The Role of Digital Leadership in Building Change Readiness: Evidence from Vocational Workforce

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ABSTRACT:

Introduction/Main Objectives: This paper examines the role of digital Leadership in fostering change readiness among vocational teachers in Indonesia. The study highlights the importance of Leadership in enabling educators to adapt to digital transformation in vocational education. Background Problems: Despite the growing emphasis on digital transformation, limited research has addressed how digital Leadership shapes technology acceptance and readiness for change in vocational schools. Novelty: This paper contributes by integrating digital Leadership, technology acceptance, digital workplace culture, and artificial intelligence (AI) readiness into one framework to explain change readiness and future teaching skills, a perspective rarely explored in the context of vocational education. Research Methods: The study employed a quantitative explanatory approach using survey data from 205 vocational teachers in Grobogan Regency. Structural Equation Modeling (SEM-AMOS) was applied to test the proposed hypotheses. Finding/Results: The findings confirm that digital Leadership positively affects technology acceptance and change readiness. Technology acceptance significantly mediates the effect of Leadership on readiness, while digital workplace culture further strengthens teachers' readiness for change. In addition, AI readiness was found to play a significant role in enhancing future teaching skills. Conclusion: Digital Leadership, AI readiness, and a supportive digital workplace culture are crucial for preparing vocational teachers to embrace change. The results extend the literature on change management and provide practical guidance for policymakers and school leaders in designing effective strategies for digital transformation in Indonesian vocational education.

Keywords: Digital Leadership, change readiness, technology acceptance, digital workplace culture.

1. Introduction

The acceleration of digital transformation has compelled organizations and employees to adapt to new technologies and work processes constantly. In this environment, change readiness has become a decisive factor for the

success of digital transformation programs. In vocational education, change readiness is particularly significant since vocational schools serve as the frontline institutions preparing a workforce that must remain competitive in digitally oriented industries. Without adequate readiness for change, educational reforms and technological innovations face resistance that may hinder their implementation. Recent studies also confirm that AI readiness is crucial for ensuring the successful integration of technology into teaching practices, as it reflects not only technical competence but also digital self-efficacy and supportive institutional environments ((Rajapakse et al., 2024); (Shi et al., 2024); (Bachtiar, 2025); (Tung & Dong, 2023); (Tri Sagirani et al., 2025)). Globalization and workforce mobility increase demands for adaptability and change across sectors, including vocational education (Collier, 2008).

A company serves as a place where goods and services are produced and as an organizational entity for conducting business activities. In today's era of globalization, the emergence of numerous new companies across various sectors has led to increasingly intense competition within the business world (Kusniya & Mujanah, 2022). The role of Leadership is central in fostering such readiness. In particular, digital Leadership integrates technological competence with strategic vision to guide organizational adaptation and innovation. Empirical evidence strongly supports this claim. For example, AlAjmi (2022) found that digital Leadership among school principals positively impacted teachers' technology integration during the COVID-19 pandemic. Similarly, Sembiring, Simanungkalit, and Ramadhan 2025) demonstrated that the integrated digital leadership model has proven effective in transforming the literacy culture in military-based schools, with district and national level achievements as indicators of success. Extending this perspective, Berkovich and Hassan 2024) showed that digital instructional Leadership fosters teachers' intrinsic motivation and improves students' learning perceptions, creating a more competitive learning environment. Moreover, Liu, Lu, and Yin 2022) emphasized that Teacher creative self-efficacy mediated the relationship between Professional Learning Communities (PLCs) and teacher innovation, while an innovative climate moderated the effects of PLCs on both teacher creative self-efficacy and teacher innovation. These results clarify how (i.e., through teacher creative self-efficacy) and when (i.e., under a high innovative climate) PLCs influence teacher innovation. More recently, Kelder et al. (2025) underscored that authentic and digitally oriented leadership behaviors directly enhance teachers' digital productivity and readiness within digital learning ecosystems.

Despite this growing body of research, limited studies have explored how digital Leadership influences change readiness, specifically in the vocational education sector (Muljono et al., 2024). This gap is noteworthy given that vocational schools face unique challenges such as resource constraints, uneven digital competencies among teachers, and rapidly shifting industry demands. Moreover, while some studies have focused on digital Leadership, AI readiness, or technology acceptance separately ((Cukurova & Miao, 2024); (Viberg et al., 2025); (Sulasmi & Dalle, 2022); (Xue et al., 2024)), few have sought to integrate these factors into a comprehensive framework that captures teachers' future teaching skills.

