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Determinants of School Teachers' Acceptance of Online Teaching in the Post-COVID-19 Era: A Technology Acceptance Model Approach

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Abstract: ***This study examines school teachers' acceptance of online teaching in the post-COVID-19 era using the Technology Acceptance Model framework. A quantitative survey was conducted among 229 in-service government school teachers. Data were analyzed using exploratory factor analysis, reliability testing, correlation analysis, multiple regression, and structural equation modeling. Two significant predictors of online teaching acceptance were identified: perceived usefulness ($r = .49$, $p < .001$) and computer self-efficacy ($r = .16$, $p < .001$). Regression analysis indicated that these variables explained 27.7% of the variance in acceptance, with perceived usefulness emerging as the stronger predictor. Gender differences were also observed ($p = .008$). The findings highlight the importance of enhancing teachers' perceptions of instructional value and digital competence to sustain technology integration in post-pandemic education***

Keywords: Technology Acceptance Model (TAM); Online Teaching Adoption; Computer Self-Efficacy; Perceived Usefulness; Structural Equation Modeling; Post-COVID Education

1. Introduction

The COVID-19 pandemic has undeniably had a profound impact on the education landscape, with teachers having to adopt various online learning methods and evolve their teaching and learning experiences. What began as a temporary solution to maintain academic continuity during school closures has now evolved into a fundamental component of the educational landscape. In the post-pandemic era, online teaching is no longer viewed merely as an emergency response but as a viable and often necessary mode of instructional delivery. However, this upheaval also presents an opportunity for positive change in the post-COVID-19 educational landscape. The pandemic has compelled schools and universities to embrace digital transition and remote learning, underscoring the crucial role of technology in education (Rashid et al., 2022). Several studies (Akram et al., 2021; Alawamleh, 2020; Rapanta et al., 2020) reported that the integration of technology in education and digital transformation is not just a choice but a necessity in the post-COVID-19 educational landscape.

The COVID-19 pandemic has resulted in a significant change in education, affecting over 1.5 billion students who are now learning remotely, with digital education platforms becoming their lifeline (UNESCO, 2020). The swift transition to emergency online education in higher education posed significant challenges, as revealed by a comprehensive survey conducted by the International Association of Universities (IAU) (Marinoni et al., 2020). For teachers, this transition posed considerable challenges- especially for those with limited digital literacy or prior exposure to online platforms. Early efforts to replicate conventional classroom practices in virtual settings revealed the limitations of such approaches, highlighting the need for new strategies, tools, and mindsets to effectively engage students in an online context.

The rapid digitalization of education, accelerated by the pandemic, has now ushered in a new era of blended and hybrid learning models. As technology continues to evolve through the proliferation of mobile devices, learning management systems, and interactive digital content, the role of teachers as facilitators of technology-enhanced learning becomes increasingly critical. In this context, understanding the factors that influence teachers' acceptance of online teaching is essential for informing policy, guiding professional development, and ensuring long-term sustainability of digital education.

This study aims to explore school teachers' acceptance of online teaching in the post-pandemic period, focusing specifically on the influence of Computer Self-Efficacy and Perceived Usefulness. By adopting a quantitative approach, the research seeks to provide empirical insights into the readiness and adaptability of educators in embracing online teaching as an integral part of their professional practice.

1.1 Research Contribution

This study makes several distinctive contributions to the existing literature on technology acceptance in education.

Contextual Contribution: Government School Teachers in the Post-Pandemic Context

While the Technology Acceptance Model (TAM) has been extensively applied in higher education contexts, its application to government school teachers in the post-pandemic era represents a contextual novelty. Government school teachers in India operate within unique infrastructural constraints, diverse student populations, and varying levels of institutional support that distinguish their technology adoption experiences from their counterparts in private schools or higher education institutions. The post-COVID-19

period presents a critical juncture where emergency remote teaching has transitioned to sustained blended learning, necessitating renewed investigation into teacher acceptance patterns (Scherer & Teo, 2021; Li & Yu, 2022).

