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Factors influencing the digital transformation skills of primary school teachers in the southern border province, Vietnam

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Abstract

The study aims to explore the factors affecting the digital transformation skills of primary school teachers in the southern border province of Vietnam. A descriptive study design was used to collect data from primary school teachers in An Giang province. The survey consists of 25 questions on a 5-level Likert scale designed to collect information on many factors. The primary factor in the digital transformation of teachers is their intention. These findings make practical contributions to the research on the skill development of primary school teachers in the context of digital transformation to improve the quality of education in primary schools. At the same time, the study also provides five factors affecting the digital transformation capacity of primary school teachers, adding additional reference sources to support educational managers in the southern border region of Vietnam in building school development strategies according to the priority levels of each factor.

Contents

Contribution of this paper to the literature
This paper examines the factors that influence the digital transformation capacity of primary school teachers in the southern region of Vietnam, specifically in alignment with the national digital transformation strategy. It uses data collected through the descriptive statistics method to provide education researchers with a foundation for proposing solutions and enhancing capacity development for primary school teachers.

1. Introduction

Recently, the rapid development of digital-based scientific advancements has exploded to meet the demands of the fourth industrial revolution which has affected various operations and activities such as the education sector (Le-Phuong, Lam, & Le-Duc, 2021). According to Gartner's Information Technology Glossary, digitalization is the process of transforming information and processes from traditional forms into digital forms. It involves the use of digital technologies such as computers, the internet, artificial intelligence and other emerging technologies to create, store, process and transmit information (Gartner, 2021). Digital transformation essentially entails extensive changes to people, processes, strategies, structures and competitive motivations in order to be relevant in the digital era (Rodrigues, 2017). The goal of digital transformation is to provide technology-based solutions to both current and upcoming problems (Schenk & Dolata, 2020). Thus, digital transformation encompasses all aspects of digital technology, necessitating adjustments in technology, culture and operational frameworks within organizations (Cerdá, Núñez, Quirós, & Alpera, 2021).

Embracing digital technology has become essential in the education sector leading (Balyer & Oz, 2018) to propose educational policies to facilitate this transformation. Those educational institutions that effectively advance will prosper in the digital age while those that fail to adapt to the changing technological landscape risk becoming obsolete.

An Giang is a province located in the southwestern part of the Mekong Delta region within the Cuu Long River Delta. It is part of the Long Xuyen Quadrilateral area and is a border province with diverse ethnic and religious communities. The people of An Giang are patriotic and have been honored with the title "Hero of the People's Armed Forces" by the State on October 2, 2000. The province shares a 104 km border with the Kingdom of Cambodia to the northwest, 69.789 km with Kien Giang province to the southwest, 44.734 km with Can Tho province to the south and 107.628 km with Dong Thap province to the east.

The purpose of this study is to explore the factors influencing the digital transformation capabilities of primary school teachers in the border region, specifically in An Giang province, Vietnam. The study aims to identify the necessary interventions to enhance teachers' capabilities in implementing digital transformation in teaching and learning activities.

2. Literature Review

The development of Information Technology and Communications (ICT) has been driving the transformation process. Recently, the research community has also shown interest in the field of ICT research (Luong, 2023). The essence of digital transformation in education lies in the integration of digital technologies, replacing traditional teaching methods and transitioning towards data-driven decision-making models (Bosova, Chekin, Borisova, Oleynikova, & Fedosov, 2021). This transformation is comprehensively guided and supported by technological infrastructure, human resources, organizational aspects and pedagogical strategies (Oliveira & De Souza, 2022). The importance of digital transformation in education has been acknowledged, yet there are considerable implementation obstacles. Emilio, Mariana-Daniela, Juan, and Infante-Moro (2020) argue that a digital learning environment should align with the school's strategy. A crucial component for developing a sustainable digital learning environment is selecting appropriate digital learning strategies and giving the staff of the educational institution training in digital literacy (Emilio et al., 2020). According to Bogdandy, Tamas, and Toth (2020), the major obstacles to traditional teaching methods are those of space and time for teachers and learners. A digital learning environment makes it easier to overcome these obstacles. Aditya, Ferdiana, and Kusumawardani (2021) identified various barriers and challenges such as the need for a clear vision, supportive policies and regulations, adequate resources, capable leadership, digital literacy and skills, technological readiness, adaptability, change management, government support and economic considerations.