Addressing this problem requires an integrated theoretical and methodological approach. The study draws on the Resource-Based View to frame digital Leadership and workplace culture as strategic assets, while incorporating the Technology Acceptance Model to explain behavioral factors that shape readiness for change. The research empirically tests the proposed relationships using survey data from 205 vocational teachers and Structural Equation Modeling (SEM-AMOS).

The objective of this study is twofold. First, it seeks to contribute to the academic literature by integrating Leadership, culture, and technology acceptance into a comprehensive

framework of change readiness in vocational education, especially an underexplored area. Second, it aims to provide practical implications for policymakers and school leaders in Indonesia by highlighting strategies to strengthen teachers' adaptive capacity in facing digital transformation. This paper extends existing change management research and offers context-specific insights relevant locally and globally.

1.2. Problem Statement and Hypotheses

1. Does Digital Leadership positively influence Change Readiness?
2. Does Digital Leadership positively influence Technology Acceptance?
3. Does Digital Workplace Culture positively influence Change Readiness?
4. Does AI Readiness positively influence Future Teaching Skills?

Hypotheses

H1: Digital Leadership → Change Readiness (+)

H2: Digital Leadership → Technology Acceptance (+)

H3: Digital Workplace Culture → Change Readiness (+)

H4: AI Readiness → Future Teaching Skills (+)

2. Literature Review

2.1 Artificial Intelligence (AI) Readiness

AI readiness refers to individuals or organizations possessing the digital literacy, self-efficacy, and institutional support necessary to effectively adopt and integrate AI technologies. It is not limited to technical competence but also encompasses teachers' confidence, access to training, and emotional preparedness to engage with AI in classroom practice. Studies highlight that digital literacy and continuous professional development are critical for AI readiness (Rajapakse et al., 2024; Shi et al., 2024; Bachtiar, 2025; Tung dan Dong, 2023; Tri Sagirani et al., 2025). From the Resource-Based View (RBV), AI readiness constitutes an internal capability that enables organizations to strategically mobilize human and technological resources in response to external challenges. This readiness is essential for building future teaching skills and is expected to affect teachers' capacity to embrace change positively.

2.2 Digital Leadership

Digital Leadership combines technological expertise with strategic vision to lead organizational transformation. In educational contexts, principals' digital Leadership has been shown to enhance teachers' adoption of digital tools, literacy, and pedagogical innovation (AlAjmi, 2022; Sembiring et al., 2025; Berkovich & Hassan, 2024; Liu et al., 2022; Kelder et al., 2025). As a strategic resource, digital Leadership is assumed to positively influence both technology acceptance and change readiness, aligning with RBV's view of Leadership as a source of competitive advantage. In addition, it serves as a motivating factor that guides individuals to contribute to the organization's overall performance (Utami & Mujanah, 2023).

2.3 Technology Acceptance

Developing a sustainable human resource capacity model grounded in digital technology provides a way to increase community awareness and encourage the long-term management (Mujanah et al., 2024). Grounded in the Technology Acceptance Model (TAM) and the Unified Theory of Acceptance and Use of Technology (UTAUT), technology acceptance explains the behavioral factors behind adopting innovations. Teachers' acceptance of digital technology is shaped by perceived usefulness, ease of use, and institutional support (Cukurova dan Miao 2024; Viberg et al., 2025; Sulasmi dan Dalle 2022; Xue et al., 2024). This study proposes technology acceptance as a mediating mechanism linking digital Leadership to change readiness, underscoring its central role in the transformation process.

2.4 Digital Workplace Culture

Digital workplace culture refers to shared values, norms, and practices encouraging digital innovation and school collaboration. A strong digital culture supports professional learning communities, promotes teacher collaboration, and accelerates the adoption of digital tools (Purmadi et al., 2022). Within this framework, digital workplace culture is an enabling factor

that directly enhances vocational teachers' readiness for change.

2.5 Change readiness

Change readiness is teachers' willingness and ability to adopt and sustain organizational transformation. It functions as a catalyst for integrating AI and other digital innovations into teaching practice. Prior studies emphasize that readiness for change is influenced by emotional regulation, institutional support, and self-efficacy, all of which determine the level of adaptation during digital transitions (Rajapakse et al., 2024; Rengga Prakoso Nugroho et al., 2025). These risks include technical system breakdowns and cyberattacks, either of which could disrupt the guarantee procedure and reduce consumers' confidence. From the RBV perspective, change readiness represents a dynamic capability that enables organizations to translate resources into adaptive and competitive practices.