Theoretical Contribution: Extending TAM in the Indian School Context

TAM has remained under-tested in Indian school contexts, particularly among government school educators. Recent studies have called for more context-specific examinations of technology adoption in developing countries (Mukherjee & Banerjee, 2023; Kumar & Nanda, 2022; Sharma & Singh, 2024). Despite India's rapid digital education initiatives such as DIKSHA and NISHTHA, empirical evidence on how government school teachers perceive and accept online teaching remains limited. Sharma et al. (2023) observed that most TAM studies in India have focused on higher education, leaving a significant gap in understanding K-12 teacher populations. This study addresses this gap by examining whether the predictive power of TAM's core constructs- perceived usefulness and computer self-efficacy- holds true for government school teachers navigating post-pandemic pedagogical realities.

Practical Contribution: Implications for Policy and Professional Development

The study offers practical contributions to educational policy and professional development frameworks**.** By identifying perceived usefulness as the dominant predictor of acceptance, the findings inform the design of teacher training programs that emphasize pedagogical value over mere technical proficiency. This aligns with recent evidence suggesting that technology integration succeeds when teachers recognize tangible improvements in student engagement and learning outcomes (Venkatesh et al., 2021; Zhao & Cao, 2023). For policymakers, the results underscore the need for contextualized digital capacity-building initiatives that address gender disparities and provide sustained technical support. The study thus provides evidence-based recommendations for structuring teacher professional development in resource-constrained educational systems.

2. Online Teaching

Web based teaching and learning is the utilization of internet and other significant advances to create materials for instructive purposes, instructional delivery and the management of the program (Fry, 2001). Hrastinski (2008) expressed that there are two types of online teaching and learning, in particular asynchronous and synchronous and that for online teaching to be effective and efficient, instructors, must have an extensive idea on its benefits and limitations. This article discusses the acceptance of web based teaching apropos to the two selected factors and how an awareness of the impact of these factors will help in creating a better teaching-learning experience as the world battles to eradicate the pandemic.

3. Acceptance of online teaching

As online mode of study continues to expand, a rising awareness of the prerequisites for competent online instructors has also been recorded. According to Gregory and Lodge (2015), institutional capability in web-based course delivery can be established by devising a bona-fide training for the instructors and further investing in an associated a program. Besides the acknowledged teaching competencies like knowledge of curricula and course delivery methods, the perception of the unique competencies required for web based teaching achievement, specifically the attitude of trainers towards online teaching when teaching happens online, should also be addressed (Alvarez et al., 2009). In spite of much earlier exploration in investigating the notion of online student readiness, online instructor readiness is currently materializing as a similarly significant construct (Oomen-Early and Murphy, 2009).

The standard and convenience of the virtual learning environment are the key influencers on the learning outcome, i.e., student satisfaction. The ease of use of the e-learning technologies, as the main element of the e-learning success, incorporates academic and technical usability. The assistance during the exercise of course delivery is the pedagogical convenience while technical convenience alludes to the association between the client and the PC (Melis et al., 2003). Because of the referenced realities, to initiate a virtual learning climate, apart from the instructor, a bunch of specialists from other fields are also needed like the multimedia experts, programmers, administrators, instructional designers and similar experts. However, the practice shows that often teachers are the ones who perform many different roles themselves. Given the complexity of e-learning implementation, the outcome of the exploration show that teachers demonstrate moderate acceptance of e-learning. For that reason, a question is being asked: *Which are the factors that influence a teacher's acceptance of online teaching?*

3.1 Factors affecting Acceptance of Online Teaching

The shift to online teaching has posed significant challenges for school teachers, who often face unique barriers compared to higher education instructors. Many factors like fear of change, apprehensions related to the dependability of technology, unpredictability about student outcomes in a web-based environment, workload and other related factors discourage faculty members from embracing different forms of web-based instruction modes (Bacow et al. 2012; Betts & Heaston, 2014; Bolliger & Wasilik, 2009; McQuiggan, 2012). Institutions that consider web-based education as a vital strategic plan should encourage the faculty member's acceptance in online teaching and to accomplish this, it is imperative to recognize how faculty perceive teaching online and what factors shape those perceptions. Several prior studies have explored introducing e-learning as an innovation diffusion in organization, introducing and accepting new information system, communication between human and the machine, psychology, pedagogy, reengineering the education/business process and other. Many researches utilized the existing hypotheses and models of technology and innovation acceptance to explore the factors affecting online teaching. Keller (2009) has tried to associate the acceptance of faculty towards web-based education to innovation diffusion from an organizational learning perspective, while Nanayakkara and Whiddett (2005) identified the factors as individual, organizational and system factors. Agarwal (2000)

in his study identified the various factors influencing individualized adoption towards information technology in organizations as personal differences, situational factors, social influence, organizational factors, beliefs and attitudes. Osika and Buteau (2009) has identified the adoption of the e-learning technology through motivational factors, and classified into intrinsic factors (beliefs, sense of competence, anxiety) and extrinsic factors (institutional factors).

