

# International Journal of Social Science Exceptional Research

## Influential factors of artificial intelligence in digital transformation in Vietnam education industry

Nguyen Van Toai <sup>1\*</sup>, Do Thi Thu Hien <sup>2</sup>, Tran Quang Thuan <sup>3</sup>

<sup>1</sup> Ho Chi Minh City University of Industry and Trade, Vietnam

<sup>2</sup> Van Hien University, Vietnam

<sup>3</sup> Posts and Telecommunications Institute of Technology, Vietnam

\* Corresponding Author: **Nguyen Van Toai**

### Article Info

**ISSN (online):** 2583-8261

**Volume:** 03

**Issue:** 03

**May-June** 2024

**Received:** 10-03-2024;

**Accepted:** 13-04-2024

**Page No:** 14-21

### Abstract

Artificial intelligence (AI) has become an indispensable tool in the education industry, playing a decisive role in creating innovative and advanced learning opportunities for students in Vietnam. Under the influence of AI, the education industry is undergoing a potential digital transformation, bringing great benefits to both students and teachers. The article uses quantitative research, surveyed by 150 experts and managers in the field of education. Research results on the impact factors of AI in digital transformation of Vietnam's education sector show: Machine learning and data analysis system ( $\beta^1 = 0.246$ ) and Smart Evaluation System ( $\beta^5 = 0.223$ ) is the most influential, followed by Virtual Learning Experience ( $\beta^2 = 0.124$ ), Online Learning Platform ( $\beta^4 = 0.205$ ), Smart Tutoring System ( $\beta^3 = 0.204$ ) all have influence affects the operation of artificial intelligence in digital transformation of Vietnam's education sector.

Based on practical research, the influencing factors of artificial intelligence in digital transformation of Vietnam's education sector. The article has proposed 05 implications for improving the operation of artificial intelligence in digital transformation of Vietnam's education sector.

**Keywords:** AI, Education, Digital transformation

### 1. Introduction

The 4.0 technological revolution has been having a strong impact on all aspects of social life, through technologies such as the Internet of Things (IoT) and artificial intelligence (AI). Virtual reality (Virtual Realtime - VR), interactive virtual reality (Augmented Reality - AR), social networks, cloud computing, mobile, analysis based on big data (Social, Mobile, Analytics and Cloud - SMAC) ... to transform the entire real world into a digital world. Education will not be outside of that influence. Education has changed over the centuries, from the scope of knowledge to the models and spaces of learning. In the era of Industrial Revolution 4.0, many traditional learning concepts have changed compared to the past, opening up a more open and flexible educational perspective. Lifelong learning, learning anywhere, the role of lecturers from experts to coordinators... are the differences in education (Dinh Thi My Hanh, 2021) <sup>[3]</sup>.

One of the technologies that has been mentioned a lot in the past few years, contributing to creating strong breakthroughs and bringing about "miraculous" results is AI. AI is an interdisciplinary field of Philosophy, Psychology, Neuroscience, Mathematics, Cybernetics, Computer Science, Linguistics, Economics. AI will be one of the "leverages" that help IT become increasingly close to life and bring breakthroughs in the coming years (Russell & Norvig, 2016) <sup>[10]</sup>.

Based on the study of the current situation and influencing factors of artificial intelligence in digital transformation of Vietnam's education sector, thereby suggesting solutions to improve activities in digital transformation of Vietnam's education sector.

