The Global Journal of Contextual Thought
(A Double-Blind, Peer-Reviewed, Quarterly, Multidisciplinary Journal)
Volume: 2, Issue: 1. May'26-Jul'26 Home Page: www.tgjct.orgEmail:editor@tgjct.org ISSN: 3107-7528(Online)

Teachers' Readiness for AI Integration in Classroom Teaching: A Study of Opportunities, Challenges, and Influencing Factors

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Abstract

The study was carried out to explain the role of Artificial Intelligence Technologies in the field of education and their impact on improving the role of the teacher and ensuring quality education. Because the use of these can be a precondition for their use, the study investigated the role of such factors in decisions to adopt and opened up predictors for teachers' readiness to accept the use of AI-supported educational technologies. The study followed the technology acceptance model as its theoretical framework and identified the independent variables considered in the study: knowledge about AI, Digital Competence, Organizational Support, AI Training, perceived usefulness, and ease of use. The study used quantitative research method because it aimed to obtain the statistical data to gain better understanding of the problem of the study. In particular, the researchers investigated the factors predicting teacher readiness in this regard using secondary data obtained from the school teachers. The number of respondents to the study research questions was 250 who were sampled from both private and public institutions. The data properties were examined in the initial stages by descriptive statistics and reliability analysis to see if the basic properties of the data were present and if the research instrument was reliable. This was done through the use of Statistical Package for Social Sciences (SPSS). This study then went on to carry out a Pearson's correlation and regression analysis to draw out a predictive relationship between the independent variables and the dependent variable.

The study found that all the independent variables were significantly and positively related with the dependent variable. The analysis, however, showed the relative effect of each of the independent variables. Indeed, although all the factors had positive influences, perceived usefulness proved to be more strongly related with the inclination of school teachers to adopt AI-based learning technologies than the other factors. The research report offers several original aspects of the phenomenon studied, thus introducing new information into the existing knowledge about the phenomenon. In this context, the theoretical framework used in most studies on factors influencing teachers' willingness to adopt technologies in education is TAM, which gave impetus to the study, although it is not the only one that identified other variables that significantly predicted teachers' readiness to use artificial intelligence technologies. Secondly, the study gives another theoretical basis to study this area, which can be used in a similar study as another theoretical framework on top of TAM. Thirdly, the research paper gives the feasibility of the study as per the benefits to be obtained from the study findings. For instance, it could support educational policymakers and administrators to identify strategies for boosting teachers' readiness to adopt AI, such as expanding their knowledge of AI to further support their digital competence. Finally, the findings of the study will help to support the effective use of AI in the field of education with empirical evidence to improve readiness to use the technologies.

Keywords: *Artificial Intelligence (AI), Teachers' Readiness, AI Integration, Digital Competency, Technology Acceptance Model (TAM), Perceived Usefulness, Educational Technology, Institutional Support.*

1. Introduction

1.1 Background of the Study

Artificial intelligence (AI) has become an integral part of the 21st century. It has infiltrated just about every aspect of life, such as the educational system. Incorporation of AI innovations like smart tutors, intelligent

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academic software, teaching robots, marking systems, and chatbots has taken the education industry to unprecedented levels of development and sophistication. Countries around the globe have been investing heavily in AI-driven digital solutions to revolutionize and dehumanize education.Developed and developing countries have spent a lot of money and time developing digital technologies related to AI to revolutionize and dehumanize education. As a result, the teaching and learning processes have changed completely and the learning process has become easier and more convenient than ever before (UNESCO, 2024; OECD, 2024). But the implementation of AI in the field of education depends on the teachers' attitude and capacity toward the technology. The teachers are at the heart of the education system; their contribution to the successful implementation of AI and other innovations should not be overlooked. However, there are some factors that impact teachers' preparedness to implement and use the new technology in their teaching. Professional competence, digital skills, the level of knowledge regarding AI, educational contexts, readiness of the educational institution, training, perceived benefits, and ethical implications can be some of the factors that influence the use of AI by educators (Holmes et al., 2023; Zawacki-Richter et al., 2024). While some teachers might be very eager to use AI-powered software in their teaching methods, others might be against the advances altogether for different reasons. The current study seeks to evaluate educators' preparedness for incorporating AI into education.