Acceptance of online teaching may be referred to as the process by which the teachers are equipped to put in their finest efforts to know and understand the new technology besides to use the same to extend to the students. Acceptance of this state of the art medium of teaching will create in them a new drive to conquer the negative factors like fear and to embrace it with their whole heart. This in turn will find reflection in their teaching-learning methodology.

The **Technology Acceptance Model (TAM)**, originally developed by Davis (1989), is one of the most widely used frameworks for understanding how individuals adopt and use new technologies. The model proposes that two key beliefs influence technology acceptance: Perceived Usefulness (PU) and Perceived Ease of Use (PEOU). Perceived usefulness refers to the degree to which an individual believes that using a particular system will enhance job performance, while perceived ease of use refers to the degree to which a person believes that using the system will require minimal effort. These beliefs influence the individual's attitude toward using the technology and subsequently shape their behavioral intention to adopt it. TAM has been extensively applied in studies examining technology adoption in sectors such as education, healthcare, and business. In the context of education, the model has been used to understand teachers' acceptance of digital learning platforms, online teaching tools, and other instructional technologies. In this study, the TAM framework is used to examine how Perceived Usefulness and Computer Self-Efficacy influence teachers' acceptance of online teaching in the post-COVID-19 educational context**.**

3.2 Computer Self efficacy

Online teaching and learning process alludes to the utilization of web-based innovations to convey an expansive exhibit of arrangements that enhance knowledge and performance (Rosenberg, 2001). It is based on three basic rules: (1) it is organized, which makes it fit for instant refreshing, storage/recovery, conveyance and sharing of instruction or data (2 it is conveyed to the end-client by means of a PC utilizing standard Internet technology and (3) it centers around the broadest perspective on learning – learning arrangements that go past the customary ideal models of training (Rosenberg, 2001, p. 28). A digital mindset (Smith, 2000) is required in the teaching profession, though teachers differ widely in their attitudes and ability to cope with technology (Sutherland-Smith, 2002).The successful use of computers in classrooms depends on the instructor's frame of mind towards computers (Lawton & Gerschner, 1982). Prior studies have stated that instructors' mentalities in addition to the knowledge and expertise in using computers are main considerations influencing their primary adoption of computer technology and their later conduct with respect to computer utilisation (Koohang, 1989; Violato, Mariniz & Hunter, 1989). Kluever, Lam and Hoffman (1994) also indicated that teachers' perspectives towards computers affect their instructional utilization of computers and probability of benefitting from training. However, recent researches find that teachers and students are yet hesitant to take part in a functioning or continued way in exercises employing information technology (Reffell & Whitworth, 2002). The application of computers in various levels of education varies significantly with courses as well as institutions and is inconsistent till date (Breen et al., 2001; Marriott et al., 2004). The current paper endeavors to investigate a model to comprehend teacher acceptance of e-learning technology and to deliberate about its suggestions to teacher's education and teacher's professional development.

One significant construct used to investigate the capability of individuals to effectively perform computer-related errands is self-efficacy (Doll & Torkzadeh, 1989). Self-efficacy is generally characterized as an assessment of individualized self-percepts that result from dynamic interaction among self-referent idea, influence, and activity (Bandura, 1986). As a psychological construct, self-efficacy is accepted to assume a vital role in self-motivation, particularly when a specific degree of motivation is predominant to start adapting with unfamiliar tasks. Computer self-efficacy has been identified as a determinant of information system utilization by Compeau and Higgins (1995) while Hill et al (1987) identified that computer self-efficacy can be a significant antecedent of behavioral intention. By and large, studies done till date affirm that computer self-efficacy not just decides choices by people to acknowledge and utilize the computer system; it is also a decent indicator of acceptance and in computer-related tasks. This study tries to identify the significance of computer self efficacy in acceptance of web based course delivery by school teachers leading to their improved performance in online classes.

