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Perception Of Educators On The Role Of Artificial Intelligence (AI) In Teaching And Learning Vocational Education In North Central Nigeria

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Abstract
This study examined the perceptions of vocational educators on the role of Artificial Intelligence (AI) in teaching and learning of Vocational Education in Colleges of Education in North Central Nigeria. This study utilized survey research design and the population of the study was 7,835 vocational education lecturers and students from 16 Colleges of Education in the North Central Nigeria. Krejcie and Morgan table was used in determining the sample size of the study which was 364. The study utilized structured questionnaire developed by the researchers in data collection. The instrument was validated by experts from Kwara State University, Malete, and pilot tested with 50 participants from Kaduna State College of Education, Gidan Waya. To ensure reliability, Cronbach's alpha statistics was used to determine its internal consistency and 0.88 was obtained. The study used simple percentage, frequency counts mean and standard deviation to summarize demographic characteristics and perceptions, while t-test was used to test the null hypotheses at alpha level of 0.05. Based on the findings, the study concluded that while AI tools are frequently employed by educators and students, significant gaps in training and awareness hinder optimal integration. Educators recognize the potential of AI to enhance educational quality and student's engagement, yet many lack the necessary training to effectively incorporate these technologies into their teaching methodologies. The study recommended among others that institutions should organize ongoing training programmes focused on AI tools for educators to improve their competency and confidence in using these technologies.

Key Word: *Artificial Intelligence (AI). Teaching and Learning and Vocational Education.*

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I. Introduction

The rapid advancement of Artificial Intelligence (AI) has significantly transformed various sectors, including education, prompting a re-evaluation of traditional teaching and learning methodologies. AI has the potential to enhance educational outcomes through personalized learning experiences and improved engagement. Artificial Intelligence involves a collection of technologies that enable machines to act with a very high level of intelligence similar to humans (Benhamou & Janin, 2018). Artificial Intelligence (AI) is the development of computer systems that can perform tasks that typically require human intelligence, such as learning, problem-solving, and decision-making (Russell & Norvig, 2021). Elhajjar, Karam and Borna (2021) advocate integrating AI into vocational education to equip students with skills essential for future jobs and digital society's demands, such as innovation, creativity, and design thinking. Vocational education is a field of study that focuses on teaching the skills, knowledge, and principles necessary for success in the world of work. Vocational education forms a critical pillar of higher education, equipping students with essential skills and knowledge required for success in the dynamic and competitive corporate landscape (Alonta, Onwubuya & Onwuamaeme, 2023).

Artificial Intelligence (AI) offer tailored learning experiences that adapt to the unique needs and preferences of individual vocational education students, thereby promoting a more personalized educational journey. For instance, AI can analyze students' learning styles and performance data to customize content delivery, ensuring that each learner receives the support necessary to thrive (Babu George, 2023). However, the challenges associated with AI adoption, including technological barriers, insufficient training, and concerns about data privacy, remain pressing issues that need to be addressed. As AI continues to evolve, there is an urgent need for comprehensive research that explores these perceptions in depth, enabling stakeholders to develop targeted strategies for integrating AI into vocational education curricula effectively.

Artificial Intelligence (AI) is the development of computer systems that can perform tasks that typically require human intelligence, such as learning, problem-solving, and decision-making (Russell & Norvig, 2021). Artificial Intelligence (AI) encompasses a broad range of technologies and methodologies aimed at enabling machines to perform tasks that typically require human intelligence. The term was first coined by John McCarthy

in 1955, who defined it as "the science and engineering of making intelligent machines (United Nations Economic Commission for Europe, 2021). International Organization for Standardization (ISO) (2022) defined AI is as a field devoted to engineered systems that generate outputs like content, forecasts, and recommendations based on human-defined objectives.

Vocational education is designed to equip students with the knowledge, skills, and competencies needed for specific trades or occupations. It prepares individuals for employment or further education in fields that require practical expertise and specialized training. Programs typically include hands-on learning experiences, practical instruction, and real-world applications of skills across various career pathways such as healthcare, automotive technology, construction, and information technology (Okoye & Onyenwe Arimonu, 2016). Vocational education refers to training that prepares individuals for jobs requiring specific skills or knowledge (Dixit & Ravichandran, 2023). The European Centre for the Development of Vocational Training (Cedefop) (2014) describes vocational education as an educational framework that aims to equip individuals with the necessary knowledge, skills, and competencies required in specific occupations or more broadly in the labor market.