The use of AI in education has been a topic of great interest in recent years. The application of AI-assisted technologies such as smart tutors, chatbots, and intelligent content creation software in education has been very promising (OECD, 2024; UNESCO, 2024). For instance, AI can free teachers from mundane tasks such as marking assignments and enable them to concentrate on more meaningful activities such as enhancing students' cognitive ability. But, in order for teachers to appropriately use these technologies in practice, they must have sufficient knowledge of these technologies. Thus, teacher readiness needs to be seen as a multidimensional phenomenon when designing and implementing intervention programs (Zawacki-Richter et al., 2024; Holmes et al., 2023). AI readiness should involve teachers' knowledge about the technology, emotional readiness (including digital competence, ethical issues, and institutional support), and other factors (Zawacki-Richter et al., 2024; Holmes et al., 2023). Hence, it is highly essential to discuss thoroughly the factors affecting teacher preparedness to help education stakeholders take steps toward implementing measures that encourage the use of artificial intelligence (AI) technology in higher education institutions. Therefore, in this thesis, the phenomenon of teachers' readiness to adopt this technology (AI) and the opportunities and challenges associated with the implementation of this technology in the teaching and learning process will be reviewed. Furthermore, the thesis will explore barriers and challenges to the integration of the technology by teachers and will discuss the factors that contribute to teachers' preparedness for using AI-assisted technologies in education (Zawacki-Richter et al., 2024; UNESCO, 2024; OECD, 2024). As a result, this thesis will make a valuable contribution to the knowledge on the influence of AI technologies on the education system.

2. Literature Review

For the past decade, scientific research has been conducted in the field of education that combines Artificial Intelligence (AI). Scientists agree that AI can have a major impact on the fields of learning, teaching, and educational administration. To put it in perspective, AI is a collection of "computer generated capabilities, including learning, understanding, reasoning, planning, thinking and judgment." From simple tutoring algorithms to advanced learning systems that create texts, assess student performance, and guide teachers in their administrative tasks, the integration of AI in education has come a long way. In general, the use of technology in the teaching and learning process has changed the nature of the relationship between teachers and students, providing opportunities to personalize learning by making learning more accessible through digital technology (Holmes et al., 2023; UNESCO, 2024).

The applications of AI in education as found in the reviewed literature span from enhancing student engagement, providing personalized learning pathways, to automating evaluation processes and creating educational programs and administrative tasks. Teachers can use educational AI applications to monitor student progress, create personalized learning tours and give feedback. At the same time, the latest advances in

generative AI enable teachers to generate content, learn foreign languages, and plan lessons and more. The potential of these technologies to bring about the benefits, however, relies on the willingness of teachers to use them in their teaching (OECD, 2024; Zawacki-Richter et al., 2024).

The study underscores the crucial role of technology acceptance among teachers in the context of the adoption of AI in educational settings. It refers to "cognitive and emotional attitudes of learners towards the use of emerging technologies in education and their perception of the value of these technologies in education, as well as their psychological and behavioural readiness to interact with the emerging technologies." The instructors' attitudes towards using AI in education are influenced by their digital skills as well as confidence and expertise in using educational technologies, according to scholars. Davis' 1989 invention of the Technology Acceptance Model (TAM) has been one of the models that have been used to understand teachers' accepting technologies in education. Researchers concentrate on perceived usefulness (PU) and perceived ease of use (PEOU) which are likely to predict users' attitudes toward the specific technology and their behavioural intentions to use the technology. With the planned study, PU represents teachers' beliefs that using the artificial intelligence technology would be useful and PEOU represents teachers' confidence in using the technology (Davis, 1989; Scherer et al., 2021).

The analyzed literature has shown the significance of teachers' digital skills and their readiness and confidence in the use of educational technologies in the willingness to adopt AI. Another important variable that influences the instructors' attitudes about the incorporation of technology is access to professional development resources. Further, researchers point out that factors such as leadership, context and teaching environments are significant influencing factors in either encouraging or hindering technology use. Besides, a number of studies highlight ethical issues that prompt educators to refuse to embrace new technologies. Lastly, as shown in the literature review, there has been a significant amount of research on teacher adoption of AI in the last ten years. However, the majority of the previous studies adopted a narrow definition of the notion of technology acceptance, concentrated on the use of AI in higher education, or examined the application of AI in the pedagogical space from a specific angle. It was also observed that few researchers have used the TAM to study the phenomenon. Lastly, not all reviewed articles have taken teachers' preparedness to use AI into account from a variety of theoretical angles. Therefore, a comprehensive knowledge of the phenomenon is needed to fill this gap in scholarly research.