3.3 Perceived Usefulness

The technology acceptance model has recognized the function of the perceived usefulness constructs in the information technology acceptance process. Perceived Usefulness (PU) is expressed as "how much an individual accepts that utilizing a specific framework would improve the activity execution" (Davis,1986). In other words, it is the extent to which a person believes that the overall performance is enhanced by making use of the system. It is the degree to which a person believes that using a technology will enhance their performance (Davis, 1989). It has been shown that PU impacts the utilization of a framework due to the person's faith in a user–performance relationship (Agarwal & Karahanna, 2000). It has been demonstrated that PU impacts the use of a framework owing to the person's faith in the presence of utilization execution relationship. The easier it is to use a system, the less effort it takes to execute tasks, hence directly influencing the intent to use the system. Less effort to execute tasks results in more cognitive resources to be used elsewhere. In this case, the additional cognitive resources differential is applied toward meeting performance outcome expectations by being more attentive while using the system. This

relationship in turn has an indirect influence on behavioral intention. The performance outcome expectations variable is synonymous to the PU construct. Perceived usefulness of online learning for students serves it can be as an added advantage to the teachers to accept online teaching and to proceed in such a way as to improve the online teaching - learning experience.

The effect of perceived usefulness of online learning for the students and how it will improve their overall skills will be an added incentive for the instructors to focus on developing and implementing a more effective online teaching process. If teachers believe online teaching improves student outcomes, they are more likely to adopt it (Teo, 2019). This study tries to bring out the influence of Perceived Usefulness of learning online in creating a greater acceptance of online teaching process.

4. Research Methodology

4.1 Research Design and Sampling Procedure

A quantitative cross-sectional survey design was employed to examine the factors influencing school teachers' acceptance of online teaching. The target population comprised in-service teachers from government schools in Kerala, India. A multistage cluster sampling technique was adopted: three districts were randomly selected from the state's 14 districts, followed by random selection of five government schools from each district. Within each selected school, all teachers were invited to participate.

Inclusion criteria required participants to: (a) have at least one year of teaching experience, (b) have conducted online classes during the COVID-19 pandemic, and (c) currently teach in a government school. Of the 320 questionnaires distributed, 250 were returned, yielding a response rate of 78.1%. After data cleaning, 229 valid responses were retained for analysis (effective response rate: 71.6%). The sample comprised 98 males (42.8%) and 131 females (57.2%), representing diverse subject backgrounds including languages, sciences, social studies, and mathematics.

4.2 Measurement Instrument

The structured questionnaire consisted of two sections: demographic information (gender, teaching experience, subject area) and 20 items measuring technology acceptance constructs. All items were rated on a five-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree).

1) **Perceived Usefulness (PU)** was measured using six items adapted from Davis (1989) and Teo (2019), assessing the extent to which teachers believed online teaching enhanced their instructional effectiveness. An example item is: *"Using online teaching platforms improves my teaching effectiveness."*
2) **Computer Self-Efficacy (CSE)** was measured using six items adapted from Compeau and Higgins (1995) and Venkatesh et al. (2003), capturing teachers' confidence in performing computer-related tasks. An example item is: *"I feel confident using online teaching tools even without assistance."*
3) **Acceptance of Online Teaching** was measured using eight items developed based on previous TAM studies (Scherer et al., 2019), reflecting teachers' willingness to continue using online teaching methods.

Following exploratory factor analysis, eight items were retained (four for perceived usefulness and four for computer self-efficacy) with factor loadings exceeding 0.40. The final measurement model demonstrated adequate psychometric properties.

4.3 Reliability and Validity

Reliability analysis using Cronbach's alpha yielded a coefficient of $\alpha = 0.604$ for the eight-item scale. While this value falls slightly below the conventional threshold of 0.70, it is considered acceptable for exploratory research in social sciences (Hair et al., 2019; Taber, 2018), particularly when scales are adapted to new cultural contexts. Composite reliability scores from the PLS-SEM analysis ranged from 0.71 to 0.79, indicating acceptable internal consistency. Average variance extracted (AVE) exceeded 0.50 for both constructs, supporting convergent validity (Fornell & Larcker, 1981).