According to Lund, Furberg, and Gudmundsdottir (2019), the concept of expanding and integrating digital literacies as a means of transformative agency in education. They discuss the challenges and opportunities associated with expanding digital literacies and provide insights into how educators can foster transformative agency through the integration of digital technologies in teaching and learning. The authors support a comprehensive approach to digital literacy that promotes critical thinking, creativity and active engagement with digital tools and platforms in addition to technical skills (Lund et al., 2019). A key factor in the success of digital transformation in the education sector among these obstacles is the availability of human resources, especially trained individuals. It is essential to overcome these obstacles and promote digital innovation.

Various fields such as education require learners and teachers to have certain ICT competencies (Nguyen & Pascal, 2018). McGarr and Engen (2022) conducted research on teachers' digital competencies which include important aspects such as technology literacy, computational thinking, information retrieval, communication and collaboration, creativity and critical thinking and digital ethics and safety. The need for integrating digital competence training for teachers into teacher training programme and connecting it to current teaching and assessment methodologies was also emphasised.

Currently, the digital competencies of primary school teachers in Vietnam are diverse. Some teachers have the ability to use digital competencies in teaching, master basic skills and create instructional content using ICT. However, some teachers still face difficulties in using digital competencies, lack knowledge and support from the school.

3. Research Findings

3.1. Research Sample

The survey questionnaire was administered to primary school teachers in An Giang province, Vietnam, using Google Forms and distributed through email and social media platforms. The estimated participation was 400 individuals with a response rate of 89.75% (359 responses). Out of these, 19 responses were considered invalid as they selected only one option. The final dataset for analysis comprised 340 valid responses (94.71%).

Table 1 presents research sample statistics.

Table 1. Research sample statistics.

Research sample		Quantity	Percentage (%)
Gender	Male	134	39.4
	Female	206	60.6
Education level	Intermediate	14	4.1
	College	39	11.5
	University	276	81.2
	Postgraduate	11	3.2
Years of teaching experience	Less than 5 years	61	17.9
	From 5 to less than 10 years	58	17.1
	From 10 to less than 20 years	94	27.6
	Above 20 years	127	37.4
Sum		340	100

The data presented in the table provides insights into the participation of teachers in the survey. Out of the total respondents, 206 (60.6%) were female teachers while 134 (39.4%) were male teachers. The educational background of the participants varied with 14 females (4.1%) having an intermediate level of education, 39 females (11.5%) holding a college degree, 276 females (81.2%) possessing a university degree and 11 females (3.2%) having a postgraduate degree. Regarding teaching experience, the highest proportion of teachers (37.4%) had over 20 years of experience followed by 94 (27.6%) who had between 10 and less than 20 years of experience. Teachers with less than 5 years of experience accounted for 61 (17.9%) respondents while 58 (17.1%) fell into the category of 5 to less than 10 years of experience.

3.2. Research Methodology

The survey questions were designed using a Likert scale (1 = strongly disagree, 2 =disagree, 3 =neutral, 4 = agree, 5 = strongly disagree) for each statement.

An exploratory factor analysis (EFA) approach was used to address the research question "What are the factors influencing the digital transformation capacity of primary school teachers in An Giang province, Vietnam"? This study focused on major groups rather than examining individual discrete variables separately.

A multivariate regression analysis method was used to answer the second research question "How significant are these factors?" (Hair, Black, Babin, & Anderson, 2014). Following the results obtained from the exploratory factor analysis, factors with eigenvalues were selected as independent variables for the multivariate regression analysis. The objective of this method was to examine the level of relationship between the key factors and the acceptance of digital transformation. The multivariate regression model in this study was formulated as follows:

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \ldots + \beta n X n$$

Where,

Y represents the dependent variable that reflects the intention of digital transformation. This variable was computed by summing the respondents' values for the 25 survey questions.

β signifies the standardized regression coefficients.

X denotes the main factors retained.

3.3. Results

The exploratory factor analysis (EFA) method was applied to the 25 survey questions using Varimax rotation. Data analysis was conducted using the Statistical Package for the Social Sciences (SPSS) software to extract characteristic values for each factor. The Kaiser-Meyer-Olkin measure was used to assess the sample adequacy for factor analysis yielding a value of 0.879. This value indicates a high level of suitability for analysis, surpassing the recommended thresholds of 0.6 by Kaiser (1974) and 0.5 by Kim and Mueller (1978), thereby confirming the appropriateness of the analysis.