Teaching and Learning involves using various approaches and activities to help learners gain the necessary skills, knowledge, and understanding for a particular purpose, such as obtaining a qualification or performing a job role. It involves gaining and using new knowledge to demonstrate a change, which might relate to the performance of a skill, the demonstration of understanding, and/or a change in behavior and attitudes (Gravells, 2019). The concept of teaching and learning is foundational to education, encompassing a dynamic interplay between educators and learners. Teaching can be defined as a structured process aimed at facilitating learning by imparting knowledge, skills, and attitudes. According to Gage (1963), teaching is "a form of interpersonal influence aimed at changing the behavior potential of another person." This definition highlights the relational aspect of teaching, emphasizing that effective teaching involves not just the delivery of content, but also the ability to engage and motivate students. Teaching is often viewed as a scientific process, where various components such as content, communication, and feedback play critical roles in achieving educational objectives (Rajagopalan, 2020). Learning, on the other hand, is understood as a transformative process that leads to a change in knowledge or behavior. It is often described as an active endeavor where learners construct their understanding based on prior experiences and new information (Bruner, 1966).

The role of Artificial Intelligence (AI) in vocational education is increasingly significant as it transforms traditional teaching and learning methodologies, making them more efficient, personalized, and aligned with industry demands. AI technologies, such as machine learning, natural language processing, and intelligent tutoring systems, are being integrated into vocational education to enhance student engagement, improve skill acquisition, and streamline administrative processes. One of the primary contributions of AI in vocational education is the facilitation of personalized learning experiences. AI systems can analyze individual student data to tailor educational content to meet specific learning needs. For instance, adaptive learning platforms can modify the pace and difficulty of lessons based on real-time assessments of a student's understanding. This personalized approach not only increases student engagement but also enhances retention and mastery of skills essential for their chosen professions (Rosyadi, Chen & Spöttl, 2023). By providing customized learning paths, AI helps students acquire both theoretical knowledge and practical skills more effectively. AI plays a crucial role in curriculum development and alignment with industry needs. In reference to labour market trends and skill requirements, AI can assist educators in designing curricula that reflect the competencies needed in various sectors. This ensures that vocational programs remain relevant and up-to-date, better preparing students for employment opportunities after graduation (Chen & Spöttl, 2022). AI-driven tools can also facilitate the creation of dynamic teaching materials that adapt to technological advancements and market demands and it enhance learning experiences and curriculum relevance.

In enhancing learning experiences and curriculum relevance, AI significantly impacts career guidance and job placement within vocational education. AI systems can analyze vast amounts of labor market data to match students' skills and interests with available job opportunities. This capability aids students in making informed decisions about their future careers while boosting their employability (Yusro, Misin & Mauludin, 2024). For example, AI-driven chatbots can guide students through the job application process, helping them create resumes and prepare for interviews. Furthermore, the use of virtual simulations and intelligent tutoring systems offers students practical training opportunities in a controlled environment. These technologies allow learners to engage with realistic scenarios relevant to their fields, enhancing their hands-on skills without the risks associated with real-world practice (Janius, Ishar, Bang, Sid & Wong, 2024).

Statement of the Problem

The integration of Artificial Intelligence (AI) into educational practices has become increasingly prevalent, yet its impact on teaching and learning remains under-explored, particularly in the context of vocational education in Nigeria. Despite the potential benefits of AI, such as personalized learning experiences, enhanced administrative efficiency, and improved access to educational resources, there is a notable gap in the awareness

and preparedness of both educators and students to effectively utilize these technologies. Preliminary observations suggest that many vocational educators may lack familiarity with AI tools and their applications in the classroom, leading to underutilization. Similarly, students may not fully comprehend the advantages that AI can offer in their learning processes, which may hinder their engagement and preparedness for a workforce increasingly influenced by technology. A 2024 study by Surugiu, Grădinaru, and Surugiu found that while a majority of educators and students had used AI tools, but their understanding of the specific ways these tools could benefit education was limited. The research revealed that there is limited familiarity of students and educators with AI's benefits for education, despite 87.8% haven used AI previously.

It is based on the above discussion that this study seeks to examine the perception of vocational educators on the role of artificial intelligence in teaching and learning of vocational education in Colleges of Education in North Central, Nigeria.