## 2. Theoretical basis and research methods

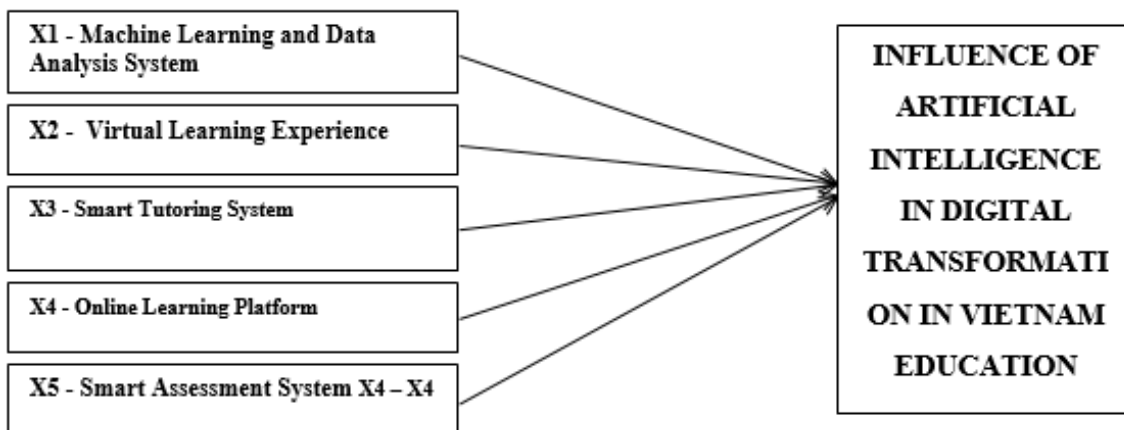
### 2.1. Theoretical basis

The application of artificial intelligence (AI) in human resource management (HRM) is a growing trend, offering potential benefits in recruitment, compliance, onboarding and training (Evseeva, Evseeva et al. 2021). Despite these challenges, AI has the potential to enhance HRM functions and support overall business operations. (Ćormarković, Dražeta, & Njeguš, 2022) [2].

Artificial intelligence aims to accurately describe aspects of intellectual processing and learning (to obtain knowledge) and create systems and machines that simulate learning and intellectual processing activities. In the early stages, AI aims to build systems and machines capable of using natural language, abstracting - formalizing concepts and solving problems based on logical approaches and decision making, under conditions of lack of information (McCarthy, Minsky,

& Rochester, 1955).

Artificial Intelligence in Education (AIEd) was born around the 1970s (Kay, 2015) [6] and focuses on research, development and evaluation of computer software to improve teaching and learning. practice. The long-term goals identified are to collect learner feedback, assess learner abilities and causes of weakness, personalize for a person or group of learners, and finally use the techniques of AI to learn and develop teaching and learning theories (Woolf, 2015) [12]. From the results of theoretical research and expert interviews, the author proposes a model to research the influencing factors of artificial intelligence in digital transformation of Vietnam's education sector, including: 1) Learning System machine and data analysis; 2) Virtual Learning Experience; 3) Smart Tutoring System; 4) Online Learning Platform; 5) Smart Evaluation System.(Figure 1).



**Fig 1:** Research model of influencing factors of artificial intelligence in digital transformation of Vietnam's education sector

In particular, 1) Machine Learning and Data Analysis System, including 04 measurement scales: Student learning performance; Student interactions in the classroom; Students' interest and learning attitude; Progress and performance of study programs; 2) Virtual Learning Experience, including 04 scales: Student interaction - content; Time spent and interactions; Encouragement and active participation of students; Effective learning; 3) Smart Tutoring System, including 04 measuring scales: Student learning progress; Student satisfaction; Interaction between students and the system; System performance; 4) Online Learning Platform, including 04 scales: Frequency of using the platform; Diversity of content; Interaction between students and content; Learning performance 5) Smart Assessment System, including 04 scales: Assessing learning performance; Instant response; Personalized assessment; Evaluate progress.

### 3. Research methods, analysis and evaluation

*Methods of collecting information*, including: *Secondary data* are relevant studies and reports of ministries, departments, divisions, branches of education...; *Primary data*, compiled from survey results of 150 education experts and representatives of the Vietnam Education Administration To ensure the objectivity of the research results, the sample was randomly selected based on the number of schools in Vietnam.

*Research approach*, system, institutional, policy and market approach are used throughout the research process.

*Qualitative research methods*, Collect data and related research projects, develop a preliminary questionnaire and interview 20 leaders, representatives of relevant organizations and experts, to determine research targets for the current situation and factors. The impact of artificial intelligence in digital transformation of Vietnam's education sector. The results serve as the basis for building an official survey, ensuring objectivity and proving the research results. discuss and Proposal implies solutions to improve digital transformation of Vietnam's education sector.

*Quantitative research method*, from the results of a survey of 150 related experts, the author used SPSS 23.0 software to test the scale, evaluate and analyze the influencing factors of artificial intelligence in transformation. Changing the number of Vietnam's education sector. The results of analysis and evaluation are the basis discuss and The proposal implies advanced solutions in digital transformation of Vietnam's education sector.