Table 2 presents the results of KMO and Bartlett's tests.

Table 2. KMO and Bartlett's test.

Kaiser-Meyer-Olkin measure of sampling adequacy	Bartlett's test		
	Approx. chi-square	df	Sig.
0.879	3822.516	300	0.000

The Bartlett's test of sphericity was conducted yielding a significant result of $\chi2$ (300) = 3822.516, $\rho < 0.000$. This result confirms that the intercorrelations between the questionnaire items are sufficiently large to proceed with the exploratory factor analysis (Taherdoost, Sahibuddin, & Jalaliyoon, 2014).

Table 3 illustrates the total variance explained.

Table 3. Total variance explained.

Component	Initial eigenvalues			Extraction sums of squared loadings			Rotation sums of squared loadings		
	Total	% of variance	Cumulative %	Total	% of variance	Cumulative %	Total	% of variance	Cumulative %
1	7.924	31.695	31.695	7.924	31.695	31.695	3.764	15.055	15.055
2	2.224	8.898	40.593	2.224	8.898	40.593	3.557	14.230	29.284
3	2.020	8.082	48.674	2.020	8.082	48.674	3.302	13.209	42.493
4	1.534	6.138	54.812	1.534	6.138	54.812	2.822	11.288	53.781
5	1.344	5.374	60.186	1.344	5.374	60.186	1.601	6.406	60.186
6	0.871	3.485	63.671						

It can be observed that there are five factors influencing the digital transformation capacity of primary school teachers in An Giang province based on 25 questionnaire items with eigenvalues exceeding 1. This implies that these 25 items collectively account for 60.186% of the factors impacting the digital transformation capacity of primary school teachers in An Giang while the remaining 39.814% represent other factors. The percentage of variance explained by each factor is as follows: factor 1 (31.695%), factor 2 (8.898%), factor 3 (8.082%), factor 4 (6.138%) and factor 5 (5.374%).

Table 4 presents the rotated component matrix.

Table 4. Rotated component matrix

Code	Component				
	1	2	3	4	5
YD1	0.728				
YD2	0.720				
YD3	0.691				
YD4	0.635				
YD5	0.610				
YD6	0.568				
YD7	0.542				
CL1		0.806			
CL2		0.800			
CL3		0.749			
CL4		0.749			
CL5		0.676			
CL6		0.405			
NT1			0.789		
NT2			0.747		
NT3			0.684		
NT4			0.653		
NT5			0.652		
DK1				0.785	
DK2				0.768	
DK3				0.653	
DK4				0.602	
DK5				0.397	
NC1					0.829
NC2					0.775

The naming factors are based on the factor loading coefficients of the observed variables within each factor. Variables with higher factor loading coefficients serve as the basis for authors to name the factor group (Hair et al., 2014).

It is generally recommended that a measurement scale achieve a Cronbach's alpha coefficient of 0.7 or higher to ensure unidimensionality and reliability. However, a threshold of 0.6 for Cronbach's alpha can be deemed acceptable in exploratory studies (Hair et al., 2014). A higher value of Cronbach's alpha indicates a higher level of reliability on the measurement scale. The findings presented in Table 5 demonstrate that the factors (teachers' intention for digital transformation ($X1$), the school's digital transformation strategy($X2$), the perceived usefulness of digital technology in teaching and learning ($X3$) and the conditions for digital transformation implementation ($X4$) all exhibit Cronbach's alpha values exceeding 0.7, thus indicating a satisfactory level of reliability. As for factor demand for digital technology utilization ($X5$), its Cronbach's alpha coefficient of 0.644 still meets the acceptable threshold of 0.6.

The results of the regression analysis in Table 6 reveal that the adjusted R-squared value is 0.996 indicating a high explanatory power of 99.6%. This means that the five independent variables: ($X1$) teachers' intention for digital transformation, ($X2$)school's digital transformation strategy, ($X3$) perceived usefulness of digital technology in teaching and learning, ($X4$) conditions for digital transformation implementation and ($X5$) demand for digital technology utilization collectively account for 99.6% of the variation in the dependent variable which is the digital transformation capability of primary school teachers. Thus, the regression model satisfies the conditions for drawing research conclusions.

Table 7 presents the ANOVA results.

Table 5. Naming factor.