Objectives of the Study

i. To examine the extent of AI utilization in teaching and learning processes by Vocational educators and students in Colleges of Education in North Central, Nigeria.
ii. To examine the challenges faced by vocational educators and students in adopting AI technologies in teaching and learning in Colleges of Education in North Central, Nigeria

Research Questions

i. What is the extent of AI utilization in teaching and learning processes by Vocational educators and students in Colleges of Education in North Central, Nigeria?
ii. What are the challenges faced by vocational educators and students in adopting AI technologies in teaching and learning in Colleges of Education in North Central, Nigeria?

Research Hypotheses

HO1: There is no significant difference in the mean responses of educators and students on the extent of AI utilization in teaching and learning processes by Vocational educators and students in Colleges of Education in North Central, Nigeria.

HO2: There is no significant difference in the mean responses of educators and students on the challenges faced by vocational educators and students in adopting AI technologies in teaching and learning in Colleges of Education in North Central, Nigeria.

II. Material And Methods

The study utilized descriptive survey research design. The population of the study was 7,835 comprising of 420 Vocational Education lecturers and 7,415 Students from 16 Colleges of Education in the North Central Zone of Nigeria. In view of the size of the population. Krejcie and Morgan table was used in determining the sample size of the study which was three hundred and sixty four (364). Simple random techniques was used in the selection of six Colleges of Education in North Central Zone, Nigeria. The names of schools and total number of respondents sampled are: twelve (12) Lecturers and one hundred and two (102) students from Niger State College of Education Minna, six (6) Lecturers and fourty nine (49) students from College of Education Katsina-Ala, Benue State, six (6) Lecturers and fourty seven (47) from Federal College of Education, Okene, five (5) Lecturers and fourty one (41) students from Federal College of Education, Pankshin Plateau State, three (3) lecturers and nineteen (19) students from Kwara State College of Education, Oro, Kwara State and eight (8) lecturers and sixty six (66) students from College of Education Akwanga, Nasarawa State. The instrument used in data collection was a structured questionnaire titled: Perception of Educators on the Role of Artificial Intelligence in Teaching and Learning Vocational Education Questionnaire (PERAITLVEQ). The instrument was validated using face and content validity approach by three experts: One from Department of Entrepreneurship and Business Education, Kwara State University, Malete, one from Department of Computer Science Federal University of Technology, Minna and one from Faculty of Vocational and Technical Education, Department of Computer Science, University of Nigeria, Nsukka.

The instrument was pilot tested with 50 participants from Kaduna State College of Education, Gidan Waya. Cronbach's alpha statistics was used to determine its internal consistency and 0.88 was obtained. The statistical tools used in data analysis was simple percentage, frequency table, mean and standard deviation, while t-test with the aid of SPSS20 was used in testing null hypotheses at alpha level of 0.05 significance.

III. Result

Table 1 revealed that 260 representing 73.9% of the respondents were male, while the remaining 92 representing 26.1% female. The implication of this is that both male and female respondents participated in the study.

Table 1: Gender of the Respondents

S/NO	Gender	Frequency	Percentage (%)
1	**Male**	**260**	**73.9**
2	**Female**	**92**	**26.1**
	Total	**352**	**100**

Source: Field Survey, 2025

Research Question 1: What is the extent of AI utilization in teaching and learning processes by Vocational educators and students in Colleges of Education in North Central, Nigeria?

Result in table 2 which focused on the extent of AI utilization in teaching and learning processes by Vocational educators and students in Colleges of Education in North Central, Nigeria, reveals that the respondents agreed to 7 items out of the 9 items in the table which recorded a grand mean of 2.96 and standard deviation of 0.64. The interpretation is that the educators regularly use AI tools to support their teaching/learning, the educators frequently use AI to provide personalized feedback to students, students frequently use AI in doing assignments, AI-based simulations or virtual labs such as real-time 3D visualization of clothing design, weather and resource algorithms as well as supply Chain Game are not used in vocational courses, educators often use AI tools for improving lesson planning and delivery, educators does not often use AI for assessment learning outcomes, educators often use AI in grading their students, educators do not regularly received training on the use of AI in Vocational education and educators often use AI to enhance students' creativity in practical tasks.