### 4. Research results and discussion

#### 4.1. Current status of artificial intelligence in digital transformation of Vietnam's education sector

The development of AI can threaten humanity's existence and mastery of the world (Chace, 2018), and at the same time humans become the second most intelligent species on Earth (Barrat, 2023) . In the field of education, besides the positive impacts mentioned above, AI also poses potential challenges and difficulties when applied in practice.

#### 4.1.1. Machine learning and data analysis system

Currently in Vietnam, the use of artificial intelligence and data analysis in digital transformation of the education industry is facing a number of challenges. Although the development potential is great, implementation is still slow due to many reasons. The technological infrastructure system is still limited, making it difficult to deploy and develop artificial intelligence solutions in education. In addition, the lack of knowledge and skills of practitioners is also a challenge, which needs to be improved through training and awareness raising. More importantly, data privacy and security issues are also slowing down progress, especially when it comes to collecting and using personal data in educational settings. To be able to exploit the full potential of artificial intelligence and data analytics, these challenges must be addressed carefully and comprehensively.

#### 4.1.2. Virtual learning experiences

Virtual learning experiences are becoming popular in Vietnam, especially in the context of the epidemic and increased demand for distance learning. However, implementing and using this experience still faces many challenges. One of them is the lack of technological infrastructure and stable internet connection, causing interruptions and reduced performance during the learning process. At the same time, people implementing and participating in this experience have not been fully trained on how to use technology and online learning platforms, as well as ensure the quality of educational content. Another challenge is creating engaging and interactive virtual learning environments, especially when using artificial intelligence to personalize the learning experience. Faced with these problems, overcoming and developing virtual learning experiences will play an important role in improving the quality of education in Vietnam.

#### 4.1.3. Smart Tutoring System

In Vietnam, the use of artificial intelligence in digital transformation of the education industry is developing, but there are still many challenges that need to be overcome. Despite increased awareness and use, access remains limited, especially in rural and remote areas. This can create inequality in access to education. At the same time, people who implement and use this system need to be trained to use the technology effectively and safely. Personalization for each student is also a big challenge, requiring the system to be able to customize and adjust to meet diverse learning needs. To overcome these challenges, there needs to be equal investment in technology infrastructure, human resource training, and increased awareness of the benefits of artificial intelligence in education.

#### 4.1.4. Online learning platform

The process of accessing online knowledge in remote areas is facing many significant difficulties. In particular, in mountainous and remote areas, network infrastructure and information technology equipment are not guaranteed, causing negative effects on educational management and the teaching process. This becomes especially urgent as the need

for online teaching and learning increases, especially when in-person learning conditions cannot be guaranteed. This is an issue that needs to be prioritized to overcome to successfully deploy online education methods and ensure that every student has the opportunity to access knowledge equitably (Nghe, 2022).

#### 4.1.5. Smart Evaluation System

Smart Evaluation System in using artificial intelligence in digital transformation of the education sector in Vietnam is developing, however, there are still many challenges that need to be resolved. Although there has been awareness and use, the level of implementation remains uneven and assessment standards are inconsistent. In addition, the shortage of human resources with knowledge and skills about artificial intelligence in educational assessment is also a matter of concern. The challenge of privacy and data security also needs to be considered carefully to ensure the safety and protection of personal information of students and teachers. To improve the efficiency and fairness of the educational assessment process, there is a need to invest in human resource training, develop uniform standards and establish strong security measures.

#### 4.1.6. Ethical issues in accessing, collecting and exploiting data

In policies to develop AI in general and AI in education in particular, it is necessary to attach great importance to ethical issues associated with the collection and production of data. extract, analyze and disseminate large-scale data about people.

Privacy and data security are concerns, the main challenge lies in being able to use personal data while ensuring that personally identifiable information and the individual's privacy preferences are protected. It is also important to install the necessary protections to prevent data theft. In education, this becomes even more difficult in a context where young learners are not yet legally able to give explicit consent to the collection and use of their personal data. The collection and use of personal data, even when used to enhance learning, must always be maintained based on explicit and informed consent, transparency, fairness and justice (Pedro et al., 2019)

### 4.2. Factors affecting the performance of artificial intelligence in digital transformation of Vietnam's education sector

#### 4.2.1. Results of Cronbach's Alpha test

**Cronbach's Alpha test results:** Observed variables with total correlation coefficient  $< 0.3$  will be eliminated from the model. The standard for the scale to meet requirements is when Cronbach's Alpha  $> 0.6$  (Ho 2012). With 150 official samples and 05 criteria of the survey questionnaire, the variables met reliability requirements, the full scale coefficient Cronbach's Alpha =  $0.936 > 0.6$  is within a good measurement level, the total variable correlation coefficients of the variables measuring this factor are  $> 0.3$ , all observed variables are accepted and will be used in the next factor analysis (Table 1).

