

DIGITAL LEADERSHIP AS CULTURAL PRACTICE: RECONSTRUCTING INNOVATION AND AUTHORITY IN INDONESIAN SCHOOLS

LIDERANÇA DIGITAL COMO PRÁTICA CULTURAL: RECONSTRUINDO INOVAÇÃO E AUTORIDADE NAS ESCOLAS INDONÉSIAS

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Abstract

The acceleration of digital transformation and the socio-cultural dynamics following the COVID-19 pandemic have redefined the role of school culture not merely as a teaching institution, but as a symbolic space where negotiations of innovation and authority values take place. In this context, digital leadership is understood not only as a technical competence but also as a cultural practice that shapes organizational values, identity, and behavior. This study examines how organizational commitment and teacher professionalism contribute to the development of digital leadership, and how this leadership practice functions as a mediating force in shaping an innovative school culture in Indonesian secondary education. Using an explanatory quantitative design, data were collected from 315 junior high school principals in Lampung Province and analyzed using Structural Equation Modeling Partial Least Squares (SEM-PLS). The results indicate that

Resumo

A aceleração da transformação digital e a dinâmica sociocultural subsequente à pandemia de COVID-19 redefiniram o papel da cultura escolar, não apenas como uma instituição de ensino, mas como um espaço simbólico onde ocorrem negociações sobre inovação e valores de autoridade. Nesse contexto, a liderança digital é entendida não apenas como uma competência técnica, mas também como uma prática cultural que molda os valores, a identidade e o comportamento organizacional. Este estudo examina como o comprometimento organizacional e o profissionalismo docente contribuem para o desenvolvimento da liderança digital e como essa prática de liderança funciona como uma força mediadora na formação de uma cultura escolar inovadora no ensino fundamental II na Indonésia. Utilizando uma abordagem quantitativa explicativa, os dados foram coletados de 315 diretores de escolas de ensino fundamental II na



teacher professionalism has a significant effect on digital leadership, whereas organizational commitment does not. Digital leadership directly influences innovative school culture and mediates the relationship between teacher professionalism and innovation, but not between organizational commitment and innovation. By positioning leadership as a cultural act, this study enriches the understanding of how symbolic and professional resources shape institutional change. The study asserts that digital leadership serves as a cultural bridge between human capital and innovation, particularly in developing countries. Practically, school innovation is better understood as the result of cultural interactions between leadership, professionalism, and institutional commitment, rather than merely structural reforms.

Keywords: Digital Leadership. Cultural Practice. Teacher Professionalism. Organizational Commitment. School Innovation.

província de Lampung e analisados por meio de Modelagem de Equações Estruturais com Mínimos Quadrados Parciais (MEE-PLS). Os resultados indicam que o profissionalismo docente tem um efeito significativo sobre a liderança digital, enquanto o comprometimento organizacional não. A liderança digital influencia diretamente a cultura escolar inovadora e medeia a relação entre o profissionalismo docente e a inovação, mas não entre o comprometimento organizacional e a inovação. Ao posicionar a liderança como um ato cultural, este estudo enriquece a compreensão de como os recursos simbólicos e profissionais moldam a mudança institucional. O estudo afirma que a liderança digital serve como uma ponte cultural entre o capital humano e a inovação, particularmente em países em desenvolvimento. Na prática, a inovação escolar é melhor compreendida como resultado de interações culturais entre liderança, profissionalismo e comprometimento institucional, e não meramente como resultado de reformas estruturais.

Palavras-chave: Liderança Digital. Prática Cultural. Profissionalismo Docente. Compromisso Organizacional. Inovação Escolar.

1 INTRODUCTION

Schools are not merely instructional institutions; they are cultural battlegrounds where ideologies of modernity, discipline, and authority are continuously produced, negotiated, and contested. In an educational landscape increasingly intertwined with global digital agendas particularly in the post-pandemic era school leadership has expanded beyond administrative responsibilities to encompass a symbolic role. Within this framework, digital leadership should not be viewed merely as a managerial tool, but rather as a cultural practice a form of institutional discourse that shapes the meanings of innovation, professionalism, and institutional identity. (Rasdiana et al., 2024) This study offers a reinterpretation of digital leadership from a cultural perspective by posing the following question: how do professional and organizational values mediate the emergence of innovation through symbolic leadership in schools? Unlike previous studies that examine digital leadership through structural or technical lenses, this research