4.4 Data Analysis

Data analysis proceeded in four stages using SPSS version 26 and SmartPLS 4. First, exploratory factor analysis (EFA) with principal component extraction and varimax rotation was conducted to identify the underlying factor structure. Second, reliability analysis assessed internal consistency. Third, Pearson correlation and multiple regression analysis examined relationships between predictors and acceptance. Fourth, partial least squares structural equation modeling (PLS-SEM) was employed to test the measurement and structural models. Model fit was assessed using standardized root mean square residual (SRMR) and normed fit index (NFI), with bootstrapping (5,000 resamples) used to evaluate path significance.

4.5 Ethical Considerations

This study adhered to established ethical guidelines for educational research. Participation was entirely voluntary, and written informed consent was obtained from all respondents prior to data collection. Teachers were assured of anonymity and confidentiality; questionnaires were coded numerically without any identifying information. Participants were informed of their right to withdraw at any point without consequence. Data were stored securely and accessed only by the research team for analytical purposes. Institutional approval was obtained from the research ethics committee of Chinmaya Vishwavidyapeeth.

5. Results & Interpretation

5.1 Factor Analysis

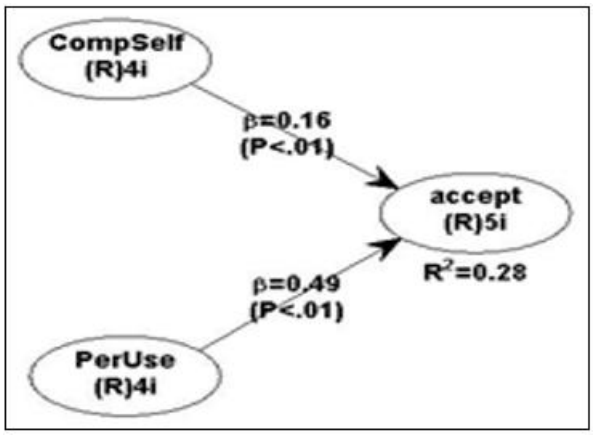
Survey was sent to 250 participants from different backgrounds of which 229 responded of which 98 males and 131 females were. There were 20 self-reported items apart from demographic factors and the responses were recorded on

five point Likert scale, ranging from 1 = strongly disagree to 5 = strongly agree. The communalities were all above 0.30, which showed that all items shared some common variance with other. Secondly, the Kaiser-Meyer-Olkin measure of sampling adequacy was .789, above the stipulated value of .6, and Bartlett's test of sphericity was significant $\chi 2$ (190) = 1228.799, $p < .05$. From these indicators, factor analysis was deemed to be suitable with all the 20 items. To calculate the composite scores for the factors in acceptance level of online teaching, principal component analysis was used. Initial eigen values indicated the loading of only two factors though initially seven factors technological acceptance, computer literacy, teaching style, access to internet, subjective norms, faculty experience and students availability were considered. Many factors cross loaded and the two factors identified were more computer self efficacy related and perceived usefulness related and finalized these factors. The factors with least loadings in the initial factor analysis were omitted and a second factor analysis was done wherein the communalities of all the items were above 0.30 and the KMO measure of sampling adequacy was reported to be .722, and Bartlett's test of sphericity was significant $\chi 2$ (28) = 452.467, $p < .05$. The two factors described 31% and 25% of the variance respectively. The two factor solution, which explained 56% of the variance, was preferred because of: (a) the theoretical support; (b) the steadiness of eigen values on the scree plot after two factors; and (c) the inadequate number of primary loadings and the hassles of interpreting any ensuing factors. A total of twelve items were removed because of their inadequacy in contributing towards a simple factor structure and also because of the non-fulfillment of the criteria of having a primary factor loading of .4 or above.

A reliability analysis was carried out on the perceived benefits comprising of the final 8 items. Cronbach's alpha showed the questionnaire to reach an acceptable reliability, $\alpha = 0.604$. Practically all the eleven items seemed to be deserving of retention, bringing about a decrease in the value in alpha in case of removal. Hence all the eight items can be retained.

5.2 SEM Analysis

A SEM analysis was conducted using PLS and the model fits are as shown below:



5.3 Correlation and Regression

A correlation was run to determine the relationship between perceived usefulness and acceptance of online teaching. Results of the Pearson correlation indicated a significant positive association between perceived usefulness and acceptance of online teaching, (r=.49, n=229, p=.000). Similarly, a correlation was run to determine the relationship between computer self- efficacy and acceptance of online teaching and again the results of the Pearson correlation indicated a positive association between computer efficacy and acceptance of online teaching, (r=.16, n=229, p=.000).

