergence of a more diversified economy, the scope of TVET broadened to encompass a wider array of industries and occupations (Olowe, 2023; Allen, 2020; Kankia & Awang, 2018; Eze & Okorafor 2016).

Technical and Vocational Education and Training (TVET) is a comprehensive educational approach that integrates theoretical knowledge with practical skills development, with the aim of preparing individuals for specific occupations or trades (Olowe, 2023; UNESCO, 2021). Within the Nigerian context, TVET encompasses a diverse array of programs delivered through formal, non-formal, and informal avenues, catering to a wide range of learners across different age brackets and skill levels (Aliyu, 2023; Zite & Deebom, 2017). The importance of TVET in national development lies in its capacity to tackle crucial socio-economic issues such as youth unemployment, poverty alleviation, and economic diversification (Afolabi & Ajayi, 2023). Through the provision of individuals with skills and competencies that are relevant to the market, TVET not only enhances their employability but also fosters entrepreneurship and innovation, thereby contributing to sustainable economic growth and social cohesion (Allen, 2020; Akinyele & Bolarinwa, 2018; Akanbi, 2017; Okoye & Arimonu, 2016).

The National Policy on Education and the Role of Technical and Vocational Education in National Development.

The National Policy on Education (2013) spelt out the aims of technical and vocational education in Nigeria as follows;

1. Provide trained manpower in the Applied Sciences, Technology and Business particularly at craft, advanced craft and technical levels.

2. Provide the technical knowledge and vocational skills necessary for agricultural, commercial and economic development; and
3. Give training and impart the necessary skills to individual for self-reliance economically. (FRN, 2013).

However, notwithstanding its significance, the TVET sector in Nigeria encounters numerous obstacles that impede its efficiency and influence. In recent years, successive administrations in Nigeria have acknowledged the significance of TVET in combatting youth unemployment, fostering entrepreneurship, and propelling industrialization. Consequently, substantial endeavors have been undertaken to revamp and modernize the TVET sector, including the formulation of national policies and frameworks, establishment of specialized training institutions, and implementation of competency-based training methodologies (Joseph, 2020; Oviawe, 2018; FRN, 2013). Nevertheless, despite these interventions, TVET encounters various obstacles such as low enrollment rates, gender inequalities, insufficient teacher training, professional growth opportunities (Udoudo & Ikeji, 2023; Allen, 2020).

One prominent challenge is the insufficient funding, resulting in restricted access to high-quality training facilities, outdated teaching materials, and inadequate staff capacity (Joseph, 2020; Shefiu, 2019; Nwokike & Nwokike, 2019). Furthermore, there exists a misalignment between TVET curricula and the needs of industries, leading to a skills gap that undermines the pertinence of training programs and diminishes the employability of graduates (Allen, 2020; Muoghalu, 2018; Okoye & Arimonu, 2016). Moreover, negative societal perceptions and stereotypes surrounding technical and vocational occupations often dissuade individuals from pursuing TVET pathways, aggravating the issue of skills shortages in critical sectors like manufacturing, construction, and ICT (ADB, 2021; Zite & Okwelle, 2018; Okwelle & Deebom, 2017; UNESCO, 2004).

Some of the Persisting Major Challenges Facing TVET in Nigeria

Despite its importance, TVET in Nigeria faces numerous challenges that hinder its effectiveness and impact on socio-economic development. Some of these persisting challenges include:

1. Inadequate Funding

TVET institutions in Nigeria suffer from a persistent lack of adequate financial support, resulting in constraints in resources, substandard infrastructure, and restricted access to up-to-date equipment and technologies. Insufficient budgetary provisions for TVET further compound issues related to quality and relevance, impacting the institutions' ability to offer training programs aligned with market demands and industry standards (Udoudo & Ikeji 2023; Allen, 2020; Kankia & Awang, 2018; Muoghalu, 2018; Inyiagu, 2014).

2. Outdated Curricula

The curricula implemented in Technical and Vocational Education and Training (TVET) institutions often fail to align with the current requirements of industries and advancements in technology, resulting in a discrepancy between the skills possessed by graduates and the expectations of employers. The absence of effective mechanisms for reviewing and revising curricula restricts the flexibility and adaptability of TVET programs in response to evolving demands in the job market, thereby impeding the employability and professional development of graduates (Udoudo & Ikeji 2023; Allen, 2020; Kankia & Awang, 2018; Muoghalu, 2018; Inyiagu, 2014).