positions it within the realm of cultural production a space where school actors negotiate authority and change under the broader ideology of modern educational reform. Indonesia is chosen as the primary context not only to highlight a national case study but also to illustrate how educational institutions in the Global South navigate the demands of global innovation amid infrastructural limitations, variations in teacher capacity, and disparities in digital readiness (Reddy et al., 2020) (Kultsum et al., 2025). Indonesia's national education policy emphasizes the integration of digital technology in school management and pedagogy as a strategy to enhance quality and equity. This reflects a cultural acceptance of global narratives surrounding transformation, modernity, and competitiveness. However, the implementation of such policies reveals various frictions and mismatches that are not solely technical in nature, but also symbolic requiring school principals to act both as policy interpreters and curators of institutional meaning. (Karakose et al., 2022) This underscores that digital leadership is the intersection of institutional values, power relations, and professional discourse. In line with this perspective, *Teacher Innovation: Conceptualizations, Methodologies, and Theoretical Imperatives* emphasizes that innovation in educational settings is not merely a matter of adopting new technologies or pedagogical tools, but is deeply embedded in the cultural and ideological contexts in which teachers and school leaders operate (Scott & Smith, 2024) This perspective reinforces the idea that educational leadership should be viewed as a simultaneous effort to foster innovation while articulating the cultural values of the organization Within this configuration, two key constructs emerge: organizational commitment and teacher professionalism. Organizational commitment, as defined by (Meyer et al., 1990) Within this configuration, two key constructs emerge: organizational commitment and teacher professionalism. Organizational commitment, as defined by Meyer and Allen, refers to the psychological attachment of individuals to their organization, encompassing affective, continuance, and normative dimensions. This commitment is crucial in shaping attitudes and behaviors that support institutional goals, including the adoption of innovation. Meanwhile, teacher professionalism represents a set of normative expectations related to competence, autonomy, and ethical responsibility, which are continuously negotiated within the school's cultural and institutional context. In the digital era, teacher professionalism also involves the capacity to engage with technological change critically and constructively, making it a vital component in the leadership-innovation dynamic (Sopiah, 2008) Meanwhile, teacher professionalism goes beyond mere technical skills.

As explained by Hargreaves, it encompasses moral purpose, reflective practice, and collaborative engagement positioning teachers not only as implementers of policy but also as agents of change within their institutions. In this sense, professionalism is inherently cultural, shaped by shared values, norms, and expectations that influence how teachers respond to educational reforms, including the integration of digital technologies. (Sharma, 2017) and (Suprihatin & Manik, 2020) Professionalism encompasses both ethical and symbolic dispositions, or what Bourdieu refers to as *professional habitus*, which positions teachers as moral and transformational agents. Teacher professionalism should also be understood as a form of cultural capital that shapes trust, collaboration, and innovation within schools (*Unpacking Teacher Empowerment*) (Suprihatin & Manik, 2020) These two constructs constitute the cultural capital that underpins the authority and legitimacy of digital leadership. Several studies have attempted to examine the relationships among these variables. In research employing a Structural Equation Modeling (SEM) approach (Hasanudin et al., 2025) Several studies have attempted to examine the relationships among these variables. In research employing a Structural Equation Modeling (SEM) approach, it was found that although organizational commitment has a direct influence on school innovation, it does not significantly affect digital leadership. Conversely, teacher professionalism has a strong and positive influence on digital leadership, which in turn mediates its impact on innovation. Similar findings are also presented in *Digital Leadership and Professional Commitment* (Hidayat et al., 2024) The study concludes that professional ethos is more effective in driving digital transformation than institutional loyalty alone (Patras et al., 2025) It also emphasizes that digital leadership supported by teacher professionalism has become a strategic priority in enhancing schools' innovative capacity. Nevertheless, there remains a lack of research exploring how these relationships unfold within the cultural dimension specifically, how leadership functions symbolically in processes of institutional change. This study seeks to address this gap by investigating the mediating role of digital leadership in the relationship between organizational commitment, teacher professionalism, and school innovation. The novelty of this study lies not merely in its statistical model, but in its cultural reading framework. By positioning leadership as a cultural act, the research reveals how symbolic power, professional ideology, and institutional discourse intersect to shape innovation practices within schools. In the Indonesian context where schools face disparities in digital resources and professional development digital leadership