3. Conceptual Framework & Hypotheses

The conceptual framework brings some background information on the factors that predict teachers' willingness to use artificial intelligence (AI) in the teaching-learning process. Meanwhile, the conceptual framework is used to set relationships between independent variables and dependent variable(s). In this aspect, the current study will develop its research model based on the Technology Acceptance Theory (TAM) presented by Davis (1989). This theory is used to predict users' attitude towards technology as well as their behavior based on two constructs: Perceived Usefulness (PU) and Perceived Ease of Use (PEOU).Davis (1989) defines PU as an individual's expectations of the impact the new technology will have on his/her job performance. However, PEOU is the ease of use perceived by the individual in the newly learnt technology. However, recent studies have revealed that besides PU and PEOU, other factors can predict acceptance of technology amongst users. This encompasses AI knowledge, digital competency, institutional support for AI and AI training (Davis, 1989; Scherer et al., 2021; UNESCO, 2024).

Based on the theoretical model of TAM, this study proposes the following hypotheses: AI knowledge, digital competency, institutional support, AI training, perceived usefulness, and perceived ease of use significantly influence teachers' readiness for the integration of AI. Therefore, using TAM constructs, this study aims to create a conceptual model that contains technological and organizational variables that influence teachers' readiness to integrate AI as illustrated in the conceptual model below.

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Figure 3.1 Conceptual Framework of the Study

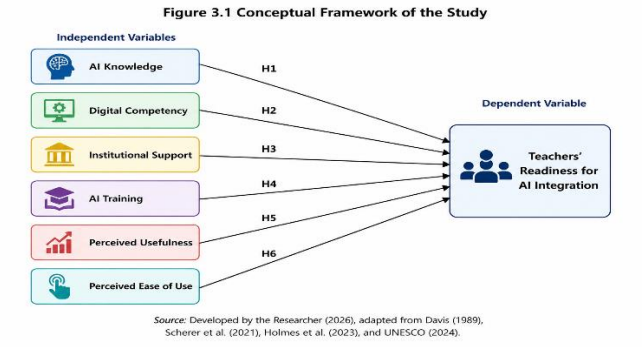

Figure 3.1

Source: Developed by the Researcher (2026), adapted from Davis (1989), Scherer et al. (2021), Holmes et al. (2023), and UNESCO (2024).

AI knowledge helps the teachers to grasp what is possible, what the limits are, and the ethical implications of AI, whereas digital competency is the use of digital in education in general. The support from institutions and teacher perceptions regarding the significance of adopting AI technologies and their ease of use foster the teachers' acceptance and support for AI in education. Moreover, the continuous professional development also boosts teacher readiness to incorporate AI tools in teaching, creating a boost in their confidence and understanding of AI-assisted teaching. Lastly, the teacher's attitude towards integrated AI technologies in teaching is shaped by the perceived usefulness and ease of use (OECD, 2024; Holmes et al., 2023).

The dependent variable of the study is Teachers' Readiness for AI Integration which reflects teachers' attitudes, preparedness, and confidence towards using AI in education. Teachers' readiness for AI is seen as their competencies, skills, and attitudes towards using AI in education and ethical considerations and willingness to accept AI in education to support learning (Zawacki-Richter et al., 2024; UNESCO, 2024). Research in education has shown that teachers with high knowledge of AI, competence in digital tools, perceived usefulness, institutional support, and perceptions of its application in education are more inclined towards being prepared for the use of AI in education (Zawacki-Richter et al., 2024; UNESCO, 2024).

Based on the conceptual model above, the study will be guided by six research hypotheses that argue for positive relationships between six independent variables with teachers' readiness to use AI. Based on these findings, this study will propose that the following factors positively influence educators' readiness to adopt AI: teachers' knowledge of AI, digital competency, institutional support, AI training, perceived usefulness, and ease of use. Last but not least, the study will help in advancing scientific knowledge by offering a theoretical basis for future research by testing the proposed research model, which will yield information related to AI in education, technology, and digital innovations that transform and improve learning.

4. Research Methodology

A description of the research methodology is important due to its ability to explain the step by step procedures in studying a research question, as well as to demonstrate the authenticity and credibility of the research procedure. The research design used in this study is quantitative research design so that the study variables can be investigated by using statistical models and test the proposed hypothesis. The quantitative research design is suitable for this study because it allows for the collection of numerical data from a sample of the population of interest, and the use of statistical procedures to ensure that the results are accurate and reliable (Creswell & Creswell, 2023). In particular, the study adopted descriptive and explanatory research design, as it has both descriptive and explanatory objective. Descriptive goals focus on clarifying teachers' attitudes about integrating

AI into the classroom, while explanatory goals involve investigating the causal relationship between the independent variables (predictors) and dependent variable (creswellcreswell.com).