3. Limited Industry Collaboration

There exists a disconnection between Technical and Vocational Education and Training (TVET) institutions and the industries they are intended to cater to, leading to a deficiency in industry-specific education, practical experience, and apprenticeship prospects for students. The lack of efficient collaborations between TVET providers and industry stakeholders undermines the hands-on approach and relevance of educational schemes, diminishing their appeal to potential learners and employers (Udoudo & Ikeji 2023; Allen, 2020; Kankia & Awang, 2018; Muoghalu, 2018; Inyiagu, 2014).

4. Quality Assurance

The quality assurance mechanisms within the realm of Technical and Vocational Education and Training (TVET) are frequently deemed deficient and inefficacious, thereby resulting in disparities in the caliber of instruction and validation among various institutions and programs. The deficiency in standardized evaluation, validation, and validation procedures undermines the credibility and transferability of TVET certifications, consequently constraining the mobility and acknowledgment of graduates within the workforce (Udoudo & Ikeji 2023; Korter, 2023; Allen, 2020; Kankia & Awang, 2018; Muoghalu, 2018; Inyiagu, 2014).

Rail Transportation Systems: Historical Context and Current Status in Nigeria

The historical background of railway transportation in Nigeria traces its origins to the 19th century, when the initial railway line linking Lagos to Ibadan was constructed by the British colonial administration. Throughout the years, there was a significant expansion of the railway network in Nigeria, playing a crucial role in transporting passengers and goods across the nation. Nevertheless, due to prolonged neglect and insufficient investment, the railway system

deteriorated, resulting in decreased operational efficiency and capacity. Railways in Nigeria consist of a 3,505 km Cape gauge national railway network and 669 km of standard gauge. (Obe et al, 2022; Ogochukwu et al, 2022; Oluwakoya & Ogundipe, 2021; Onokala & Olajide, 2020; Ugwukah & Ali, 2020; Onatere et al 2014; Onatere-Ubrurhe, 2016).

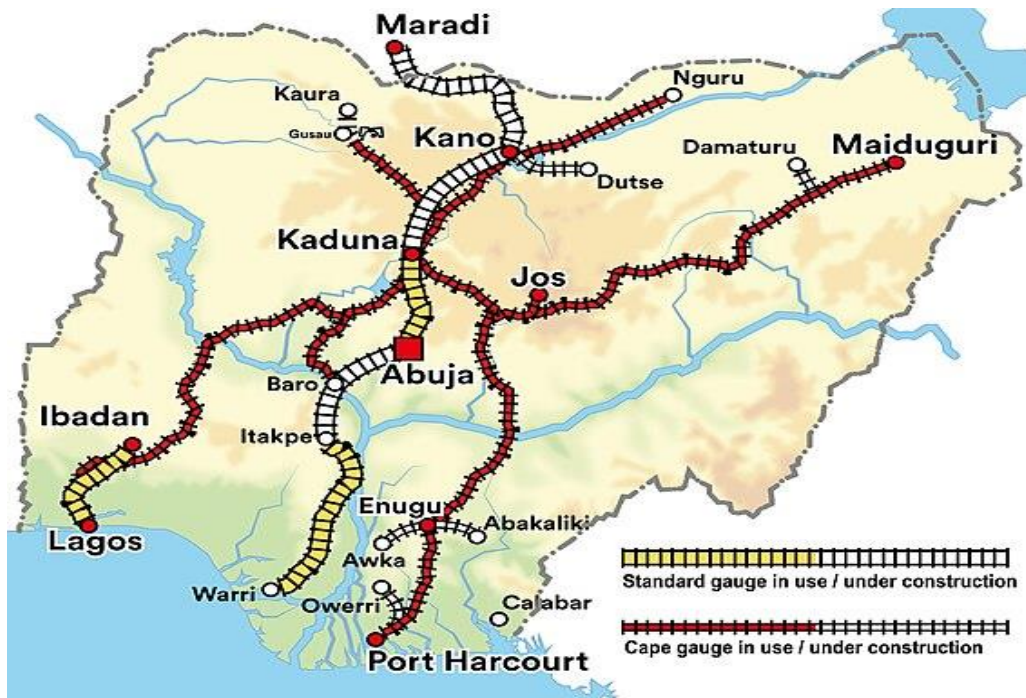


Figure 1. Railway Network in Nigeria

(Source:

https://en.wikipedia.org/wiki/Rail_transport_in_Nigeria#/media/File:Railway_system_Nigeria_2022_english.jpg