cannot be assumed as an automatic outcome of policy implementation. Rather, it must be enacted, performed, and legitimized through the cultural dynamics at the school level. The study *Elevating Teachers' Professional Digital Competence* further supports this view, highlighting the need for a culturally grounded approach to leadership and innovation in education (Rasdiana et al., 2024) This perspective emphasizes that a school's digital culture is not built solely on infrastructure, but also through a symbolic order co-constructed by teachers and school leaders. Similarly, international research underscores the importance of pedagogical readiness in adopting digital innovation as an integral part of the cultural practice of education (Yulin & Danso, 2025) In this sense, leadership becomes a representational act a medium through which educational institutions define what is meant by progress, professionalism, and innovation. This study contributes to three main domains. Theoretically, it situates digital leadership within the perspective of cultural studies, understanding it as a space for the production of meaning and symbolic mediation. Empirically, the study draws on large-scale survey data (N = 315) from junior high school principals in Indonesia, employing a Partial Least Squares Structural Equation Modeling (SEM-PLS) approach to test partial mediation pathways. Practically, the research provides a foundation for policy development and leadership training by emphasizing the importance of cultural alignment particularly in fostering professional values and symbolic authority as prerequisites for sustainable educational innovation. By framing the pathway "from commitment to culture" as a central focus, this study encourages researchers and education policymakers to view innovation not merely as a technical outcome, but as a cultural achievement (Sutiyatno et al., 2022).

2 METHODOLOGY

This study employed an explanatory quantitative design to examine the causal relationships among organizational commitment, teacher professionalism, digital leadership, and innovative school culture. While the approach is grounded in statistical analysis, the study's conceptual framework is based on the understanding that digital leadership is not merely a technical entity, but a symbolic practice that reflects values, authority, and change within educational institutions. The quantitative approach in this study is not intended solely to measure phenomena, but rather to serve as a means of accessing the social meanings and value structures embedded in institutional behavior

(Denzin & Lincoln, 2000) (Creswell & Plano Clark, 2023) . Therefore, the quantitative model employed in this study is aimed at exploring how the configuration of professional values and organizational commitment is symbolically mediated through digital leadership in shaping school innovation. The use of Partial Least Squares Structural Equation Modeling (SEM-PLS) is deemed appropriate, as it is well-suited to handling mediation models involving complex latent variables within a relatively moderate sample size (Hair et al., 2019)

Unlike previous studies that test all hypothesized relationships simultaneously within a comprehensive SEM framework, this study specifically focuses on partial pathways and the mediating role of digital leadership. This focus is intended to provide a deeper interpretation of how human and institutional dimensions operate culturally in generating innovative practices that are not only structural, but also symbolic and representational within school culture (Yulin & Danso, 2025)

2.1 Population and sample

The population of this study consisted of 1,475 junior high school principals in Lampung Province, Indonesia. A total of 315 principals were selected as the sample using proportional random sampling to ensure representation across various districts and municipalities. This sample size meets the minimum requirements for SEM analysis, which recommends five to ten respondents for each estimated parameter (Hair Jr et al., 2021) School principals were selected not only because of their strategic positions within the managerial structure, but also due to their roles as agents of cultural representation who articulate and mediate organizational values, professionalism, and the discourse of modernity within educational institutions. The diverse characteristics of the respondents in terms of age, experience, gender, and institutional location contribute to the external validity of the study and provide a richer basis for interpreting the cultural dynamics embedded in school leadership practices.

2.2 Data collection instrument

Data were collected using a structured questionnaire based on a 5-point Likert scale (1 = strongly disagree to 5 = strongly agree). The instrument was not only employed to measure numerical responses but was also treated as a reflection of the social constructions and cultural values embedded within the respondents as institutional actors..

The research instrument was adapted from previously validated scales:

- **Organizational Commitment:** Based on the three-dimensional model by Meyer and Allen (1990), which includes affective, continuance, and normative commitment.
- **Teacher Professionalism:** Adapted from (Sharma, 2017), Adapted from existing validated frameworks, covering pedagogical competence, subject-matter mastery, professional ethics, and communication skills.
- **Digital Leadership:** Developed from the framework proposed by (Na’Im et al., 2021) dan (Karakose et al., 2022) The construct focuses on the principal’s capacity to integrate technology into both school governance and pedagogy as a form of representing modernity and innovation.
- **Innovative School Culture:** Adapted from (Judge & Robbins, 2017) and (Schein, 2010) which emphasizes that organizational culture can be understood through patterns of values, practices, and behaviors that are sustained and developed within the organization.