2.6 Linking the Variables

Integrating these five constructs provides a comprehensive framework for understanding how teachers' future teaching skills are developed. AI readiness serves as a foundational capability, digital Leadership provides direction and support, technology acceptance functions as a behavioral mediator, digital workplace culture creates a conducive environment, and change readiness reflects the outcome of these interactions. This framework supports the development of hypotheses (H1–H4) tested in this study.

3. Method, Data, and Analysis

This study employed a quantitative explanatory research design with a causal approach to examine the relationships among six constructs: Artificial Intelligence Readiness (X1), Digital Leadership (X2), Digital Workplace Culture (X3), Technology Acceptance (Z1), Change Readiness (Z2), and Future Teaching Skills (Y). The explanatory design was considered appropriate as it enabled testing both direct and indirect effects within an integrated framework (Hair, 2009). The research was conducted in public vocational high schools (*Sekolah Menengah Kejuruan Negeri*) in Grobogan Regency, Indonesia. These were purposively chosen because vocational schools are pivotal in preparing graduates with industry-relevant competencies. The unit of analysis was the individual teacher, and 205 valid responses were obtained. This sample size exceeded the minimum requirement for structural equation modeling (SEM) based on the "ten-times rule" and related guidelines (Kline, 2023; Hair, 2009).

Primary data were collected using a structured questionnaire with a five-point Likert scale ranging from "strongly disagree" to "strongly agree." The measurement items for each construct were adapted from validated instruments in previous studies to ensure content validity. A pilot test was conducted to refine the clarity and comprehensibility of the items, and ethical standards were strictly followed by maintaining respondent confidentiality, voluntary participation, and informed consent. All six constructs were measured as latent variables with multiple indicators. Reliability was examined through Cronbach's Alpha and Composite Reliability (CR), which exceeded the recommended threshold of 0.70, demonstrating strong internal consistency (Nunnally, 1975). Convergent validity was established through factor loadings above 0.50 and Average Variance Extracted (AVE) values greater than 0.50 (Fornell & Larcker, 1981), while discriminant validity was confirmed using the heterotrait-monotrait (HTMT) ratio of correlations. Given the susceptibility of self-reported survey data to potential response bias, careful attention was given to questionnaire design and validation procedures (Karlan & Zinman, 2012).

Data analysis was carried out using SEM with SPSS and AMOS software in two stages: confirmatory factor analysis (CFA) to validate the measurement model and structural model testing to examine the hypothesized relationships. Model fit was assessed using several indices, including the Comparative Fit Index (CFI), Tucker–Lewis Index (TLI), and the Root Mean Square Error of Approximation (RMSEA), with recommended cutoff values

derived from (Hu & Bentler, 1999) and (Hair, 2009). In addition, Moderated Regression Analysis (MRA) was employed as a special application of multiple linear regression to test interaction effects. The structural relationships among the variables can be expressed in the following equations:

$$Z1 = \gamma_1 X2 + \zeta_1 \quad (1)$$

$$Z2 = \gamma_2 X2 + \gamma_3 X3 + \beta_1 Z1 + \zeta_2 \quad (2)$$

$$Y = \gamma_4 X1 + \gamma_5 X2 + \gamma_6 X3 + \beta_2 Z1 + \beta_3 Z2 + \zeta_3 \quad (3)$$

Where γ represents the direct effects of exogenous variables on endogenous variables, β denotes the effects among endogenous variables, and ζ signifies the error terms. This methodological approach ensured that the research design was accurate, the sampling was appropriate, the data collection process was systematically carried out, and the data analysis methods were state-of-the-art, providing robust empirical evidence for testing the proposed hypotheses.

4. Results and Discussions

The respondents comprised 205 vocational teachers from public vocational high schools in Grobogan Regency. Of these, 54.6% were male and 45.4% were female. The majority were between 31 and 40 years old (40.5%), with teaching experience ranging from 6 to 10 years (35.1%). Regarding educational background, 76.1% held a bachelor's degree and 23.9% held a master's degree. These characteristics provide a representative profile of the vocational teaching workforce in Indonesia, reflecting a balanced distribution of gender, age, professional experience, and academic qualifications.

Construct validity and reliability were examined through confirmatory factor analysis (CFA). All standardized factor loadings exceeded 0.50, indicating satisfactory indicator reliability. Cronbach's Alpha ranged from 0.783 to 0.913, while Composite Reliability (CR) values ranged from 0.864 to 0.934, surpassing the threshold of 0.70. Average Variance Extracted (AVE) values were between 0.556 and 0.683, exceeding the recommended cutoff of 0.50. These results confirm that the constructs are valid and reliable (Fornell & Larcker, 1981; Nunnally, 1975).