In contemporary times, the Nigerian government has initiated an ambitious scheme for the modernization and expansion of the railway sector, with the aim of rejuvenating the industry and bolstering its impact on national progress. Principal components of this scheme involve the establishment of new rail routes, restoration of existing facilities, acquisition of contemporary rolling stock, and implementation of digital signaling and communication systems. These endeavors have brought about notable enhancements in the operational effectiveness and dependability of the railway network (Oguchi, 2020; Abioye et al, 2016; Onatere-Ubrurhe, 2016; Adesoji, 2010).

Table 1. Statistics on Nigerian Rail Passenger traffic (Source: NBS, 2024; Abioye et al, 2016; Oladayo, 2015)

YEAR	PASSENGER VOLUME
1964	11,288,000
1974	4,342,000
1978	6,700,000
1983	13,012,000
1984	15,500,000
1988	3,629,000
1995	1,729,000
1991	3,000,000
2003	1,600,000
2004	1,731,000
2006	708,000
2009	1,285,000
2012	4,155,988
2013	4,328,789
2014	>5,000,000
2015	>5000,000
2022	3,212,948
2023	2,182,388

Table 2. Statistics on Nigerian Rail Freight traffic (Source: NBS, 2024; Abioye et al, 2016; Oladayo, 2015)

YEAR	FREIGHT TONS
1964	2,960,000
1974	1,098,000
1983	1,619,000
1988	294,000
1995	108,000
2000	<100,000
2003	58,000
2004	62,000
2006	41,000
2009	52,000
2012	182,000
2013	99,000
2014	962,000
2015	1,115,000
2023	317,244

The Role of Rail Transportation in Socio-economic Development

Rail transportation assumes a pivotal role in advancing socio-economic progress through enhancing the mobility of passengers and goods, diminishing transportation expenses, and fostering regional cohesion and commercial activities. The establishment of a well-structured and

effective railway system in Nigeria holds the promise of unleashing economic prospects, spurring industrial advancement, and mitigating urban congestion and environmental degradation. Through the provision of dependable and cost-effective transport services, rail infrastructure enhances accessibility to markets, healthcare, education, and other vital amenities, especially in rural and underserved regions. (Akuesodo et al, 2024; Soretire et al, 2024; Soretire et al; 2023; Labib & Anson, 2020; Blumenfeld et al, 2019; Abioye et al, 2016; Onatere-Ubrurhe, 2016).

Moreover, the role of rail transportation in broadening value chains, creating job opportunities, and generating tax revenues contributes significantly to fostering comprehensive economic growth and poverty alleviation. Furthermore, the establishment of intermodal transport networks that connect rail, road, air, and waterways enhances connectivity and operational efficiency, enabling enterprises to access domestic and international markets more efficiently. Additionally, investments in railway infrastructure stimulate local manufacturing and construction sectors, generate demand for skilled labor, and facilitate technology transfer and innovation (Akuesodo et al, 2024; Soretire et al, 2024; Soretire et al; 2023; Labib & Anson, 2020; Blumenfeld et al, 2019; Abioye et al, 2016; Onatere-Ubrurhe, 2016).

The major contributions of Rail transportation to the Nigeria economy have been well articulated and they include the following:

1. Infrastructure Development

Rail transportation is of paramount importance in the advancement of infrastructure as it offers a cost-efficient and effective mode of conveying both passengers and merchandise over extensive distances. The allocation of resources into railway infrastructure, such as the construction of tracks, development of stations, and implementation of signaling systems, generates job opportunities, boosts the demand for construction materials, and promotes connectivity between urban hubs and rural regions (Akuesodo et al, 2024; Soretire et al, 2024; Soretire et al; 2023; Labib & Anson, 2020; Blumenfeld et al, 2019; Abioye et al, 2016; Onatere-Ubrurhe, 2016).

2. Economic Growth and Productivity

Rail transportation plays a crucial role in fostering economic growth and enhancing productivity through the facilitation of goods and raw materials, the reduction of transportation expenses, and the enhancement of supply chain effectiveness. The effective transportation of goods by rail allows industries to efficiently reach markets, inputs, and resources, thereby increasing production, trade, and investment. Furthermore, projects related to rail infrastructure create a demand for materials such as steel, cement, and other construction resources, which in turn bolster local manufacturing activities and job opportunities (Akuesodo et al, 2024; Soretire et al, 2024; Soretire et al; 2023; Labib & Anson, 2020; Blumenfeld et al, 2019; Abioye et al, 2016; Onatere-Ubrurhe, 2016).