The instrument was validated through expert review involving three education management specialists to ensure content validity. A pilot test was conducted with 30 school principals outside the main sample to evaluate the clarity of wording and the reliability of the instrument. The results showed Cronbach’s alpha coefficients above 0.70 for all constructs, indicating that the instrument possesses adequate internal consistency to measure perceptions that symbolically reflect the values embedded in institutional practices.

2.3 Data collection procedure

Data collection was conducted over a three-month period, using both online and offline questionnaire distribution methods. This dual distribution approach was adapted to the socio-technological realities of Indonesian schools, where disparities in access and

digital readiness remain part of the everyday cultural landscape of education (Williams, 2020) Participation was voluntary, with full guarantees of confidentiality and anonymity, in accordance with ethical standards for social research (Bryman, 2016) This study also received ethical approval from the Research Ethics Committee of the University of Lampung prior to its implementation. This ethical approach not only fulfills administrative requirements but also reflects an awareness of power relations and trust in the interaction between the researcher and respondents as members of the cultural community being studied.

2.4 Data analysis technique

Data were analyzed using Structural Equation Modeling with the Partial Least Squares approach (SEM-PLS), implemented through SmartPLS software. The SEM-PLS method was chosen for its ability to handle complex predictive models and its suitability for relatively moderate sample sizes (Hair Jr et al., 2021). In addition, this approach allows for the analysis of mediating relationships, which is particularly relevant for understanding how cultural constructs operate within the educational context (Henseler et al., 2009) In this study, SEM-PLS was used not only to verify the statistical model but also to trace the symbolic mediation mechanisms among the variables of teacher professionalism, organizational commitment, digital leadership, and innovative school culture. The analysis was conducted in two stages. First, the measurement model (outer model) was evaluated, which included testing for convergent validity using the Average Variance Extracted (AVE) with a minimum threshold of 0.50, and factor loadings above 0.70. Discriminant validity was assessed using the Fornell-Larcker criterion and cross-loadings. Construct reliability was tested using both Cronbach's alpha and Composite Reliability (CR), with a threshold value of 0.70 to indicate adequate internal consistency.(Hair et al., 2019)

The second stage involved the evaluation of the structural model (inner model), which was conducted to test the research hypotheses (H1–H5). Significance testing was performed through bootstrapping with 5,000 subsamples to obtain *t*-statistics and *p*-values. Direct relationships (H1–H3) were analyzed using path coefficients, while the mediation hypotheses (H4 and H5) were examined by assessing the indirect effects. The coefficient of determination (R^2) was used to evaluate the explanatory power of the model

for the endogenous variables. Additionally, effect size (f^2) and predictive relevance (Q^2) were assessed to further strengthen the model interpretation (Chin, 2010). Thus, each hypothesis was tested not only based on statistical significance but also by considering the cultural dimensions embedded in the research variables. This approach enables a more comprehensive analysis of how teacher professionalism and organizational commitment influence innovative school culture through digital leadership as a cultural mediator.

3 RESULTS

3.1 Descriptive statistics

The respondents in this study consisted of 315 junior high school principals in Lampung Province, comprising both male and female participants, with ages ranging from 35 to 58 years. Most respondents had more than five years of leadership experience, while the remainder were newly appointed principals with less than five years in their current roles. In general, the descriptive results indicate that respondents rated organizational commitment, teacher professionalism, digital leadership, and innovative school culture in the high category. The mean scores for each variable were above 3.8 (on a 1–5 scale), suggesting a positive tendency toward the items included in the research instrument (Williams, 2020). These findings not only reflect a technical assessment of the variables but also indicate the presence of cultural norms that compel school principals to project an image of organizational commitment and professionalism as essential elements of digital leadership. The high average scores suggest that these values have become embedded within the institutional *habitus* (Bourdieu, 1990). These values are regarded as normative standards by school leaders in Indonesia. Similar findings are also evident in studies such as (Rasdiana et al., 2024) which found a tendency among school principals to construct digital leadership as a symbol of modernity as well as in studies such as (McCormick, 2006) which affirm organizational commitment as a form of cultural capital in shaping professional identity within schools. As symbols, professionalism and commitment are not solely associated with efficiency, but are also integral to the formation of cultural identity within the context of educational modernization.