**Table 1:** Cronbach's Alpha evaluates factors affecting the personnel recruitment process in businesses in Ho Chi Minh City

Observed variables	Coefficient of correlation of total variables	Cronbach's Alpha if variable type	Full-scale Cronbach's Alpha
Machine learning and data analysis system	0.877	0.949	0.928
Experience virtual learning	0.837	0.930	
Smart Tutoring System	0.752	0.887	
Online Learning Platform	0.916	0.966	
Smart Evaluation System	0.803	0.912	

**4.2.2. Test for heteroskedasticity and correlation**

Observed variables were extracted into 20 factors at Eigenvalues = 2,041 (>1), the factor analysis results were reasonable, the total variance extracted reached 83,758%

(>50%) of the variation of the data, this is the result. Acceptable variables were simultaneously extracted into factors (Table 2).

**Table 2:** Variance explained by influencing factors

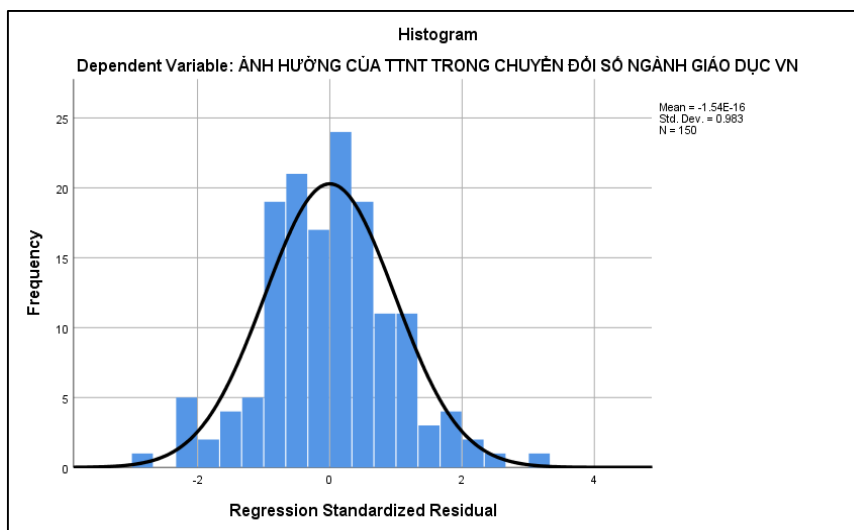
Factor	Variance extract			Total Variance Extracted			Total Variance Extracted		
	Total	Percent Variance	Cumulative percentage	Total	Percent Variance	Cumulative percentage	Total	Percent Variance	Cumulative percentage
1	5,769	28,847	28,847	5,769	28,847	28,847	3,664	18,319	18,319
2	4,139	20,694	49,541	4,139	20,694	49,541	3,518	17,589	35,909
3	2,706	13,528	63,069	2,706	13,528	63,069	3,309	16,544	52,453
4	2,097	10,483	73,552	2,097	10,483	73,552	3,231	16,155	68,608
5	2,041	10,206	83,758	2,041	10,206	83,758	3,030	15,150	83,758
6	.527	2,634	86,392						
7	.425	2,124	88,515						
8	.340	1,699	90,214						
9	.300	1,499	91,713						
10	.267	1,336	93,049						
11	.249	1,245	94,294						
12	.207	1,036	95,330						
13	.177	.886	96,216						
14	.167	.834	97,051						
15	.157	.786	97,837						
16	.114	.569	98,406						
17	.106	.530	98,936						
18	.102	.509	99,445						
19	.067	.336	99,781						
20	.044	.219	100,000						

Extraction method: Principal component analysis.

**Check the assumption that the independent variables do not have multicollinearity**

The variance inflation factor  $VIF < 2$ , shows that

multicollinearity does not occur and there is no strong correlation between independent variables (Trhong and Ngoc 2008).



**Fig 2:** Testing assumptions about the distribution of residuals and autocorrelated residuals

We see that the graph of the residuals (Figure 2) has a balanced bell shape, the average value of the residual =  $1.54 \times 10^{-16}$  is very small and close to 0, the deviation value

is close to 1, so we conclude assume that the standardized residual has a normal distribution.