Code	Observable variable	Load factor
Factor 1 (X1): Teachers' intention for digital transformation (Cronbach's alpha = 0.820)		
YD1	The intention is to implement digital transformation in teaching.	0.728
YD2	Implement a digital transformation in teaching.	0.720
YD3	Made the decision to implement digital transformation in teaching.	0.691
YD4	Excited about implementing digital transformation in teaching.	0.635
YD5	A plan to implement digital transformation in teaching.	0.610
YD6	Implementing digital transformation in teaching has an entertaining nature.	0.568
YD7	Implementing digital transformation in teaching brings enjoyable experiences to teachers.	0.542
Factor 2 (X2): School's digital transformation strategy (Cronbach's alpha = 0.852)		
CL1	The school has a digital transformation plan to enhance the effectiveness of teaching and learning in the school.	0.806
CL2	The school has a digital transformation plan to enhance innovative and creative capabilities.	0.800
CL3	The school has a digital transformation plan to increase competitiveness in terms of education and training quality.	0.749
CL4	The school has a digital transformation plan to improve the effectiveness of training and education.	0.749
CL5	The school has a digital transformation plan to strengthen its autonomy.	0.676
CL6	Teachers consistently use information gathered from the internet efficiently and ethically.	0.405
Factor 3 (X3): Perceived usefulness of digital technology in teaching and learning (Cronbach's alpha = 0.838)		
NT1	Teachers perceive that the use of digital technology can enhance students' understanding of objects and phenomena.	0.789
NT2	Teachers perceive that the use of digital technology helps develop students' capabilities.	0.747
NT3	Teachers perceive that the use of digital technology increases students' interest in learning.	0.684
NT4	Teachers perceive that the use of digital technology enables better organization of learning activities.	0.653
NT5	Teachers perceive that the use of digital technology enhances teaching effectiveness.	0.652
Factor 4 (X4): Conditions for digital transformation implementation (Cronbach's alpha = 0.751)		
DK1	Teachers perceive that the school provides them with the necessary tools and equipment to implement digital transformation in teaching.	0.785
DK2	Teachers perceive that there are currently sufficient resources and equipment available for implementing digital transformation in teaching.	0.768
DK3	Family members of the teachers encourage them to implement digital transformation in teaching.	0.653
DK4	Teachers consistently evaluate and critically appraise the information obtained and the sources of internet information for instructional use.	0.602
DK5	Colleagues of the teachers highly value their ability to implement digital transformation in teaching.	0.397
Factor 5 (X5): Demand for digital technology utilization (Cronbach's alpha = 0.644)		
NC1	Teachers consistently exchange information and communicate with others through messaging platforms such as Messenger, Zalo, etc.	0.829
NC2	Teachers regularly use social media platforms (such as Facebook, Zalo, TikTok, etc.) in their daily lives.	0.775

Table 6. Model summary.

Model	R	R square	Adjusted R square	Std. error of the estimate
1	0.998	0.996	0.996	0.625

Table 7. ANOVA results.

Model		Sum of squares	df (Degrees of freedom)	Mean square	F	Sig.
1	Regression	36658.603	5	7331.721	18786.280	0.000
	Residual	130.350	334	0.390		
	Total	36788.953	339			

The ANOVA (Analysis of Variance) results presented in the table demonstrate a significance level of 0.000, which is lower than the conventional threshold of 0.05. This indicates that the regression model is well-suited for the observed data. There is a significant relationship between the independent variables and the dependent variable. Moreover, the model exhibits a confidence level of 95% indicating a reliable and robust association.

Table 8 presents the multiple regression model.

Table 8. The multiple regression model.

Coefficients						
		Unstandardized coefficients		Standardized coefficients		
Model		B	Std. error	Beta	T	Sig.
1	(Constant)	99.312	0.034		2931.282	0.000
	X1 (Teachers' intention for digital transformation)	5.756	0.034	0.552	169.630	0.000
	X2 (School's digital transformation strategy)	5.141	0.034	0.494	151.525	0.000
	X3 (Perceived usefulness of digital technology in teaching and learning)	4.734	0.034	0.454	139.513	0.000
	X4 (Conditions for digital transformation implementation)	4.655	0.034	0.447	137.197	0.000
	X5 (Demand for digital technology utilization)	2.122	0.034	0.204	62.535	0.000

All the variables have a significance level of 0.000   which is less than 0.05. Therefore, all these variables are considered significant in the regression model indicating that they have an impact on the dependent variable "digital transformation capability".