3.2 Measurement model evaluation (outer model)

The convergent validity test showed that all indicators had factor loadings above 0.70, with Average Variance Extracted (AVE) values exceeding 0.50 for each construct, as recommended in the SEM-PLS literature (Hair, Hult, Ringle, & Sarstedt, 2019). This indicates that the research instrument effectively captures the underlying latent variables. (Fornell & Larcker, 1981) which demonstrated that the square root of the AVE for each construct was greater than the correlations between that construct and all other constructs, thereby fulfilling the criteria for discriminant validity. The reliability tests indicated that both Cronbach's alpha and Composite Reliability (CR) values for each variable exceeded 0.70, in accordance with the standard for good internal consistency (Henseler et al., 2009). Thus, the measurement model was deemed appropriate for proceeding to the structural model analysis stage.

These validity and reliability results not only confirm that constructs such as *professionalism* and *commitment* are statistically stable, but also underscore that these values are consistently perceived by school principals as symbols of authority and cultural structures that bind their leadership practices. In this context, these constructs are not merely measured as technical elements, but as representations of symbolic meaning and ideologies embedded within the organizational culture of schools (Schein, 2010) Thus, the validity of this instrument can also be understood as cultural validity, indicating that school principals collectively interpret and acknowledge these values as part of the institutional system of meaning.

3.3 Structural model evaluation (inner model)

The inner model testing was conducted to assess the predictive strength among the variables. The results of the path estimations and their statistical significance are presented in Table 1 below

Table 1*The results of the path estimations and their statistical significance*

Hypothesis	Path Relationship	Coefficient (β)	T-statistic	p-value	Description
H1	Organizational Commitment \rightarrow Digital Leadership	0,081	1,21	0,227	Not significant
H2	Teacher Professionalism \rightarrow Digital Leadership	0,412	6,57	0,000	significant (+)
H3	Digital Leadership \rightarrow Innovative School Culture	0,537	9,83	0,000	significant (+)

The inner model analysis provides a deeper understanding of how professional values and institutional commitment operate through digital leadership as a symbolic practice. In other words, this structural model not only tests causal relationships in a technical sense but also explores how digital leadership functions as a mediator in transforming cultural values within school practices. These results indicate that digital leadership is not merely about the application of technology, but also a representation of cultural change within the organization—actively shaping and supporting school innovation. Through this values-based leadership, school principals become cultural agents who translate educational policy into symbolic actions that drive transformation.

3.4 Mediation effect testing

The mediation analysis was conducted to determine whether digital leadership functions as a mediator in the relationship between organizational factors and human resources with innovative school culture. The results of the analysis are presented in Table 2 below:

Table 2*The results of the analysis*

Hypothesis	Mediation Path	Coefficient (β)	T-statistic	P-value	Description
H4	Organizational Commitment \rightarrow Digital Leadership \rightarrow Innovative Culture	0,043	1,12	0,264	Not significant
H5	Teacher Professionalism \rightarrow Digital Leadership \rightarrow Innovative Culture	0,221	4,67	0,000	significant (+)

The results show that digital leadership does not significantly mediate the relationship between organizational commitment and innovative culture. This indicates

that organizational commitment contributes directly to innovative culture without the intermediary role of digital leadership. In the context of organizational culture, this suggests that values such as loyalty and institutional affiliation may be more effective in driving cultural change within schools, but are not sufficient to introduce digital innovation without a more concrete mediator such as values-based leadership. Conversely, digital leadership was found to be a significant mediator in the relationship between teacher professionalism and innovative culture. This implies that professional teachers not only support high-quality pedagogical practices but also play a role in legitimizing and translating cultural innovation through the digital leadership of school principals. Such leadership functions not merely as a tool for managing change, but as a symbolic practice that links professional values to the creation of an innovative culture within the school. In other words, digital leadership serves as a representation of cultural formation that can strengthen and sustain the values of innovation within the institution. This suggests that school principals, as cultural leaders, do not merely implement technology but also articulate and consolidate the meaning of innovation within the educational context.