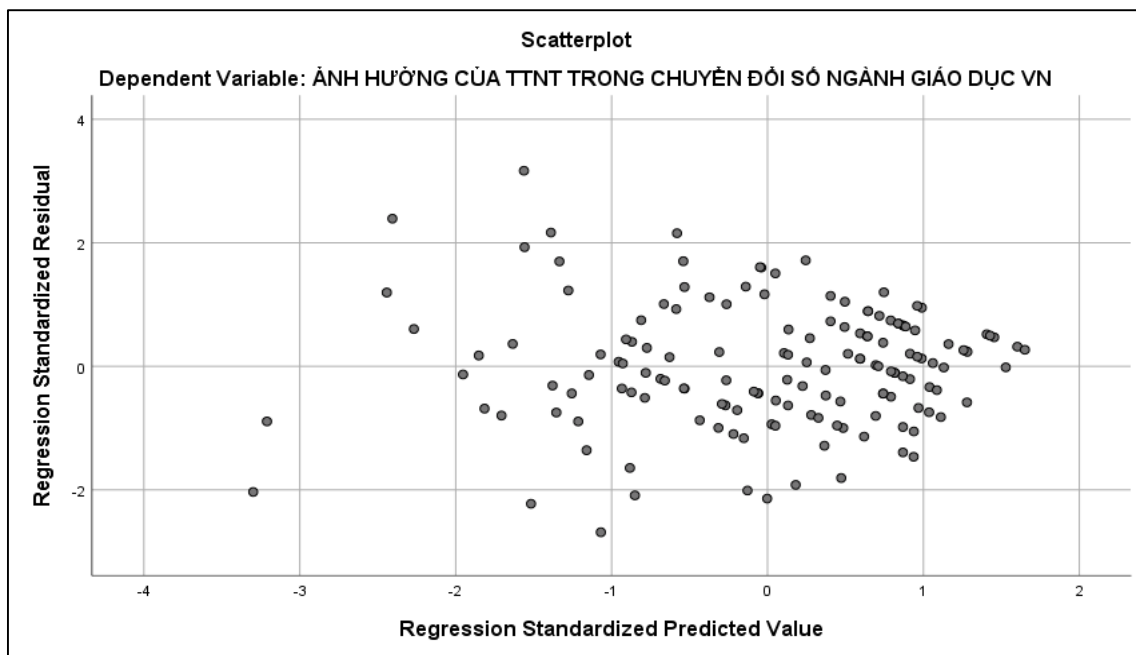


Fig 3: Residual correlation analysis graph

We see that the graph of the standardized residual value is randomly scattered along the value line = 0, so we conclude that there is no autocorrelation phenomenon between the residuals.

**4.2.3. Results of EFA exploratory factor analysis**

Evaluate the scale through EFA exploratory factor analysis: KMO coefficient = 0.821 ( $0.5 < KMO < 1$ ). The Chi-Square statistic of Bartlett's test has a value of 2878.833 with a significance level of Sig. = 0.000, showing that the observed variables are correlated with each other. The results of EFA analysis show that the total variance extracted reached 83.758% ( $> 50\%$ ) shows that these 5 extracted factors explain 83.758% of the variation in the data, this is an acceptable result and proves that grouping the factors together is appropriate. The stopping point when extracting factors at the 4th factor with Eigenvalues is  $2.041 > 1$ , indicating that the factor analysis results are appropriate. The observed variables have satisfactory factor loading coefficients  $> 0.5$ . There are no observed variables that have loading coefficients simultaneously on both factors, so the scales meet the association value capacitor (Table 3).

Table 3: KMO test for sampling suitability KMO and Bartlett's Test

<b>Kaiser-Meyer-Olkin test for sample adequacy</b>		<b>0.821</b>
Bartlett's test of sample configuration	Equivalent to Chi Square	2878,833
	DF	190
	Sig.	0.000

exploratory factor analysis (EFA) show that the groups of exploratory factors are consistent with the research model.

**4.2.4. Linear regression analysis**

Linear regression analysis shows that there is no multicollinearity phenomenon. Collinearity Statistics with the VIF (Variance Inflation Factor) of the independent variables in the model are all less than 2., proving that there is no multicollinearity phenomenon (Table 4). As a result, all variables have statistically significant Sig values. = 0.000 ( $< 0.05$ ). Thus, there are 05 factors affecting the personnel recruitment process in businesses in Ho Chi Minh City according to the standardized regression coefficient (Beta).