Table 2: Mean and standard deviation of responses on the extent of AI utilization in teaching and learning processes by Vocational educators and students in Colleges of Education in North Central, Nigeria

S/N	Statement	$\bar{X}$	Std. Dev.	Remarks
1	I regularly use AI tools to support my teaching/learning.	3.57	0.63	Accepted
2	I frequently use AI to provide personalized feedback to students.	3.39	0.69	Accepted
3	Students frequently use AI in doing assignments	3.48	0.72	Accepted
4	AI-based simulations or virtual labs such as real-time 3D visualization of clothing design, weather and resource algorithms, Supply Chain Game are used in vocational courses.	2.10	0.45	Rejected
5	I often use AI tools for improving lesson planning and delivery.	3.48	0.64	Accepted
6	I often use AI for assessment learning outcomes	2.18	0.54	Rejected
7	I often use AI in grading my students	2.97	0.98	Accepted
8	I do not regularly received training on the use of AI in Vocational education.	2.87	0.96	Accepted
9	I often use AI to enhance students' creativity in practical tasks.	2.63	0.91	Accepted
	Grand Mean	**2.96**	**0.64**	

Source: Field Survey, 2025

Research Question 2: What are the challenges faced by vocational educators and students in adopting AI technologies in teaching and learning in Colleges of Education in North Central, Nigeria?

Result in table 3 which focused on challenges faced by vocational educators and students in adopting AI technologies in teaching and learning in Colleges of Education in North Central, Nigeria, revealed that the respondents agreed to 6 out of 9 items in the table. The table recorded a grand mean of 2.77 and standard deviation of 0.96 are considered as the challenges faced by vocational educators and students in adopting AI technologies in teaching and learning in Colleges of Education in North Central, Nigeria. The interpretation is that there is inadequate infrastructure (e.g., internet, computers) for using AI tools, the educators lack sufficient knowledge and training to use AI in teaching/learning, high cost of acquiring AI tools limits its usage, there is no resistance to change among educators regarding the use of AI, students are not well-oriented on how to use AI for educational purposes, power supply issues hinder the effective use of AI technologies, limited access to AI resources influences it usage in vocational education, lack of policy or administrative support discourages AI use, time constraints does not affect using AI tools in vocational education.

Table 3: Means and standard deviation of responses the challenges faced by vocational educators and students in adopting AI technologies in teaching and learning in Colleges of Education in North Central, Nigeria

S/No	Statement	$\bar{X}$	Std. Dev.	Remarks
1	Inadequate infrastructure (e.g., internet, computers) for using AI tools.	3.41	0.7	Accepted
2	I lack sufficient knowledge and training to use AI in my teaching/learning.	2.83	0.93	Accepted
3	High cost of acquiring AI tools does not limits its usage.	2.33	1.01	Rejected
4	There is no resistance to change among educators regarding the use of AI.	3.02	0.96	Accepted
5	Students are not well-oriented on how to use AI for educational purposes.	2.77	0.97	Accepted

6	Power supply issues hinder the effective use of AI technologies.	2.91	1.0	Accepted
7	Limited access to AI resources does not influences it usage in vocational education.	2.43	1.05	Rejected
8	Lack of policy or administrative support discourages AI use.	2.84	0.97	Accepted
9	Time constraints does not affect me from using AI tools.	2.43	1.05	Rejected
	Grand Mean	2.77	0.96	Accepted

Source: Field Survey, 2025

Test of Hypotheses

H_{O1}: There is no significant difference in the mean responses of educators and students on the extent of AI utilization in teaching and learning processes by Vocational educators and students in Colleges of Education in North Central, Nigeria.

Table 5 show that the calculated t-value of 0.51 at 350 degrees of freedom and at 0.05 level of significance is less than the critical value of 1.91. This shows that there is no significant difference in the mean responses of educators and students on the extent of AI utilization in teaching and learning processes by Vocational educators and students in Colleges of Education in North Central, Nigeria. Therefore, the null hypothesis was accepted.

HO2: There is no significant difference in the mean responses of educators and students on the challenges faced by vocational educators and students in adopting AI technologies in teaching and learning in Colleges of Education in North Central, Nigeria.

Table 5: Summary of t-test analysis on the extent of AI utilization in teaching and learning processes by Vocational educators and students in Colleges of Education in North Central, Nigeria

Variables	No	Mean	SD	Df	T-Cal	T-Tab	L. Sig	Remarks
Male	260	3.25	0.69					
Female	92	3.22	0.61	350	0.51	1.91	05	Not Sig.

Source: Field Survey, 2025

Table 6 show that the calculated t-value of 0.54 at 350 degrees of freedom and at 0.05 level of significance is less than the critical value of 1.93. This shows that there is no significant difference in the mean responses of educators and students on the challenges faced by vocational educators and students in adopting AI technologies in teaching and learning in Colleges of Education in North Central, Nigeria. Therefore, the null hypothesis was accepted.