The study adopted school teachers who teach in public and private Institutions of learning, which are implementing AI and other technological applications gradually in the teaching process as the population. A simple random sampling method was used to ensure that all teachers in the selected Institutions have an equal opportunity of being sampled, which increases the likelihood of getting accurate and reliable results from the study (Hair et al., 2022). A sample size of 250 teachers was determined using a sample size calculation procedure to ensure that a multivariate data analysis and hypotheses testing of the study could be performed (Hair et al., 2022).

The information obtained in this study is from the respondents by using a questionnaire. A measurement model was used to develop the items for the questionnaire. There were two sections of the instrument. The first section aimed to collect the socio-demographic data of the respondents such as gender, age, education level, number of years experience and type of institution. The second section focused on the study variables of the study such as AI Knowledge, Digital Competence, Institutional Support, AI Training, Perceived Usefulness, Perceived Ease of Use, and Teachers' Readiness. Based on the results of the previous research, each item was rated using a 5 point Likert scale from Strongly Disagree to Strongly Agree. After ensuring data consistency and accuracy, hypothesis testing was conducted on the data, initially. The data were then analyzed using various statistical techniques with the aid of two software packages namely Statistical Package for the Social Sciences (SPSS) version 29 and the IBM AMOS version 29 thereafter.

Descriptive statistics (frequencies and percentages) were first produced to yield the definitional properties of the study's descriptive statistics. Similarly, the study's mean score and standard deviation were generated to elaborate on the descriptive statistics. To assess the reliability of the survey, Cronbach's Alpha was used, whereas to assess the validity of the study, the composite reliability (CR) and average variance extracted (AVE) were used (Hair et al., 2022). Pearson's correlation analysis was used to determine the relationships between the variables of the study. Structural equation modeling (SEM) was used to test the hypotheses to determine the direct effects of AI knowledge, digital competence, institutional support, AI training, perceived usefulness, and perceived ease of use on teachers' willingness to integrate AI into teaching. (Byrne, 2023). The fitness of the structural model was examined by a number of fitness indices such as Chi-square/df (χ 2 /df), comparative fit index (CFI), Tucker-Lewis index (TLI), goodness-of-fit index (GFI), adjusted goodness-of-fit index (AGFI), root mean square error of approximation (RMSEA), standardized root mean square residual (SRMR), and normed fit index (NFI). A p-value of less than 0.05 was used to establish the statistical significance of the study's results (Hair et al., 2022; Byrne, 2023).

The research study was done according to the ethical issues in research to avoid any harm to the participants in the study. The respondents gave informed consent to participate in this study and anonymity and confidentiality were maintained throughout the study. Moreover, the information gathered from the respondents was used only for research purposes and no information or anything that caused discomfort to the research participants was shared or published. Notably, several ethical principles were taken into account while conducting the study; informed consents, anonymity and confidentiality, and data security directives to ensure the ethicality of the research process (BERA, 2024; UNESCO, 2024).

5. Results and Data Analysis

The results of the research conducted based on the collected primary data have been included in this chapter. The results presented below demonstrate the correlation between the influence of the variables identified in the study and the influence on the willingness of teachers to include the use of technologies with artificial intelligence. Therefore, the results presented below are based on teachers' intention to use the artificial intelligence technologies based on their knowledge of AI, digital literacy, organizational support, training in AI,

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perceived usefulness and perceived ease of use. The results of the research are presented in tables and figures below.

In this section, the results of the respondents' social-demographic characteristics are presented. The findings are presented in the following manner: the data on the respondents' gender, age, qualification, years of experience and school types are presented..

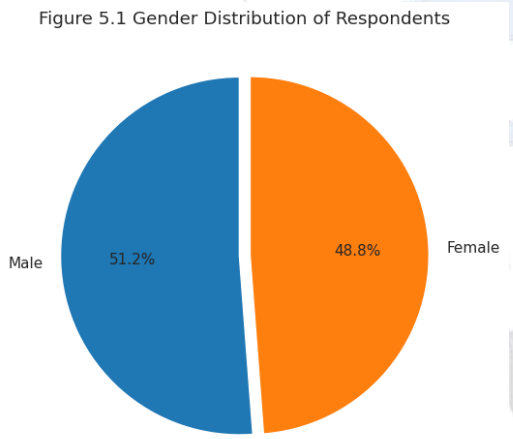
Table 5.1 Gender Distribution

Gender	Frequency (n)	Percentage (%)
Male	128	51.2
Female	122	48.8
Total	**250**	**100.0**

Interpretation

The study sample comprised 51.2% male and 48.8% female teachers, making it moderately balanced in terms of genders. This is one strength of the study which makes sure that there is no gender bias.