A multiple regression analysis was conducted to predict the acceptance of online teaching with the explanatory variables, perceived usefulness and computer self-efficacy. These variables had a statistically significant prediction on acceptance of online teaching, $F(2,226) = 44.729$, $p < .001$, adjusted $R^2 = .277$). The individual predictors were examined further and indicated that perceived usefulness (t= 8.517, p=.000) and computer self-efficacy (t=4.625, p=.000) were both significant predictors in the model.

The results indicate that **Perceived Usefulness** is the more **influential factor** compared to **Computer Self-Efficacy**. Teachers will more readily accept online teaching if they see tangible value and benefits in using technology, more than simply being confident in using it. However, enhancing both constructs can meaningfully contribute to better acceptance levels.

5.4 T-Test

A t-test was done to identify whether there is any significant difference in acceptance of online teaching between male and female faculty members. Results of the independent sample t-tests indicated that there was a significant difference in acceptance of online teaching in between males and females, (t (227) =- 2.693, p=.008). The mean value of acceptance towards web-based teaching for males were slightly higher compared to that of females and it can be inferred that the male faculty members accepted online teaching better than female faculty members.

6. Recommendations

- **Provision of Reliable and User-Friendly Digital Tools:** Schools and educational authorities should ensure that teachers are equipped with easy-to-use, purpose-driven digital platforms and tools that align with curriculum goals.
- **Targeted Professional Development and Continuous Support:** Teachers require structured, hands-on training that goes beyond basic tutorials. Professional development should include tiered workshops tailored to different proficiency levels and focus on real classroom applications.
- **Demonstrate Impact on Teaching and Learning Outcomes:** Integrate case studies and examples showing how online tools improve student engagement**,** learning retention**, or** assessment quality**.**
- **Promote Time-Saving Benefits:** Highlight how technology can streamline tasks such as grading,

attendance, and feedback, helping teachers manage workload more efficiently. Offer templates and ready-to-use digital resources to reduce preparation time.

- **Involve Teachers in Tech Planning:** Include teachers in the decision-making process regarding tech adoption to increase relevance and buy-in. Conduct regular feedback sessions to assess whether tools are perceived as helpful and make adjustments accordingly.
- **Ensure Continuous Support:** Maintain access to technical support staff or helplines for real-time assistance. Develop an internal online knowledge base (e.g., FAQs, how-to videos, troubleshooting guides).
- **Build a Culture of Safe Experimentation:** Encourage teachers to try out new tools without fear of failure, celebrate attempts as well as successes.
- **Recognition and Incentives:** Acknowledge tech adoption through awards, stipends, or leadership roles. Include successful integration of online teaching in performance appraisals or professional portfolios.
- **Ensure Infrastructure and Accessibility:** Guarantee that all teachers have access to reliable devices, stable internet, and secure platforms. Minimize the digital divide through resource provisioning and school-wide digital literacy drives.
- **Support a Blended Learning Culture:** Promote the blended model as the standard, allowing teachers to slowly embed technology without abandoning face-to-face strengths.

7. Limitations

The research addresses only perceived usefulness and computer self-efficacy related factors and its effect on the acceptance on online teaching. The research can be elaborated by incorporating other factors which can explain acceptance of online teaching. The research also did not address demographic factors like age and geographic area which also might affect the online acceptance level of teaching. The factors chosen may also vary over time for which a longitudinal study would be more appropriate.

8. Conclusion

This study empirically examined school teachers' acceptance of online teaching in the post-pandemic context using the Technology Acceptance Model. The findings confirm that perceived usefulness and computer self-efficacy significantly predict acceptance, jointly explaining 27.7% of the variance. Perceived usefulness emerged as the dominant factor, suggesting that teachers prioritize instructional value over technical confidence. Gender differences were also observed, indicating the need for targeted professional development interventions. These results emphasize that sustained digital transformation in schools requires not only infrastructure but also pedagogical value alignment and structured digital capacity building. Future research should extend the model by incorporating additional constructs such as perceived ease of use, institutional support, and longitudinal adaptation trends.

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