3. Regional Connectivity and Trade

Rail transportation promotes regional connectivity and trade through the interconnection of cities, ports, and industrial areas, thereby facilitating the transportation of goods and individuals across diverse regions and nations. The enhancement of access to markets and trade routes contributes to the advancement of regional integration, the encouragement of economic collaboration, and the expansion of market prospects for enterprises. Moreover, the establishment of rail networks plays a crucial role in linking landlocked nations to seaports, thereby facilitating global trade and bolstering competitiveness in the international markets (Akuesodo et al, 2024; Soretire et al, 2024; Soretire et al; 2023; Labib & Anson, 2020; Blumenfeld et al, 2019; Abioye et al, 2016; Onatere-Ubrurhe, 2016).

4. Sustainable Urbanization and Mobility

Rail transportation plays a crucial role in fostering sustainable urbanization and enhancing mobility through the provision of an alternative mode of transportation aimed at easing congestion, reducing air pollution, and enhancing road safety. Various urban rail systems, including light rail transit and metro systems, present rapid, dependable, and eco-friendly transportation choices for daily commuters, thereby diminishing the dependence on private vehicles and alleviating traffic congestion issues. Furthermore, the integration of land-use and transport strategies in the vicinity of rail stations fosters compact, transit-centric development, leading to the establishment of dynamic, mixed-use urban settings that encourage economic vitality and social engagement (Akuesodo et al, 2024; Soretire et al, 2024; Soretire et al; 2023; Labib & Anson, 2020; Blumenfeld et al, 2019; Abioye et al, 2016; Onatere-Ubrurhe, 2016).

Challenges and Opportunities of Rail transport in Nigeria

Despite the noteworthy contributions it has made to the socio-economic development of Nigeria, the rail transportation sector encounters various obstacles, including insufficient financial support, outdated infrastructure, and security issues. Overcoming these obstacles necessitates continuous investments in the modernization of railways, the implementation of regulatory changes, and the enhancement of institutional capabilities. Furthermore, there are possibilities to exploit emerging technologies like digitalization, electrification, and automation to improve the effectiveness, safety, and sustainability of railway systems (Obe et al, 2022; Oguchi, 2022; Onokala & Olajide, 2020; Abioye et al, 2016; Onatere-Ubrurhe, 2016; Agbaeze & Onwuka, 2014).

Implementation Strategies for Harnessing the Synergies between TVET and Rail Transportation in Nigeria

1. Stakeholder Engagement and Collaboration

Collaborating with essential stakeholders is crucial for the effective execution. It encompasses cultivating alliances among governmental bodies, academic establishments, industry entities, community groups, and global partners. Through enabling transparent channels of communication and cooperative processes for decision-making, stakeholders are able to synchronize their endeavors, exchange resources, and capitalize on each other's knowledge to reach shared objectives.

2. Curriculum Development and Training Programs.

Designing customized curricula and training programs to fulfill the specific requirements of the railway sector is imperative. Technical and Vocational Education and Training (TVET) institutions need to collaborate closely with industry professionals and regulatory authorities in order to develop training modules based on competencies that are in line with industry norms and technological progress. The integration of hands-on learning opportunities, such as internships, apprenticeships, and industry placements, not only enriches students' employability but also guarantees the acquisition of pertinent skills and competencies.

3. Infrastructure Development and Modernization

Investment in the enhancement and modernization of rail infrastructure plays a crucial role in improving the effectiveness and dependability of rail transportation systems. This process entails the enhancement of existing rail networks, the construction of novel railway routes, and the implementation of contemporary signaling and communication technologies. Furthermore, the establishment of cutting-edge training facilities and simulation laboratories equipped with industry-standard tools and equipment enriches the hands-on training experience for both students and professionals.

4. Capacity Building and Professional Development

Enhancing the capacity of educators, trainers, and industry professionals is crucial to uphold the standard and pertinence of TVET programs. Ongoing professional development endeavors, workshops, and seminars facilitate educators in keeping up-to-date with industry trends, pedagogical methodologies, and technological progressions. Likewise, offering opportunities for railway personnel to obtain additional certifications, partake in specialized training sessions, and engage in knowledge-sharing programs amplifies their skills and performance in their roles.