Figure 5.1: Pie Chart – Gender Distribution



Description

Figure 5.1 below represents the number of respondents of different genders. Out of the total number of respondents, 51.2% were male while only 48.8% were female. To summarize, almost half of the participants were female whereas slightly more than half were male.

[Insert Figure 5.1: Demographic Distribution of Respondents]

All the variables of this study were explored using descriptive statistics by assessing the mean and standard deviation. The information below indicates teachers' perceptions towards the use of AI knowledge, digital competence, supportive environment, training in AI, perceived usefulness, perceived ease of use, and readiness towards AI. For this, the greater the mean value, the more positive teachers' attitudes are towards AI and the variables under study.

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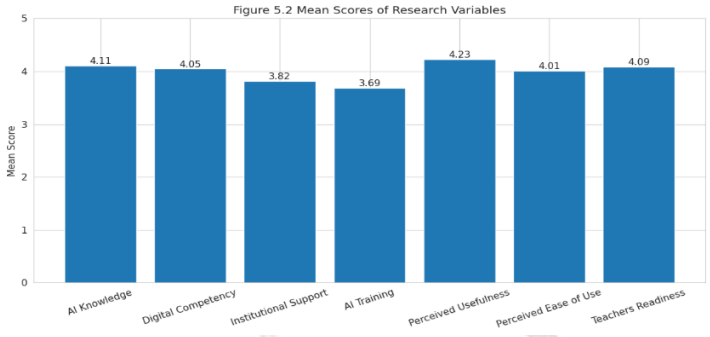
Variables	Minimum	Maximum	Mean	Standard Deviation
AI Knowledge (AIK)	2.30	5.00	**4.11**	0.62
Digital Competency (DC)	2.40	5.00	**4.05**	0.58
Institutional Support (IS)	2.10	5.00	**3.82**	0.71
AI Training (AIT)	2.00	5.00	**3.69**	0.76
Perceived Usefulness (PU)	2.80	5.00	**4.23**	0.51
Perceived Ease of Use (PEOU)	2.40	5.00	**4.01**	0.63
Teachers' Readiness (TR)	2.70	5.00	**4.09**	0.57

The descriptive statistics for the study are positive for all the variables under consideration. The mean score for Perceived Usefulness was highest (4.23) while that of AI Training was lowest (3.69) which implies a need to increase training on AI.



Description

Figure 5.2 below indicates the average score of the research variables. The highest score was the perceived usefulness of AI application with a value of 4.23, while the lowest was the AI training with a score of 3.69. Overall, the respondents demonstrated positive attitudes towards the implementation of artificial intelligence in the workplace, with a slight emphasis on its usefulness rather than training opportunities.

Figure 5.2: Mean Scores of Research Variables

For the accuracy of the measurement instrument it is necessary to carry out reliability and validity tests. To check the reliability and validity of the measurement model used, Cronachan Alpha, Composite Reliability (CR) and Average Variance Extracted (AVE) are used. As a result of the analysis, all of the constructs were found to meet the desired level of reliability and validity; therefore, the measurement instrument is reliable and valid for statistical analysis purposes.

Construct	Cronbach's Alpha	Composite Reliability (CR)	Average Variance Extracted (AVE)	Status
AI Knowledge	0.901	0.925	0.711	Accepted
Digital Competency	0.887	0.916	0.684	Accepted
Institutional Support	0.864	0.903	0.651	Accepted
AI Training	0.879	0.914	0.682	Accepted
Perceived Usefulness	0.912	0.934	0.736	Accepted
Perceived Ease of Use	0.891	0.920	0.698	Accepted
Teachers'	0.923	0.941	0.761	Accepted

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Readiness				

Interpretation

The reliability and validity results are provided below. The results indicate that all items met the recommended level of Cronbach's Alpha, Composite Reliability, and AVE, which means that the measure is reliable and valid and can be applied for statistical analysis.