Table 4: Linear regression test

Model	Unstandardized coefficients		Standardized coefficient	Coefficient (t)	Coefficient (Sig.)	Multicollinearity Statistics (Collinearity Statistics)		
	Coefficient (B)	Standard deviation	Beta coefficient			Tolerance	Variance Inflation Factor (VIF)	
(Constant)	-.090	.348		-2.59	.796			
1	X1	.246	.051	.293	4,830	.000	.899	1.112
	X2	.124	.046	.174	2,711	.008	.801	1,248
	X3	.204	.048	.265	4,258	.000	.852	1.173
	X4	.205	.045	.274	4,583	.000	.923	1,084
	X5	.223	.057	.251	3,923	.000	.811	1,233

*Linear function*, From the above results, we have a linear equation expressing the influencing factors (Xi) on Y-Operational efficiency in digital transformation of Vietnam's education sector, as follows:

$$Y = -0.90 + 0.246 * X_1 + 0.124 * X_2 + 0.204 * X_3 + 0.205 * X_4 + 0.223 * X_5$$

Thus, the linear regression model built according to equation Y does not violate the necessary assumptions in linear regression. Therefore, the hypotheses are accepted at the 5% statistical significance level.

#### IV. Research conclusion

*The Machine Learning and Data Analysis System factor*, with value  $\beta_1 = 0.246$ , is the most influential factor in digital transformation of Vietnam's education sector, this factor has the strongest influence on learning performance student's. At the same time, students' positive interactions in the classroom, interest and positive attitude towards learning also play an important role, along with the progress and performance of the learning programs.

*The Virtual Learning Experience factor*, with value  $\beta_2 = 0.124$ , is identified as an important factor in the digital transformation process of the education sector in Vietnam, due to the influence of student-content interaction content. Demonstrated student engagement with learning content in a virtual environment, including performing activities, experiments, and practice exercises. In addition, students' usage and interaction time are also important factors, measuring the time they spend on activities in the virtual learning environment along with the level of engagement during the learning process. Student enjoyment and engagement are also assessed, including the level of enjoyment and engagement in the virtual learning experience, and learning effectiveness is assessed through assessment of newly acquired knowledge and applicability to real-life situations.

*The Smart Tutoring System factor*, with value  $\beta_3 = 0.204$ , is identified as an important factor in the digital transformation process of the education sector in Vietnam. This system not only plays an important role in ensuring students' academic progress but also helping them achieve their learning goals, progress in knowledge, and problem-solving abilities. Not only that, student satisfaction is also considered an indispensable measure, reflecting the level of trust, comfort, and satisfaction with the quality of service from the Smart Tutoring system; Close interaction between students and the system is also highly valued, including levels of interaction and connection, asking questions, receiving feedback, and performing learning activities. Ultimately, the system's performance is measured by its ability to provide individualized and effective educational support to each student, through providing accurate educational suggestions, feedback, and solutions.

*The Online Learning Platform factor*, with value  $\beta_4 = 0.205$ , is the second most influential factor in the digital transformation of Vietnam's education sector. Due to the frequency with which students and teachers use online learning platforms, such as accessing the platform and engaging in learning activities; The variety of educational content offered on the online learning platform, including courses, documents, lectures, and curriculum resources; Interaction between students and learning content on the online learning platform, including discussions, performing exercises, and participating in interactive learning activities;

Student performance when using online learning platforms, with achievement of learning goals, progress in knowledge, and ability to apply knowledge into practice.

*Weak Smart Assessment System*, with value  $\beta_5 = 0.223$ , is identified as an important factor in the digital transformation process of the education sector in Vietnam. Under the impact of awareness and use of the Smart Assessment System in education in Vietnam, the level of implementation and use is still limited in some schools and educational levels; Lack of uniformity and standards in the assessment process. Diversity in assessment methods and assessment criteria can cause unfairness and lack of transparency in the assessment process; Lack of human resources with skills and knowledge about the use of artificial intelligence in educational assessment is a problem. Training and awareness about technology in educational assessment is necessary to increase the effectiveness and objectivity of the assessment process. Privacy and Security Challenges: The issue of privacy and data security is also a challenge for implementing a Smart Assessment System. Strong security measures are needed to ensure the safety and protection of student and teacher personal information.