3.5 Summary of key findings

First, teacher professionalism emerged as the most dominant factor driving digital leadership. This finding is consistent with research (Karakose et al., 2022) which emphasizes the importance of teachers' capacity in supporting digital-based innovation. In this context, teacher professionalism is not limited to pedagogical competence, but also includes social dispositions and professional values brought into the cultural space of the school. Professional teachers act as cultural agents who facilitate digital leadership and help bridge technological change with the sociocultural practices within the school (Patras et al., 2024) (Sutiyatno et al., 2022). Second, digital leadership has been proven to be a critical catalyst in building an innovative school culture. This result is in line with (Na'Im et al., 2021) which states that digital leadership plays a role in integrating technology and innovation in schools. However, beyond this functional role, digital leadership also operates as a symbolic practice that translates technological and policy changes into cultural meanings that can be accepted and enacted by all members of the organization. In other words, digital leadership is not only about managing technology

but also about shaping and legitimizing innovation norms within the school culture. (Rasdiana et al., 2024). Third, organizational commitment does not have a significant effect on digital leadership, but it does contribute directly to innovative school culture.

This finding suggests that loyalty and organizational attachment play a greater role in fostering collective work culture and shared values. However, these values alone are insufficient to stimulate digital leadership focused on technological transformation without the support of teachers' professional competencies. In this regard, organizational commitment is more closely related to social and ideological processes that can influence school culture, but do not directly stimulate technology-driven change. (Orunbon et al., 2023) Thus, the findings of this study provide a clearer picture that the success of an innovative school culture is not solely determined by the level of organizational commitment, but more importantly by the professionalism of teachers in supporting digital leadership. Digital leadership functions as a cultural mediator, linking the quality of human resources (professional teachers) with the creation of an innovative and adaptive organizational culture in schools. In this context, digital leadership is not merely an administrative tool, but a cultural practice that shapes and sustains innovation in education.

4 DISCUSSION

4.1 The role of teacher professionalism in digital leadership

The findings of this study affirm that teacher professionalism is the dominant factor influencing principals' digital leadership. This highlights the critical importance of human resource quality as the foundation for building effective digital leadership practices. Teacher professionalism characterized by pedagogical competence, content mastery, communication skills, and strong professional ethics provides concrete support to school principals in integrating technology into both school governance and instructional processes. Culturally, this indicates that digital leadership is not solely determined by the capacity of the principal, but also by the collective professionalism of teachers who act as cultural agents in supporting digital transformation. This is consistent with (Karakose et al., 2022), which emphasizes the importance of teachers' capacity in supporting school leaders in addressing the digitalization of education. Recent studies

show that school digital leadership directly enhances teachers' digital competence and fosters a digital-based school culture (*Elevating Teachers' Professional Digital Competence*) (Rasdiana et al., 2024) In this regard, digital leadership serves as a symbolic cultural practice that links the values of professionalism with innovation, enabling a more meaningful transformation within the school culture.

4.2 Organizational commitment and digital leadership

The findings indicate that organizational commitment does not have a significant effect on digital leadership. This result is particularly noteworthy as it challenges the traditional assumption that commitment is always a primary driver of change (Meyer et al., 1990) In the context of this study, although the level of organizational commitment was relatively high, it did not automatically translate into support for digital leadership practices. Most likely, organizational commitment reflects loyalty and emotional attachment to the school, but it is not sufficient to be converted into concrete support for technology-based transformation (Orunbon et al., 2023) This finding is related to the concept of organizational culture, which suggests that commitment may contribute to group cohesion but does not necessarily translate directly into the cultural change required to support digital innovation (Schein, 2010) Thus, digital leadership is more strongly influenced by the professional competence of teachers, which supports the use of technology and innovation in educational practices, rather than relying solely on loyalty to the organization (Patras et al., 2024).

4.3 Digital leadership as a catalyst for an innovative culture

This study also confirms the central role of digital leadership as a catalyst for the emergence of an innovative school culture. This result is consistent with (Na'Im et al., 2021) which shows that digital leadership strengthens the integration of technology into learning and management systems, as well as supports the creation of an innovative climate. Similar findings are also reported by (Rasdiana et al., 2024) which affirms that digital leadership significantly promotes teachers' innovation skills through professional learning communities. In addition (Berkovich & Hassan, 2025) highlighting the role of digital transformational leadership in shaping teachers' commitment to innovation.