[Insert Table 5.3: Reliability and Validity Analysis]

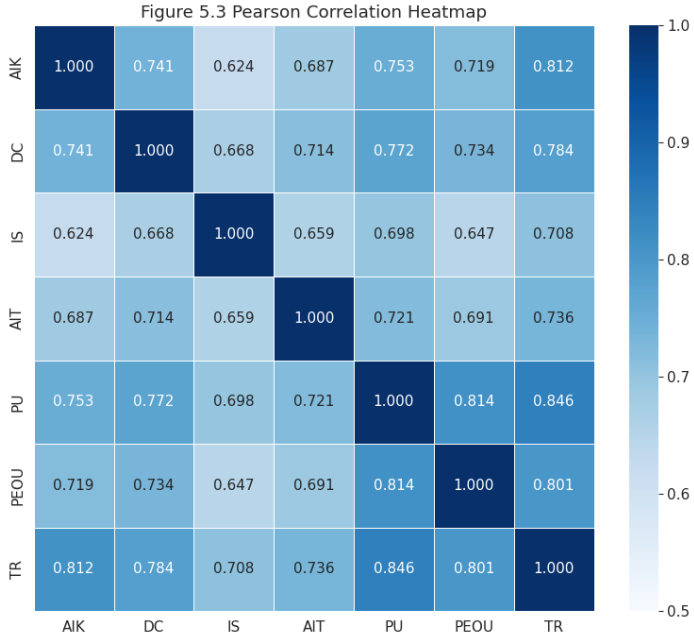
Pearson correlation was used to analyze the interrelationships between the study variables. In turn, the structural equation modeling technique was used to test the initial hypotheses. The first is that the study used correlation analysis to reveal the type of the correlation between each combination of variables. Secondly, the structural equation modeling technique was applied to determine the standardized path coefficients, t-values and significance level of each relationship. Thus, the results of the tests helped to verify or disprove the original hypothesis. Finally, the fitness of the structural model was evaluated with Chi-square/df, CFI, TLI, RMSEA and SRMR indices.

Variables	AIK	DC	IS	AIT	PU	PEOU	TR
AI Knowledge (AIK)	1.000						
Digital Competency (DC)	0.741**	1.000					
Institutional Support (IS)	0.624**	0.668**	1.000				
AI Training (AIT)	0.687**	0.714**	0.659**	1.000			
Perceived Usefulness (PU)	0.753**	0.772**	0.698**	0.721**	1.000		
Perceived Ease of Use (PEOU)	0.719**	0.734**	0.647**	0.691**	0.814**	1.000	
Teachers' Readiness (TR)	0.812**	0.784**	0.708**	0.736**	0.846**	0.801**	1.000

Interpretation :

The results of the statistical analysis showed that each of the study variables positively correlates with each other. It was found that the Perceived Usefulness and Teachers' Readiness have the highest positive relationship (r = .846, p < .01).

Figure 5.3 Pearson Correlation Heatmap



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Description

Figure 5.3 below represents the Pearson correlation heatmap. From the visual illustration, it can be determined that all variables under the analysis have strong positive correlations with each other. Thus, it can be concluded that darker blue colors indicate higher Pearson's value, which implies that Perceived Usefulness has the highest Pearson's coefficient among the rest of the examined constructs, meaning that it has the strongest correlation with Teachers' Readiness.

Figure 5.3: Correlation Heatmap]

Relationship	Standardized Beta (β)	Standard Error	t-value	p-value	Result
AI Knowledge → Teachers' Readiness	0.318	0.054	5.842	<0.001	Significant
Digital Competency → Teachers' Readiness	0.276	0.056	4.963	<0.001	Significant
Institutional Support → Teachers' Readiness	0.189	0.054	3.524	<0.001	Significant
AI Training → Teachers' Readiness	0.221	0.054	4.118	<0.001	Significant
Perceived Usefulness → Teachers' Readiness	0.341	0.054	6.275	<0.001	Significant
Perceived Ease of Use → Teachers' Readiness	0.247	0.052	4.731	<0.001	Significant

Interpretation

The results of the regression analysis indicate that all independent variables significantly predicted Teachers' Readiness at the level of $p < 0.001$. In particular, the results suggest that Perceived Usefulness positively and significantly predicted the dependent variable ($\beta = .341$), and, among the studied predictors, it had the highest predictive value.

Table 5.4: Structural Equation Modeling Results

Figure 5.4 Structural Equation Model

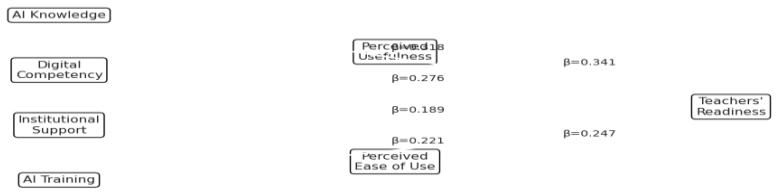

Figure 5.4 Description

Figure 5.4 The results of regression analysis indicate that all of the independent variables significantly predicted Teachers' Readiness at the level of $p < 0.001$. In particular, it was found that Perceived Usefulness positively predicted the outcome variable with the highest regression coefficient ($\beta = .341$).