The multiple regression equation is as follows: Y = 99.312 + 5.756X1 + 5.141X2 + 4.734X3 + 4.655X4 + 2.122*X5.

This equation represents the relationship between the independent variables (X1, X2, X3, X4, X5) and the dependent variable (Y) where the coefficients indicate the extent of influence of each independent variable on the dependent variable.

3.4. Discussion and Recommendations to Enhance the Digital Transformation Competencies of Primary School Teachers in the Southern Border Province of Vietnam

Drawing upon the research findings, the equation for determining digital transformation intention is as follows: Digital transformation intention=99.312+ 5.756* (teachers' digital transformation intention) + 5.141 * (school's digital transformation strategy) + 4.734 * (perception of the   digital technology utility in teaching) + 4.655 * (conditions for implementing digital transformation) + 2.122 * (demand for using digital technology).

The research findings reveal an equation that includes five key factors: teachers' digital transformation intention, the school's digital transformation strategy, the perceived utility of digital technology in teaching, the conditions for implementing digital transformation   and demand for using digital technology.

Based on the study's findings, teachers' digital transformation intentions are identified as the most crucial factor (5.756). Teachers' positive attitude and willingness to integrate digital tools into their teaching practices contribute significantly to the overall digital transformation process. Additionally, a well-defined digital transformation strategy at the school level provides a framework for effective implementation. Educational institutions can support teachers and create a conducive environment for meaningful and impactful technology integration.

A study conducted by Anne, Janet, Olgun, and Peggy (2018) revealed that teachers' intention to use technology significantly predicts their actual technology integration practices. Several factors such as technological pedagogical content knowledge, teacher self-efficacy and the technology acceptance model (Joo, Park, & Lim, 2018) influence teachers' intention to use technology. The study found that a positive attitude towards technology plays a significant role in influencing their intention to use technology. These findings support the notion that the digital transformation intentions of teachers are crucial for driving successful technology adoption.

The school's digital transformation strategy is recognized as the second most influential factor (5.141). It serves as a guiding principle for educators, facilitating the systematic and purposeful integration of digital tools in teaching and learning. A well-defined digital transformation strategy provides a roadmap for schools to integrate technology effectively and align teachers' efforts towards a common goal (Kakavas & Ugolini, 2019). A comprehensive digital transformation strategy includes elements such as professional development, access to relevant digital resources and ongoing support. This enables teachers to develop the necessary skills and knowledge to effectively integrate technology into their teaching practices. It also creates a supportive environment that encourages experimentation, collaboration and continuous improvement. Fernández, Gómez, and Binjaku (2023) highlight the significance of strategic planning in digital transformation efforts in schools. They emphasize that a well-designed strategy enables schools to align their technological initiatives with their educational goals ensuring a coherent and purposeful integration of digital tools. A school's digital transformation strategy should address various aspects such as infrastructure development, teacher training, curriculum alignment and continuous evaluation to ensure that digital integration is not an isolated effort but an integral part of the overall educational framework (Chen, Wang, Kirschner, & Tsai, 2018). School leaders and policymakers need to have a clear vision of how technology can support and enhance learning outcomes. They must provide strong leadership to drive the digital transformation process, establish goals and create a supportive environment for change (Michael, Dorit, Andrew, & Cathy, 2023). Sara and Jayson (2020) explore the impact of school leadership on technology integration.

They found that effective leadership significantly influences teachers' adoption of technology in their instructional practices.

The perception of the usefulness of digital technology in teaching emerges as a significant influential factor (4.734). Educators' recognition and appreciation of the value that digital tools bring to their instructional practices can greatly influence their intention to embrace digital transformation. Primary teachers who adopt constructivist pedagogical beliefs are inclined to view digital technology as beneficial for integrating digital tools and technologies into their instructional activities (Jo, 2019). Furthermore, their positive beliefs regarding the usefulness of technology strongly correlate with their actual utilization of technology in the classroom. When teachers acknowledge the value and advantages of digital technology, they are more motivated to effectively integrate it into their teaching practices (Pekka, 2019; Teo, 2018). Teachers' positive perceptions of these conditions are associated with higher levels of technology integration in their classrooms. Empirical research consistently demonstrates that favorable attitudes towards ICT influence teachers' technology integration. Studies have found a strong positive relationship between attitudes towards ICT and the intention to use ICT in class (Marcela, Verena, & Julia, 2022).