5. Monitoring, Evaluation, and Continuous Improvement

Implementing rigorous monitoring, evaluation, and feedback mechanisms is imperative in the assessment of the efficacy and ramifications of integrated TVET-rail endeavors. Routine

performance assessments, engagement with stakeholders, and the administration of feedback surveys offer invaluable insights into the strengths, weaknesses, and areas necessitating enhancement within the program. The utilization of data analytics and performance indicators empowers stakeholders to monitor advancements, evaluate results, and render data-driven choices to enhance program execution and resource distribution.

CONCLUSION

In conclusion, the amalgamation of Technical and Vocational Education and Training (TVET) with railway transportation offers a prospective route towards promoting comprehensive growth, advancement, and durability in Nigeria. Through leveraging the interconnectedness between TVET and railway transportation, Nigeria has the potential to cultivate a proficient labor force, improve infrastructure connectivity, and stimulate economic progress to the advantage of all inhabitants.

Nonetheless, the complete realization of the extensive advantages stemming from this fusion demands collaborative endeavors from governmental bodies, the corporate sector, educational institutions, and non-governmental organizations. Through collaborative actions aimed at surmounting obstacles and leveraging possibilities, stakeholders have the potential to utilize the revolutionary influence of Technical and Vocational Education and Training (TVET) and Railway Systems to foster a future in Nigeria that is both prosperous and just.

REFERENCES

- ADB (2021). Technical and Vocational Education and Training in the Phillipines in the Age of Industry 4.0. Available at <https://www.adb.org/sites/default/files/publication/679041/tvet-philippines-age-industry.pdf> Accessed May 12th, 2024.
- Abioye, O., Shubber, K. & Koenigsberger, J. (2016). Evaluating the role and impact of railway transport in the Nigerian economy, options and choices: Case of Nigerian Railway Corporation. *AshEse Journal of Economics*, 2(4), 103-113
- Adesoji, A. (2010). Bringing the Nigerian Railways back on track: Challenges and options. Paper presented at Monthly NISER Seminar Series, held at the NISER conference room in November 13, 2010, 1-20
- Agbaeze, E.K. & Onwuka, I.O. (2014). Boosting Railway System Infrastructure in Nigeria: The Public-Private Partnership Option. *Journal of Business Administration and Management Sciences Research*, 3(9), 184-193.
- Allen, J. E. (2020). Challenges and Prospect of Vocational Technical Education and Training in Tertiary

- Institution in South-South, Nigeria. *Vocational and Technical Education Journal (VOTEJ)*.2(1), 273-278
- Aliyu, I.L. (2023). Enhancing National Development by advancing Technical and Vocational Education in Nigeria to Foster Human Capital Development. *International Journal of Education, Culture and Society*, 1(1), 86-99.
- Akanbi, G.O. (2017). Prospects for technical and vocational education and training (TVET) in Nigeria: Bridging the gap between policy document and implementation. *The International Education Journal: Comparative Perspectives*, 16(2), 1-15.
- Akeem A. A. & Najeem O. A. (2020). Technical and Vocational Education and Training (TVET); A Necessity for Crime Reduction and Economic Transformation. Proceedings of the 2nd International Conference, The Federal Polytechnic, Ilaro, 10th – 11th Nov. 2020. 1822-1831.
- Akinyele, T.A. & Bolarinwa, F.F.B. (2018). Prospects, Issues and Challenges of Technical and Vocational Education and Training (TVET) in Revamping Nigeria Depressed Economy. *International Journal of Vocational and Technical Education Research*, 4(1), 1-18.
- Akuesodo O.E., Okonkwo, I.V., Okaro C.S., Okoye N.J., Okere, W. (2024). Transportation Infrastructure Development and Nigeria's Economy: An Empirical Investigation. *International Journal of Social Science, Technology and Economics Management*, 1(2), 330-338.
- Audu, R., Yusri, B.K. & Farhad, B. (2013). Technical Vocational Education: As a Veritable Tool for Eradicating Youth Unemployment in Nigeria. *International Journal of Humanities and Social Science Invention*, 2(1), 49-56.
- Blumenfeld, M., Wemakor, W., Azzouz, L. & Roberts, C. (2019). Developing a New Technical Strategy for Rail Infrastructure in Low-Income Countries in SubSaharan Africa and South Asia. *Sustainability*, 11, (4319), 2-23.
- Eze, T. I., & Okorafor, A. O. (2016). A Century of Nigeria's Existence: The Need to Strengthen Technical, Vocational Education and Training. *Journal of Emerging Trends in Educational Research and Policy Studies (JETERAPS)*, 7(2), 125-133.
- Faajir, A. & Zidan, Z.H. (2016). An analysis of the issues and challenges of transportation in Nigeria and Egypt *The Business and Management Review*, 7(2), 18-29.
- FRN (2019). Federal Republic of Nigeria. Federal Ministry of Education Handbook.
- FRN (2013) Federal Republic of Nigeria. National Policy on Education 2013.