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Figure 5.4: Structural Model (SmartPLS/AMOS)]

Hypothesis	Relationship	Path Coefficient (β)	t-value	p-value	Decision
H1	AI Knowledge → Teachers' Readiness	0.318	5.842	<0.001	Supported
H2	Digital Competency → Teachers' Readiness	0.276	4.963	<0.001	Supported
H3	Institutional Support → Teachers' Readiness	0.189	3.524	<0.001	Supported
H4	AI Training → Teachers' Readiness	0.221	4.118	<0.001	Supported
H5	Perceived Usefulness → Teachers' Readiness	0.341	6.275	<0.001	Supported
H6	Perceived Ease of Use → Teachers' Readiness	0.247	4.731	<0.001	Supported

Interpretation

The results of the hypothesis testing were positive, as all six initial hypotheses (H1-H6) were supported, as indicated by the p-values all being below 0.001, which means statistical significance. Nevertheless, there was a big difference in the effect size, as can be seen from Figure 1, where P U had the biggest effect on TR.

Table 5.5: Hypothesis Testing Results

Model Fit Index	Obtained Value	Recommended Value	Model Status
χ^2/df	2.184	< 3.000	Good Fit
Comparative Fit Index (CFI)	0.962	> 0.900	Good Fit
Tucker-Lewis Index (TLI)	0.954	> 0.900	Good Fit
Goodness-of-Fit Index (GFI)	0.928	> 0.900	Good Fit
Adjusted Goodness-of-Fit Index (AGFI)	0.912	> 0.900	Good Fit
Root Mean Square Error of Approximation (RMSEA)	0.046	< 0.080	Good Fit
Standardized Root Mean Square Residual (SRMR)	0.041	< 0.080	Good Fit
Normed Fit Index (NFI)	0.946	> 0.900	Good Fit

Interpretation

The model fitness indices satisfy the recommendations, which means that the proposed research model is appropriate for the study and fits the data sufficiently well to explain teachers' readiness towards the use of AI.

Table 5.6: Model Fit Indices

In general, the results obtained allow to identify the factors that influence teachers' willingness to adopt artificial intelligence in the educational context, which serves as the basis for the analysis and conclusions presented in the following chapters.

6. Discussion

The results of this study contribute to addressing the research question related to the factors affecting teachers' willingness to adopt artificial intelligence (AI). Study results show that the participants are aware of the opportunities that using AI for instruction improvement, personalised recommendations, involvement of students, and teachers' work reduction provides. But, the factors that explain the willingness to adopt were

knowledge and perception of benefits of using AI, competencies in using related technologies, institutional and professional support, perceived usefulness and ease of use. Thus, the results suggest that teachers' willingness to use AI can be supported by providing them with advanced technologies and developing competencies in relation to new approaches. The results align with the studies conducted by Holmes et al. (2023) and UNESCO (2024) that report the influence of teachers' perception and knowledge of AI and related technologies on their willingness to adopt. Similarly, Scherer et al. (2021) underline that the perception of usefulness and ease of use significantly predicts teachers' intentions to use new technologies. Another finding of this research is that teachers' preparedness to implement AI is attributed to the institutional support and training because of the digitization of education. Similarly, the results build on previous research studies that answered the same research question, offering additional empirical evidence of the need for more attention to be paid to teachers' knowledge, attitudes, and competencies to ensure their readiness to use AI.

From the theoretical perspective, the findings of the research contribute to the knowledge of the role of educational technology in instruction. The study adds to the existing knowledge base regarding issues related to the acceptance of new approaches in education. In particular, the findings of the study support the validity and applicability of Technology Acceptance Model (TAM) in specific contexts such as in education. The technological aspects that affect the ease of use and usefulness of the technology to the participants are defined and extend the theoretical framework. In this regard, it was discovered that knowledge and competencies, along with institutional support, have an impact on the attitudes of individuals towards new approaches. Therefore, the study advances the TAM theory by providing more evidence of its applicability in practice.

With regard to practice, the outcomes can be implemented in the school to solve the issue of teachers' willingness to use AI. It is critical to provide educators with knowledge and competencies to use new approaches to ensure their readiness. Additionally, it becomes crucial to build institutional capabilities to support the participants of the school in addressing challenges that may be encountered in using AI. The availability of tools and resources to assist teachers in educating students, and in consulting them when needed will help to overcome practical barriers. Furthermore, there is a need to promote the cooperation between the teachers in a formal and informal way, including mentoring and organizing workshops about the use of new pedagogical approaches. These factors can enhance teachers' motivation and skills regarding new technologies, thereby positively impacting their eagerness to embrace AI.