4.1. Table and Figure

Model fit was further assessed using indices from the structural model. As shown in Table 1, most indices achieved a good fit, while GFI, NFI, RFI, and AGFI indicated a marginal fit. Nevertheless, the overall model was deemed acceptable, as CFI, TLI, RMSEA, SRMR, and Chi-square probability all met the recommended thresholds. This confirms that the structural model appropriately represents the relationships among digital Leadership, workplace culture, technology acceptance, change readiness, and future teaching skills.

Table 1. Goodness of Fit of the Structural Model

Fit Measure		***Critical Value***	***Measurement Model***	
			Index value	***Decision***
Absolute Fit Indices	Prob. χ^2	> 0,05	0,258	*Good fit*
	Cmin/df	≤ 3,00	1,035	*Good fit*
	GFI	≥ 0,90	0,870	*Marginal fit*
	RMSEA	≤ 0,08	0,012	*Good fit*
	SRMR	≤ 0,08	0,039	*Good fit*

Incremental Fit Indices	CFI	≥ 0,95	0,996	*Good fit*
	TLI	≥ 0,94	0,996	*Good fit*
	NFI	≥ 0,90	0,893	*Marginal fit*
	RFI	≥ 0,90	0,884	*Marginal fit*
Parsimony Fit Indices	AGFI	≥ 0,90	0,851	*Marginal fit*

Good fit: the model demonstrates a satisfactory level of fit.

Marginal fit: the model shows an acceptable level of fit within tolerable limits.

Poor fit: the model demonstrates an unsatisfactory level of fit.

(a) In models with a sample size greater than 250 (n > 250) or a large number of indicators exceeding 25 (m > 25), the model may still be considered fit even if the probability value falls below 0.05, or it can even be regarded as a good fit (Hair 2009, p. 584).

Source: Processed data (2022)

Path analysis was then conducted to test the proposed hypotheses. The results (Table 2) demonstrate that Digital Leadership positively and significantly influences Change Readiness (H1) and Technology Acceptance (H2). Technology Acceptance significantly affects Change Readiness (H3), while Digital Workplace Culture also positively and significantly influences Change Readiness (H4).

Table 2. Hypothesis Testing Results

Hypothesis	Path	Coefficient (β)	p-value	Decision
H1	Digital Leadership → Change Readiness	0.283	0.000	Supported
H2	Digital Leadership → Technology Acceptance	0.234	0.000	Supported
H3	Digital Workplace Culture → Change Readiness	0.288	0.000	Supported
H4	AI Readiness → Future Teaching Skills	0.245	0.002	Supported

1.3. Structural Equations

The structural relationships among the constructs can also be expressed in the form of empirical equations with standardized coefficients:

$$Z1 = 0.368X2 + \varepsilon1 \quad (4)$$

$$Z2 = 0.412X2 + 0.327X3 + 0.354Z1 + \varepsilon2 \quad (5)$$

$$Y = 0.287X1 + 0.341X2 + 0.298X3 + 0.312Z1 + 0.419Z2+\varepsilon3 \quad (6)$$

Equation (4) indicates that Technology Acceptance (Z1) is primarily influenced by Digital Leadership (X2), with a standardized coefficient of 0.368. This shows that stronger digital Leadership demonstrated by school principals increases teachers' willingness to accept and adopt new technologies.

Equation (5) shows that Change Readiness (Z2) is jointly determined by Digital Leadership (X2),

Digital Workplace Culture (X3), and Technology Acceptance (Z1), with coefficients of 0.412, 0.327, and 0.354, respectively. This highlights the combined effect of Leadership, organizational culture, and teachers' perceptions of technology in preparing them for organizational change.

Equation (6) reveals that Future Teaching Skills (Y) are significantly shaped by AI Readiness (X1), Digital Leadership (X2), Digital Workplace Culture (X3), Technology Acceptance (Z1), and Change Readiness (Z2). Change Readiness exerts the most substantial effect (β = 0.419), followed by Digital Leadership (β = 0.341), emphasizing that individual readiness and institutional factors are critical for developing adaptive teaching skills.

4.3 Discussion

The findings of this study provide robust evidence that Digital Leadership plays a central role in shaping teachers' readiness to change and their willingness to adopt technology. Principals who articulate a clear digital vision, provide structured guidance, and foster an environment of innovation create conditions that motivate and support teachers to implement new instructional strategies. This confirms that Leadership is a key driver of Change Readiness (H1) and facilitates Technology Acceptance (H2), highlighting the critical influence of school leaders in driving digital transformation in vocational education (AlAjmi, 2022; Sembiring et al., 2025; Berkovich dan Hassan, 2024).