- Inyiagu, E. E. (2014). Challenges Facing Technical and Vocational Education in Nigeria. *Journal of Educational Policy and Entrepreneurial Research (JEPER)*, 1(1), 40-45.
- Joseph, S. (2020). TVET Systems: A Panacea for curbing Youth Unemployment in Nigeria through Entrepreneurship Education. *Vocational and Technical Education Journal (VOTEJ)*, 2(1), 72-76.
- Kankia, J. D. & Awang, H. B. (2018). Technical and Vocational Education and Training (TVET) and Apprenticeship Practice in Nigeria: Problems and Prospects. *Online Journals for TVET Practitioners*. 3(2), 1-7.
- Korter, G.O. (2023). Quality Assurance in Nigerian Technical and Vocational Education and Training Institutions: Strategies for Improvement. *Journal of Health, Applied Sciences and Management*, 6(3), 109-120.
- Labib, A. & Anson, J. (2020). High-Speed Railways and the Environmental Sustainability: Realising the Potential. *International Journal of Environmental Sciences & Natural Resources*. 24(1), 0013-0015.
- Muoghalu, N. C. (2018). Challenges of Technical and Vocational Education in Nigeria. *International Journal of Research (IJR)*, 5(1), 2348-6848.
- NBS (2024). National Bureau of Statistics. Rail Transportation Data (Q4 2023). Available at <https://nigerianstat.gov.ng/elibrary/read/1241483> Accessed May 17th 2024.
- NBTE (2020). National Board for Technical Education. Digest of Statistics of Technical Vocational Education Training (TVET) Institutions in Nigeria 2018/2019. Available at <https://www.nbte.gov.ng/nbte/sites/default/files/2024-01/DIGEST%20OF%20TVET%20STATISTICS%202018-19%20R%26S-.pdf> Accessed May 12th, 2024.
- Nwokike, J.J., F.O. & Nwokike, A.N. Alio (2019). Technical and Vocational Education and Training (TVET) as a Panacea for poverty reduction in Enugu State. *International Journal of Vocational and Technical Education Research*, 5(4), 16-26.
- Nwosu, J.C. & Micah, E.M. (2017). Technical and Vocational Education and Training as a Tool for National Sustainable Development in Nigeria. *The International Journal of Social Sciences and Humanities Invention*, 4(9), 3983-3988.
- Obe, E.S., Ibe, C.C. and Emenike, G.C. (2022). Challenges of Rail Transportation in South West Nigeria. *United International Journal for Research & Technology (UIJRT)*, 03(06), 76-81.
- Ogochukwu, C.G.; Ogochukwu, O.F; Ogorchukwu, I.M. & Ebuka, I.A. (2022). Assessment of the performance of railway transportation in Nigeria from 1970 to 2010. *Scientific African*, 15 (e01120), 1-12.