Table 6: Summary of t-test analysis on the challenges faced by vocational educators and students in adopting AI technologies in teaching and learning in Colleges of Education in North Central, Nigeria

Variables	No	Mean	SD	Df	T-Cal	T-Tab	L.Sig	Remarks
Male	260	2.66	0.67					
Female	92	2.58	0.66	350	0.54	1.93	05	Not Sig.

Source: Field Survey, 2025

IV. Discussion

The interpretation of research question 1, which focused on the extent of AI utilization in teaching and learning processes by Vocational educators and students in Colleges of Education in North Central, Nigeria revealed that the educators regularly use AI tools to support their teaching/learning, the educators frequently use AI to provide personalized feedback to students, students frequently use AI in doing assignments, AI-based simulations or virtual labs such as real-time 3D visualization of clothing design, weather and resource algorithms, Supply Chain Game are not used in vocational courses, educators often use AI tools for improving lesson planning and delivery, educators does not often use AI for assessment of learning outcomes, educators often use AI in grading their students, educators do not regularly received training on the use of AI in Vocational education and educators often use AI to enhance students' creativity in practical tasks.

The interpretation research question 2, which focused on the challenges faced by vocational educators and students in adopting AI technologies in teaching and learning in Colleges of Education in North Central, Nigeria indicated that there is inadequate infrastructure (e.g., internet, computers) for using AI tools, the educators lack sufficient knowledge and training to use AI in teaching/learning, high cost of acquiring AI tools limits its usage, there is no resistance to change among educators regarding the use of AI, students are not well-oriented on how to use AI for educational purposes, power supply issues hinder the effective use of AI technologies, limited access to AI resources influences it usage in vocational education, lack of policy or administrative support discourages AI use and time constraints does not affect using AI tools.

The findings above is agreement with that of Ogoronte and Bupo (2024) whose findings indicated a high level of readiness among vocational education teachers to integrate AI and Learning Management Systems (LMS)

into their teaching practices, suggesting that these technologies can enhance personalized learning experiences and improve educational outcomes. The finding also supported that of Olaoye and Adetunmbi (2023) whose research highlighted that educators' familiarity with AI tools is crucial for enhancing instructional delivery in vocational education; however, many still lack adequate knowledge and skills to effectively implement these technologies into their teaching methodologies. The finding also agrees with that of Unegbu, Okafor and Asuzu, (2024) who reported that the level of awareness and utilization of artificial intelligence in teaching Vocational Education in Colleges of Education in Anambra State were low, emphasizing the need for seminars and workshops to enhance educators' capabilities in leveraging AI for effective teaching practices in business education.

V. Conclusion

Based on the findings, this study concluded that while AI tools are frequently employed by educators and students, significant gaps in training and awareness hinder optimal integration. Educators recognize the potential of AI to enhance educational quality and student's engagement, yet many lack the necessary training to effectively incorporate these technologies into their teaching methodologies. Furthermore, students demonstrate active usage of AI for learning but are often unfamiliar with various applications relevant to their studies. The study further concluded that challenges such as insufficient technological infrastructure, limited institutional support, and concerns about data privacy pose barriers to effective AI adoption. The lack of awareness among educators regarding the benefits of AI further complicates this issue. Despite these hurdles, there is a clear consensus on the need for enhanced training and resources to facilitate the integration of AI into Vocational Education curriculum.

VI. Recommendations

The following recommendations were made based on the findings:

i. Institutions should organize ongoing training programmes focused on AI tools for educators to improve their competency and confidence in using these technologies. The institutions should invest in technological infrastructure to support the integration of AI, ensuring that both educators and students have access to necessary resources.
ii. Institutions should establish partnerships between educators and technology specialists to provide insights and practical strategies for effective AI implementation and that institutions should create awareness about the benefits and applications of AI among business educators to foster a more informed teaching environment.
iii. A comprehensive Vocational Education curriculum that includes AI applications should be developed; ensuring that both educators and students are equipped with relevant knowledge and that vocational educators should encouraging student feedback on AI tools to help refine their effectiveness and usability in educational settings.