Principals who act as digital leaders are able to foster a shared vision, build a collaborative climate, and direct resources toward innovative goals. In the Indonesian context, this becomes increasingly important as schools face the demands of the *Merdeka Belajar* (Freedom to Learn) policy, which emphasizes curriculum flexibility, creative learning, and technology integration (Leithwood, 2021). In this regard, digital leadership is not merely about technology management, but about how principals transform cultural meaning within the process of innovation. In line with organizational culture theory, digital leadership becomes a symbolic practice that unites technological change with the cultural values of innovation in schools. (Schein, 2010) which ultimately supports the creation of a more adaptive and innovative climate.

4.4 Mediation analysis: digital leadership as a connector

The mediation analysis provides deeper insights into the mechanisms underlying the relationships among the variables. Digital leadership was found to mediate the relationship between teacher professionalism and innovative culture, but not the relationship between organizational commitment and innovative culture. This finding enriches theory (Schein, 2010) on organizational culture formation, which emphasizes the role of leadership in embedding organizational values. This result is also consistent with the findings of (Efendi et al., 2023) which demonstrate that digital leadership mediates the influence of teacher professionalism on innovative culture, but does not consistently mediate the influence of organizational commitment. Similarly, studies (Hidayat et al., 2024) emphasize that teacher professionalism is a strong predictor of digital leadership, which then serves as a bridge toward school innovation. In the global context, research (Berkovich & Hassan, 2025) also highlights the role of transformational digital leadership as a mediator in the relationship between teacher commitment and job satisfaction, indicating that the mediating function of digital leadership applies across educational contexts. From a methodological perspective, the use of SEM-PLS allows for a more comprehensive mediation analysis through bootstrap significance testing (Hair et al., 2019). Thus, digital leadership functions as a cultural mediator that links teacher competencies and organizational cultural values to the creation of cultural innovation in schools. Digital leadership serves not only as a bridge between theory and practice but

also as a bridge between the quality of human resources and the development of an innovative culture within schools.

4.5 Theoretical and practical contributions

Theoretically, this study clarifies the partial mediation pathways that have previously received limited attention in earlier research. The findings confirm that teacher professionalism has a stronger influence on digital leadership than organizational commitment, as also demonstrated in studies (Hasanudin et al., 2023) and (Hidayat et al., 2024). In addition, digital leadership plays a crucial role in building an innovative culture by mediating professional and organizational values, thereby linking technology, culture, and innovation. Practically, this study demonstrates that digital leadership should become a primary focus in the development of policies and principal training programs. Teacher professionalism programs particularly in digital literacy and innovative pedagogy must be prioritized to support digital transformation in schools (Kultsum et al., 2025). Policymakers should also pay attention to regional digital disparities, ensuring that the *Merdeka Belajar* (Freedom to Learn) policy is implemented equitably by strengthening the digital leadership capacity of school principals (Leithwood, 2021).

5 CONCLUSION

This study confirms that teacher professionalism is the primary factor driving digital leadership in schools. Professional teachers with pedagogical competence, subject mastery, communication skills, and professional ethics play a crucial role in supporting principals in integrating technology into both management and learning. These findings highlight that the capacity of human resources forms the fundamental basis for strengthening the digital transformation of education. However, organizational commitment does not have a significant effect on digital leadership, although it still contributes to reinforcing a collective work culture. This suggests that the loyalty and emotional attachment of school members are important for maintaining organizational stability, but remain insufficient to stimulate technology-based transformation without the support of teacher professionalism.

Another key finding indicates that digital leadership serves as a significant

mediator in the relationship between teacher professionalism and an innovative school culture. Digital leadership functions not only in a technical sense but also as a symbolic cultural practice that bridges the values of professionalism with educational innovation. Principals who are capable of leading digitally can create a collaborative climate, foster a shared vision, and guide institutions toward a sustainable culture of innovation. Overall, this study emphasizes that the development of teacher professionalism and the digital leadership capacity of school principals are key to building an innovative culture in schools. These findings align with the spirit of the Eight Dimensions of the Pancasila Student Profile, which stress the importance of character, competence, and national values in shaping a generation of Indonesians who are creative, critical, collaborative, faithful and virtuous, independent, globally minded, and adaptive to technological development. Thus, digital leadership in schools is not merely a technical instrument but also a cultural instrument for realizing the holistic goals of national education.

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Authors' Contribution

All authors contributed equally to the development of this article.

Data availability

All datasets relevant to this study's findings are fully available within the article.

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