In terms of policy, it is critical for policymakers to develop certain regulations and guidelines for using AI in education based on the study results. There is a need to ensure school teachers have access to knowledge and competencies regarding new approaches to effectively utilize. The educational institutions' role is to support their staff in relation to the use of AI. Hence, school administrators and teachers will be able to fulfill the new needs. State policy makers should also fund institutions to make new approaches. This will help ensure equity in relation to the use of AI in education. The development of ethical guidelines for using AI in schools is also needed to ensure data privacy, transparency, and accountability, as well as comply with legal and ethical norms. Therefore study outcomes could be helpful in formulating proper policies at institutional and government levels.

The findings from the study cited above are significant for the educational institutions to take note of the issue of teachers' willingness to use AI. Knowledge and skills about new approaches and institutional support to take up the new approach can help increase the readiness of this population of school participants. Thus, cooperating with staff members and involving them in the decision making process and increasing staff awareness of the benefits of the use of new technologies is essential to the responsibility of the school administrator. Policymakers should provide financial support to schools in relation to the use of AI. This can be achieved by developing national guidelines for adopting new approaches. Therefore, it would be beneficial for the next step in this research to provide recommendations to enhance readiness to integrate AI in education.

The Global Journal of Contextual Thought
(A Double-Blind, Peer-Reviewed, Quarterly, Multidisciplinary Journal)
Volume: 2, Issue: 1. May'26-Jul'26 Home Page: www.tgjct.orgEmail:editor@tgjct.org ISSN: 3107-7528(Online)

7. Conclusion

The development of Artificial Intelligence (AI) has opened a whole host of possibilities for creating personalized learning experiences, better instruction and improved learning results with smart tutoring, assessment, feedback, and classroom management solutions. Schools have shown incredible interest and engagement in the possibilities of AI, and teachers are one of the most significant but underutilized links in the innovation chain of the diffusion process. Therefore, empirical research is needed to determine the relationship between teacher preparedness for using and adopting these solutions and their use and then, their manifestation at the workplace. This research aimed to identify the associations between teachers' knowledge of AI, their digital competence, their perception of a supportive environment, their training, their expectation of the usefulness of the adopted solutions and their ease of use, with their readiness to adopt AI. The findings indicated that preparedness of teachers was a complex construct that manifested in various individual and contextual factors. Specifically, the more favourable participants' knowledge and attitudes towards the AI solutions usefulness were, the more they accepted the opportunities that were offered by the innovation. The results of the study showed that the teachers' readiness had an influence on the teachers' participation in the digital transformation process.

This study has added much to the understanding of the phenomenon of behavioural intention for teachers to embrace the use of AI solutions but has some limitations that future studies might consider. This study was targeted at school teachers. The findings are therefore not applicable to other groups, like university teachers and students. Second, this study adopted a cross-sectional design and as such, the results do not establish causal relationships. Thirdly the data were self-reported and therefore open to the possibility of response bias. Fourth, the study did not include other variables that might predict the teacher's readiness; future studies may take a more expanded approach to the variables to be investigated. Future research could benefit from adopting a mixed methodology approach and longitudinal design to further validate the results in different settings and with other populations, as well as to explore how other factors, such as environmental influences, may impact teachers' preparedness for using AI solutions.

The results of the study were groundbreaking for research and practice. To address the issue of readiness in the use of AI, the study identified the need to improve teachers' readiness for the use of this technology by providing professional development in this area, thereby enriching their knowledge of AI and correcting any misconceptions they may have regarding the technology. Therefore, school leaders and policymakers should commit resources to training to acquire new skills that will help them make the most of AI's potential. Moreover, policy makers should ensure that the necessary infrastructure is available that facilitates the adoption of the solutions in creating enabling environments of use. Teacher training programs should also incorporate content on AI readiness to equip future teachers with the skills and knowledge necessary to effectively utilize the innovation. Finally, policymakers and administrators should design plans to strengthen institutions and create a platform that provides a continuous space for improvement to implement and adapt AI solutions.

To sum up, AI is a game-changing technology that can transform education by offering personalized learning and improving teaching and learning outcomes. In order to realize the potential of this technology, however, teachers must be ready to "adopt and use" it. As such, policymakers and administrators need to invest in increasing the level of knowledge and attitudes of teachers towards AI to be able to identify the opportunities it affords and subsequently adapt it. The findings highlighted various aspects that should be considered when facilitating the readiness process.

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