References

[1]. Alonta, G. C. Onwubuya, U. N. & Onwuamaeme, R. O. (2024). Perceived Threats Of Artificial Intelligence On The Academic Retention And Critical Thinking Of Vocational Education Undergraduates In Public Universities In Anambra State. International Journal Of Research And Scientific Innovation (Ijrsi). 7(5), 12-19. Www.Rsisinternational.Org
[2]. Babu, G. (2023). Artificial Intelligence And Business Education: Contemporary Challenges And Futuristic Solutions. Higher Education Digest
[3]. Benhamou, S., & Janin, E. (2018). Artificial Intelligence And Work. In Artificial Intelligence And The Future Of Work. Revue D'économie Industrielle, 169(1), 57-88. Https://Journals.Opened Ition.Org/Rei/8727
[4]. Bruner, J. S. (1966). Toward A Theory Of Instruction. Harvard University Press.
[5]. Cedefop (2014). The Changing Nature And Role Of Vocational Education And Training In Europe. European Centre For The Development Of Vocational Training. Https://Cedefop.Com
[6]. Chen, P., Li, T., & Spöttl, G. (2022). Opportunities And Challenges Of AI In Vocational Education: A Case Study Using Chatgpt. International Journal Of Learning Technologies, 10(5), 590- 605.
[7]. Dixit, P., & Ravichandran, R. (2023). The Impact Of Vocational Education On Economic Growth And Development. Indian Journal Of Vocational Education.
[8]. Ecampus, O. (2023). Student AI Use Integrating Artificial Intelligence In Business Education. Retrieved From Https://Ecampusontario.Pressbooks.Pub/Aiinbusinesseducation/Chapter/Student-Ai-Use/
[9]. Elhajjar, X., Karam, S. And Borna, S., 2021. Artificial Intelligence In Vocational Education Programs. Marketing Education Review, [E-Journal] 31(1), 2-13.Https://Doi.Org/10.1080/10528008.2020.1835492.
[10]. Gage, N. L. (1963). Handbook Of Research On Teaching. Rand Mcnally
[11]. Gravells, A. (2019). Principles And Practices Of Teaching And Training: A Guide For Teachers And Trainers In The FE And Skills Sector. Learning Matters.
[12]. International Organization For Standardization (IOS) (2022). What Is Artificial Intelligence (AI)? Retrieved From Https://Www.Iso.Org/Artificial-Intelligence/What-Is-Ai.
[13]. Janius, N., Ishar, M. I. M., Bang, P., Sid, R., & Wong, G. (2024). Advancement Of AI Tools In Learning For Technical Vocational Education And Training: Opportunities And Challenges. International Journal Of Social Research And Development, 5(1), 45-58.
[14]. Okoye, R., & Onyenwe Arimonu, M. (2016). Technical And Vocational Education In Nigeria: Issues, Challenges And A Way Forward. Journal Of Education And Practice, 7(3), 113-118

[15]. Olaoye, A.A., & Adetunmbi, A.O. (2023). The Role Of Artificial Intelligence In Enhancing Teaching Effectiveness In Business Education: Challenges And Prospects In Nigerian Colleges Of Education. Journal Of Educational Technology Development And Exchange, 16(1), 45-60.
[16]. Rosyadi, A., Chen, P., Li, T., & Spöttl, G. (2023). The Role Of AI In Vocational Education: A Systematic Literature Review. Journal Of Vocational Education Studies, 6(2), 244-263.
[17]. Russell, S. J., & Norvig, P. (2021). Artificial Intelligence: A Modern Approach. Pearson.
[18]. Surugiu, C., Grădinaru, C. & Surugiu, M.R., (2024). Artificial Intelligence In Vocational Education: Benefits And Tools. Amfiteatru Economic, 26(65), 241-258.
[19]. Unegbu, C., Okafor, J., & Asuzu, P. (2024). Awareness And Utilization Of Artificial Intelligence In Teaching Vocational Education In Colleges Of Education In Anambra State. Nigerian Journal Of Vocational And Technical Education, 10(2), 45–58.
[20]. United Nations Economic Commission For Europe (2021). Artificial Intelligence Definition And Specifics Of Its Application For Automated Road Vehicles. Retrieved From Https://Unece.Org/Sites/Default/Files/2021-01/GRVA-09-23e.Pdf
[21]. Yusro, M., Misin, R., & Mauludin, M. A. (2024). Vocational Education Development Strategy In The Use Of Artificial Intelligence: Impacts On Teaching And Learning Processes. In Proceedings Of The 5th Vocational Education International Conference (VEIC-5 2023) (Pp. 734-741). Atlantis Press. Retrieved From Https://Doi.Org/10.2991/978-2-38476-198-2_100