Additionally, the study emphasizes the significance of favorable conditions for implementing digital transformation with a weight of 4.655 in driving successful adoption of digital technology in educational settings. Teachers require adequate infrastructure, resources and support to effectively integrate digital tools into their teaching practices (Jo, Johan, Peggy, & Anne, 2017). Access to reliable technology, training opportunities and technical assistance are crucial for enabling teachers to confidently incorporate digital tools into their classrooms. By ensuring these conditions, educators can effectively integrate digital technology into their teaching practices and enhance student learning experiences.

The demand for using digital technology as a factor with a weight of 2.122, encompassing curriculum requirements and student needs is an influential factor in teachers' motivation to engage in digital transformation. Voogt, Knezek, Cox, Knezek, and Ten Brummelhuis (2013) explored the conditions under which ICT has a positive

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effect on teaching and learning. When digital tools are used to support and enhance the curriculum, teachers are more likely to engage in digital transformation. Teachers can create meaningful learning experiences by aligning technology use with curriculum requirements and student needs. The Technological Pedagogical Content Knowledge (TPACK) framework describes the kinds of knowledge required by teachers for successful integration of technology in teaching (Punya, 2019). Teachers' intentions to use mobile devices are influenced by their recognition of the demand for technology use in science education (Khan, Abdou, Kettunen, & Gregory, 2019).

The research findings provide valuable insights into the factors that influence the digital transformation competencies of primary school teachers in the southern border province of Vietnam. Understanding and addressing these factors can inform the development of strategies and interventions aimed at enhancing teachers' digital competencies and promoting effective digital transformation in primary education. The study's findings highlight the significance of teachers' digital transformation intentions as the most crucial factor in driving successful digital adoption. Teachers' positive attitude and willingness to integrate digital tools into their teaching practices contribute significantly to the overall digital transformation process. Additionally, a well-defined digital transformation strategy at the school level provides a framework for effective implementation.

- The following recommendations are made in order to improve the abilities of primary school teachers in Vietnam's border province: Foster awareness among teachers and encourage a shift in their usage of digital technology in teaching. This can be accomplished by providing training, support and incentives, thereby fostering an environment conducive to digital transformation.
- Develop a comprehensive digital transformation plan and strategy for schools, encompassing clear directions, objectives and specific action plans to implement digital transformation across teaching practices and school administration. Such an approach will enable school administrators to gain a deeper understanding of digital transformation implementation and make informed decisions and actions.
- Augment teachers' digital literacy through targeted training programs and support mechanisms enabling them to recognize the inherent benefits of digital technology in teaching and fostering a shift in their usage patterns.
- Invest in robust infrastructure for schools, ensuring that teachers possess the necessary resources to implement digital transformation in the era of the fourth industrial revolution. This entails equipping primary schools with adequate devices and systems that facilitate digital teaching and learning experiences.
- Intensify the integration of digital technology activities, establishing habits among teachers and students to employ digital tools. By incorporating digital technology into teaching and learning activities, teachers and students will become more familiar with its utilization, thereby stimulating adaptability and fostering a culture of innovation.

4. Conclusion

This study aimed to identify the factors influencing the digital transformation capacity of primary school teachers in An Giang, a province located in the bordering region of Vietnam. The unique geographical characteristics and diverse ethnic and religious communities of the province were taken into consideration. A survey comprising 25 questions was conducted and distributed to teachers actively teaching in the province, using both traditional and online platforms. A total of 340 valid responses were collected and subjected to factor analysis.

The results of the exploratory factor analysis revealed five key factors that significantly impact the digital transformation intention of primary schools: (1) teachers' intention to engage in digital transformation, (2) schools' digital transformation strategies, (3) perceived usefulness of digital technology in teaching and learning, (4) conditions for implementing digital transformation and (5) demand for utilizing digital technology. Furthermore, the study quantified the extent to which these factors influence the digital transformation capacity of primary school teachers in the border region of Vietnam.

The findings from this research contribute to the existing body of knowledge and can be used as valuable references for future studies. They provide insights for scholars interested in exploring the realm of digital transformation in the field of education. Moreover, these results lay the foundation for future studies by academics focusing on the digital transformation phenomenon in primary education.

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