In summary, despite its awareness and implementation, the Smart Assessment System in Vietnam still faces many challenges. To improve the efficiency and fairness of the educational assessment process, there is a need to invest in human resource training, establish uniform standards, and ensure data security and privacy.

## 5. Some policy implications to improve the performance of artificial intelligence in digital transformation of Vietnam's education sector

### 5.1. Increase investment and development of machine learning and data analysis systems to ensure transparency and accuracy in evaluating and personalizing learning experiences

To improve the quality of education and create a learning environment suitable for each student, increasing investment and developing machine learning and data analysis systems has become an important and effective solution. In this way, educational institutions can collect, process and analyze data on student learning progress as well as the performance of educational programs in a transparent and automated way. From this, a transparent and fair assessment system is created, helping education administrators better understand student learning progress and make decisions based on accurate and reliable information trust.

Additionally, using this data also helps personalize the learning experience for each student. Through a better understanding of each student's needs, interests, and learning styles, educational institutions can tailor educational content, teaching methods, and provide appropriate learning support. As a result, students will have the opportunity to learn more effectively and develop better in a personalized learning environment, thereby promoting personal development and meeting diverse learning needs of each individual. This not only improves the quality of education but also contributes to the comprehensive development of students.

### 5.2. Develop and integrate virtual reality technology into learning experiences, creating a more interactive and enjoyable learning environment for students

Developing and integrating virtual reality technology into

learning experiences is not only a new trend but also a big step forward in improving the quality of education. Virtual reality technology has opened a new door, expanding the learning space from traditional classrooms to colorful and vivid virtual worlds.

In a virtual learning environment, students are not just listeners but also active participants in the learning process. They can interact directly with objects, simulate real-life situations, and even participate in science experiments in a safe and engaging way. This creates a unique and creative learning environment, arousing curiosity and enthusiasm in discovering knowledge.

Not only that, virtual reality technology also helps teachers become more creative instructors. They can create interactive lectures, simulate real-life situations, and provide students with deeper and multi-dimensional learning experiences. At the same time, through collecting data from activities in the virtual environment, teachers can evaluate student learning effectiveness and adjust teaching methods flexibly and effectively.

With the benefits that virtual reality technology brings, integrating it into the learning experience is not only a trend but also an opportunity to improve the quality of education and promote the comprehensive development of students and prepare them for today's digital world. This is an important step in building a modern and advanced education.

### **5.3. Build a smart tutoring system to provide personalized and effective educational support for each student, thereby enhancing access to knowledge and personal development**

The solution of building a smart tutoring system is a means of improving the quality of education through leveraging technology to personalize and optimize each student's learning experience. By collecting and analyzing data about students, the system can understand each individual's unique needs, abilities, and learning styles.

An important part of this solution is providing educational content tailored to each student. Instead of a uniform approach, smart tutoring systems can recommend personalized learning materials, lectures, and activities based on students' interests, abilities, and learning goals. This helps create a flexible and diverse learning environment that encourages interaction and creativity.

In addition, this system also has the ability to monitor and evaluate student learning progress. Through data analysis, it can identify each individual's strengths and weaknesses, thereby suggesting measures for improvement and adjustment in teaching and learning methods. This helps optimize the efficiency and effectiveness of the learning process, helping students achieve the best possible results.

### **5.4. Develop a flexible and diverse online learning platform, providing automated courses and customized learning resources, serving the diverse learning needs of every student**

This solution proposes to develop a flexible and diverse online learning platform, to provide automated courses and customized learning resources, catering to the diverse learning needs of every student. First of all, the online learning platform will be designed to be more flexible in accessing learning content. Students will be able to access the platform anytime and anywhere, not bound by time or

location. The system will provide a range of courses from basic to advanced, from specialized to general, ensuring that every student has the opportunity to access content appropriate to their level and interests. Automated courses will be at the heart of the platform, helping to optimize the learning process. Teaching materials, video lectures, exercises, and learning activities will be organized and deployed automatically, reducing the time and effort required for course planning and implementation. This also helps ensure consistency and quality of educational content.

In addition, customized learning resources will be developed to personalize the learning experience. Students can be asked about their interests, learning goals, and learning style, thereby receiving appropriate educational materials and suggestions. This facilitates more effective and flexible learning, while increasing student interest and engagement in the learning process.