- Oguchi, C.B. (2020). Challenges and Prospects of the New Nigeria Railway Corporation: An Assessment of Buhari Rail Projects. *International Journal of Advanced Research in Public Policy, Administration and Development Strategies (IJARPPADS)*, 4(1), 183-192.
- Okoye, R. & Arimonu, M.O. (2016). Technical and Vocational Education in Nigeria: Issues, Challenges and a Way Forward. *Journal of Education and Practice*, 7(3), 113-118.
- Okwelle, P.C. & Deebom, M.T. (2017). Technical Vocational Education and Training as a Tool For Sustainable Empowerment of Youths in Niger Delta, Nigeria. *International Journal of Innovative Social & Science Education Research*, 5(1), 29-38.
- Oladayo, K. (2015). Overseeing the Resurrection of Nigerian Railways. News Agency of Nigeria (NAN). Available at <https://web.archive.org/web/20160726153512/http://nannewsnigeria.com/news-analysis-overseeing-resurrection-nigerian-railways> Accessed May 17th 2024.
- Olowe, M.O. (2023). Vocational and Technical Education: A Functional Education for Sustainable Development in a Global Turbulent Era. *International Journal of Vocational and Technical Education Research*, 10(1), 1-11.
- Oluwakoya A.O., Ogudipe S.D., 2021, An Assessment of the Geometric Growth of Railway Transport in Nigeria. A Literature based Study from 1970 and 2016. *Transport Geography Papers of PGS*, 24(4), 30-40.
- Onatere, J. O., Nwagboso, C., & Georgakis, P. (2014). Performance Indicators for Rail Transport System in Nigeria. *American Society of Civil Engineers: T&DI Congress 2014*, 753-764.
- Onatere-Ubrurhe, J.O. (2016). *Developing a Benchmarking Methodology for the Nigerian Transport Sector*. Doctoral Thesis. University of Wolverhampton. https://wlv.openrepository.com/bitstream/handle/2436/620336/Onatere-Ubrurhe_PhD%20thesis.pdf?sequence=1
- Onatere-Ubrurhe, J.O., Nwagboso, C. & Georgakis, P. (2016). Benchmarking Users' Satisfaction with Public Transport Services in Nigeria. *Journal of Economics and Sustainable Development*, 7(10), 161-168.
- Onokala, P.C. & Olajide, C.J. (2020). Problems and Challenges Facing the Nigerian Transportation System which affect their Contribution to the Economic Development of the Country in the 21st Century. *Transportation Research Procedia*, 48, 2945–2962.

- Oraegbune, M.O. & Ugwu, O.O. (2020). Delivering Sustainable Transport Infrastructure Projects (Railway) in Nigeria: Frameworks, Indicators, Methods and Tools. *Nigerian Journal of Technology (NIJOTECH)*, 39(3), 665 – 679.
- Oviawe, J.I. (2018). Revamping Technical Vocational Education and Training through Public-Private Partnerships for Skill Development. *Makerere Journal of Higher Education*, 10(1), 73-91.
- Shefiu, R. & Ayika, S. N. (2019). Technical Vocational Education and Training (TVET) as a Panacea to Solving Nigeria's Youths' Problem of Unemployment. *Continental Journal of Social Sciences*, 1 (1), 1–16.
- Soretire, O.O., Osinubi, O.B; OJO, A.J., Ajayi, A.P. & Oluwakoya, A. (2024). Sustainability of Nigeria's Rail Transport System: An Economic Perspective. *International Journal of Scientific Research and Management (IJSRM)*, 12(4), 6210-6216.
- Soretire, O; Lawal-Fagbo, S; Ajayi, A., Oluwakoya, A. & Fayomi, I. (2023). Assessing the Environmental Sustainability of Railway Transportation in Nigeria. *Innovations*, 75, 962-971.
- Udoudo, N. J., & Ikeji, F. I. (2023). Policy Reforms in Technical Vocational Education and Training (TVET) for Sustainable Development in Abia State, Nigeria. *Integrity Journal of Education and Training*, 7(2), 26-35.
- Ugwukah, A.C. & Ali, A.D. (2020). The Role of Transport in the Colonial Economy of Nigeria 1900-1960. *Journal of Nigerian Transport History*. 1(2), 143-162.
- UNESCO (2021). UNESCO Strategy for TVET (2022-2029): Transforming TVET for successful and just transitions. Available at https://unevoc.unesco.org/pub/unesco_strategy_for_tvete_2022-2029_discussion_document.pdf Accessed May 12th, 2024.
- Trainer, S.B. (2015). Technical Education and Vocational Training for Sustainable Development. *Journal and Training and Development*. 1(1), 16-20.
- Zite, B.N. & Okwelle, P.C. (2018). Revamping Technical and Vocational Education and Training in Niger Delta for Sustainable Development. *International Journal of Humanities Social Sciences and Education (IJHSSE)*, 5(3), 91-95.
- Zite, B.N. & Deebom, M.T. (2017). Enhancing Technical Vocational Education and Training (TVET) as a Tool for National Development in Nigeria: Issues, Challenges and Strategies. *Journal of Education, Society and Behavioural Science*. 21(4), 1-9.