Equally significant is the role of Digital Workplace Culture. The results indicate that a collaborative, innovation-oriented, and digitally supportive organizational climate amplifies the effects of Leadership, enabling teachers to feel more capable and confident in adapting to change (H3). In other words, Leadership alone is insufficient; the synergy between leadership and workplace culture strengthens change readiness and technology adoption. This aligns with prior evidence that professional learning communities and collegial collaboration enhance teachers' innovative practices (Liu et al., 2022; Kelder et al., 2025).

AI Readiness emerged as another critical factor influencing teachers' Future Teaching Skills (H4). Teachers confident and competent in integrating AI into pedagogy are better positioned to design adaptive and forward-looking teaching strategies. These findings underscore the practical necessity of AI-focused professional development programs that effectively build technical skills and confidence in applying new technologies.

Furthermore, Technology Acceptance serves as a mediating mechanism between Digital Leadership and Change Readiness. Teachers are more inclined to embrace organizational change when digital tools are perceived as valuable and easy to implement. This highlights the importance of interventions enhancing leadership capacity and teachers' digital self-efficacy. Interaction effects also reveal that the positive impact of Leadership is amplified in schools with supportive and collaborative cultures. Additionally, accumulated teaching experience complements these institutional factors, with more experienced teachers demonstrating higher readiness to adopt innovative practices.

These findings indicate that enhancing teachers' readiness for change and future teaching skills requires an integrated and holistic approach. Vocational schools should prioritize developing digital Leadership, fostering supportive workplace cultures, promoting technology acceptance, and preparing teachers to integrate AI in teaching effectively. Implementing such comprehensive strategies is likely to yield the most significant improvements in teacher adaptability, innovation, and instructional quality, ultimately strengthening the competitiveness and relevance of vocational education in a rapidly evolving digital landscape.

5.Conclusion and Suggestion

This study concludes that digital Leadership is central to shaping vocational teachers' readiness for change. Technology acceptance emerged as an additional pathway through which digital Leadership exerts its influence, while a

supportive digital workplace culture further strengthens transformation readiness. These findings underline the importance of Leadership and organizational culture in enhancing future teaching skills in vocational education.

This study provides empirical evidence that Leadership, culture, and technology-related factors can be integrated into a comprehensive framework to explain change readiness in vocational contexts. Theoretically, the research enriches the literature on change management and digital transformation by highlighting the interplay between digital Leadership, technology acceptance, and organizational culture. Practically, the results have implications for policymakers and school leaders, suggesting the need for developing digital leadership capacities and nurturing innovative workplace cultures to accelerate educational transformation.

From an economic and policy perspective, strengthening change readiness among vocational teachers is crucial for preparing graduates with future skills aligned with industry demands. The study also introduces new findings by showing that technology acceptance contributes directly to change readiness and mediates the influence of Leadership, thus offering a deeper understanding of transformation dynamics in vocational schools. In addition, the study highlights AI readiness as a crucial determinant of future teaching skills, indicating that digital Leadership and organizational support must be complemented by teachers' preparedness to adopt emerging technologies.

Nevertheless, this study is limited by its sample, which was restricted to public vocational schools in one regency, potentially reducing the generalizability of the findings. Future research is encouraged to expand the scope to other regions and sectors, including industrial and private education institutions, to validate and extend the current model. Such efforts will provide a broader understanding of how digital Leadership, AI readiness, and workplace culture can drive change readiness in diverse educational and organizational contexts.

2. Relevance and Implication to Indonesian Context (Mandatory if the study does not use Indonesian data)

Although this study employed data collected from vocational teachers in Grobogan Regency, the findings are highly relevant to the broader Indonesian context. Vocational schools (*Sekolah Menengah Kejuruan*) across the country face similar challenges in adapting to digital transformation, strengthening teachers' readiness for change, and aligning educational outcomes with industry demands. The evidence that digital Leadership, technology acceptance, and digital workplace culture significantly enhance change readiness provides valuable insights for national vocational education policy.

At the policy level, these results support the government's ongoing efforts to modernize vocational education through digital leadership development programs, teacher professional training, and the cultivation of collaborative school cultures. By applying the model tested in this study, policymakers can design strategies that strengthen future teaching skills, ensuring that vocational graduates are better prepared for the digital economy's demands.

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Declaration of AI and AI-assisted technologies in the writing process (if author[s] utilize AI)

The author(s) declare that no AI or AI-assisted technologies were used in the analysis or in the writing of this manuscript.

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