### **5.4. Build a smart assessment system, using artificial intelligence to provide instant feedback and in-depth analysis of students' learning progress, helping to improve educational performance and ensure comprehensive development their**

This solution proposes to build an intelligent assessment system, using artificial intelligence to provide instant feedback and in-depth analysis of student learning progress, with the aim of improving educational performance and ensure their comprehensive development.

This system will use artificial intelligence to automatically collect and analyze data about students' learning progress. From information such as test results, assignments, classroom activities and online interactions, the system creates a comprehensive picture of each student's academic performance.

A key part of this solution is the ability to provide instant feedback to students. Instead of having to wait until the end of the term to receive feedback on their progress, students will receive continuous information about their performance through charts, reports, and suggestions for improvement. This helps students self-adjust and improve their learning methods from the earliest stages. Furthermore, the system will also conduct in-depth analysis of students' learning progress. By applying algorithms and big data models, it can identify trends, learning patterns and potential problems, thereby suggesting measures to improve and adjust teaching methods and study.

### **Conclude**

From an overview of the theoretical basis and current situation of the operation of artificial intelligence in digital transformation of Vietnam's education sector, the study has analyzed in depth 05 groups of factors affecting the operation of artificial intelligence in the field of education. Digital transformation of Vietnam's education sector. Among them, the machine learning and data analysis system factor group (X1) and the intelligent assessment system factor (X5) are the most influential, followed by the e-learning platform factor group. (X4), the Smart Tutoring System factor (X3) and the Virtual Learning Experience factor (X2), all have an impact on the activity of artificial intelligence in digital transformation of Vietnam's education sector.

From the results of studying the current situation, combined with analysis of factors affecting the operation of artificial

intelligence in digital transformation of Vietnam's education sector, the author proposes a number of solutions to improve the operation of artificial intelligence in the digital transformation of Vietnam's education sector. Artificial intelligence in digital transformation of Vietnam's education industry, as follows: *Firstly*, Increase investment and development of machine learning and data analysis systems to ensure transparency and accuracy in evaluating and personalize learning experiences; *Second*, Develop and integrate virtual reality technology into learning experiences, creating a more interactive and interesting learning environment for students; *Third*, Build a smart tutoring system to provide personalized and effective educational support for each student, thereby enhancing access to knowledge and personal development; *Fourth*, Build a smart assessment system, using artificial intelligence to provide instant feedback and in-depth analysis of student learning progress, helping to improve educational performance and ensure development. their comprehensive development; *Fifth*, Build a smart tutoring system to provide personalized and effective educational support for each student, thereby enhancing access to knowledge and personal development.

### References

1. Barrat James. Our final invention: Artificial intelligence and the end of the human era. Hachette UK, 2023.
2. Ćormarković, Teodora, Lazar Dražeta, and Angelina Njeguš. The levels of artificial intelligence applied in human resource systems. *The European Journal of Applied Economics*, 2022, 19.2
3. Dinh Thi My Hanh, Tran Van Hung. Artificial intelligence in education: Opportunities and challenges for the future of teaching and learning at universities, 2021.
4. Chace, Calum. Artificial intelligence and the two singularities. Chapman and Hall/CRC, 2018.
5. Ho, D. P. Quantitative research methods and practical studies in agricultural development economics, Orient. 2012.
6. Kay, Judy. "Whither or wither the AI of AIED?. AIED Workshops. 2015.
7. McCarthy John, *et al.* A proposal for the Dartmouth summer research project on artificial intelligence, August 31, 1955. *AI magazine*. 2006; 27(4):12-12.
8. Technology TCKHVC Digital transformation in education and training: Current status and solutions, 2022. Accessed 14.04, Source: <https://vjst.vn/vn/tin-tuc/6707/chuyen-doi-so-in-communication-and-creation--page-and-phase-phap.aspx>
9. Pedro Francesc, *et al.* Artificial intelligence in education: Challenges and opportunities for sustainable development, 2019.
10. Russell Stuart J, Peter Norvig. Artificial intelligence: a modern approach. Pearson, 2016.
11. Trong H, CNM Ngoc. Applied statistics in socio-economics, 2008 *Statistics*, 537 pages.
12. Woolf, Beverly Park. AI and Education: Celebrating 30 years of Marriage. AIED Workshops, 2015, 4.