Do Digital Competence and Learning Culture Drive Agility and Innovation Capability through Knowledge Sharing?

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ABSTRACT

This study examines the impact of digital competence and learning culture on organizational agility and innovation through the mediating role of knowledge sharing in Indonesia. Utilizing a quantitative approach, data were collected from 100 respondents across diverse industries using a structured questionnaire measured on a 5-point Likert scale. Structural Equation Modeling–Partial Least Squares (SEM-PLS 3) was employed to analyze the relationships between the variables. The results reveal that both digital competence and learning culture have a significant positive effect on knowledge sharing. In turn, knowledge sharing significantly influences both agility and innovation. Furthermore, knowledge sharing mediates the effects of digital competence on agility and of learning culture on innovation. These findings underscore the strategic importance of fostering digital capabilities and a learning-oriented culture to drive knowledge-based organizational performance in the context of Indonesia's digital transformation.

Keywords: Digital Competence, Learning Culture, Knowledge Sharing, Organizational Agility, Innovation

1. INTRODUCTION

In the rapidly evolving digital era, organizations are increasingly challenged to adapt, innovate, and remain competitive, making agility and innovation vital for organizational sustainability. Within this dynamic landscape, two critical internal capabilities—digital competence and a strong learning culture—have emerged as strategic assets that enable firms to respond to change and foster innovation. Digital competence, involving the integration of technologies such as AI, IoT, blockchain, and big data analytics, facilitates real-time decision-making, enhances operational efficiency, and boosts organizational agility [1], [2]. However, achieving this transformation requires strategic alignment with organizational goals to ensure clarity and stakeholder engagement, while also managing challenges such as legacy systems, skill gaps, and resistance to change [1], [2]. Equally important, a strong learning culture supports continuous adaptation and knowledge integration, which are essential for leveraging digital transformation and aligning with market orientation to drive improved performance [3]. Strategic human resource planning plays a vital role in addressing skill gaps and nurturing talent development [4], while organizational learning mediates the relationship between digital transformation and performance by enhancing adaptability and competitiveness [3]. Therefore, successful digital transformation necessitates a holistic strategy that integrates technological advancements with human capital development [1]. reinforced by strategic planning and leadership commitment to foster innovation and adaptability [2]. Empirical case studies further emphasize that aligning digital tools with organizational capabilities is key to optimizing operations and driving innovation [2], [5].

Digital competence refers to the ability of individuals and organizations to effectively utilize digital technologies to access, manage, evaluate, and create information, encompassing not only technical skills but also critical thinking and adaptability to emerging technologies. In Indonesia, where digital transformation is accelerating across public and private sectors, digital competence has

become a foundational element for enhancing operational efficiency and driving innovation. Particularly in public institutions, the development of digital competence is prioritized to foster a digital culture and improve organizational performance, as demonstrated by initiatives within the Ministry of Agrarian and Spatial Planning that emphasize leadership and systematic capacity building to support transformation [6]. Digital competence is widely recognized as a core skill for lifelong learning and adaptation to technological advancements, enabling individuals to effectively manage and produce information in an increasingly digital world ("Bridging the digital competence gap[7], [8]. In the context of digital transformation, capabilities such as business process management, cloud computing, and cybersecurity are essential for successful implementation [9]. Furthermore, the DIGCOMP framework offers a structured guide for identifying and aligning necessary digital skills with evolving technological landscapes, reinforcing that digital transformation requires more than just digitalization—it demands the ability to innovate and adapt continuously [10].

Similarly, learning culture—the collective mindset and practices that promote continuous learning, knowledge development, and skill enhancement - plays a vital role in building adaptive and innovative organizations. A strong learning culture encourages employees to actively seek new knowledge, share insights, and apply their learning in daily tasks, thereby enhancing both individual capabilities and collective organizational performance. Organizations that cultivate such a culture tend to be more agile, resilient, and innovative in responding to societal uncertainties, while also attracting and retaining top talent, and fostering motivation, satisfaction, and employee commitment [11], [12]. Research shows that continuous learning is positively correlated with improved organizational performance, allowing firms to adapt to changes and maintain competitiveness [13]. Moreover, learning cultures enhance innovation by fostering collaboration and team learning, especially in academic settings where these elements drive significant growth and development [13]. From a human capital perspective, organizations that invest in learning opportunities increase employee engagement, effectiveness, and self-actualization [14]. To develop such cultures, strategies must include providing motivation, learning opportunities, and adequate resources [12]. as well as embracing a growth mindset, promoting experimentation, and applying agile methodologies and scenario planning to build organizational resilience [15]. Exemplary organizations like Amazon and Netflix demonstrate how prioritizing learning orientation and adaptive problem-solving can lead to sustained success in dynamic environments [15].

At the intersection of digital competence and learning culture lies the critical practice of knowledge sharing, which involves the dissemination of information, skills, and expertise among individuals and teams within an organization. This practice acts as a bridge that transforms individual competencies into collective organizational outcomes, thereby enhancing both agility—the capacity to respond swiftly to external changes—and innovation—the ability to generate and implement novel ideas. Knowledge sharing is instrumental for organizations striving to remain competitive in a rapidly changing environment, as it accelerates the internal flow of knowledge and enables collaborative problem-solving. Empirical studies support this, with [16] demonstrating a strong positive relationship between knowledge sharing and innovative behavior in academic settings, while [17] highlights its role in developing strategic capabilities and fostering an innovation-friendly environment. In terms of organizational agility, knowledge sharing facilitates the transformation of individual knowledge into shared organizational intelligence, which is vital for sustainable growth and responsiveness [18]. Effective practices can lead to improved customer

service, faster product development, and lower operational costs [19] However, knowledge sharing is not without barriers—individual, managerial, and contextual factors can hinder its effectiveness. These challenges can be addressed through better management practices and a culture that values and rewards knowledge dissemination [17], along with supportive organizational configurations and motivational mechanisms, including technology and incentives [20].

Despite the acknowledged importance of digital competence, learning culture, and knowledge sharing in driving organizational agility and innovation, empirical evidence exploring the interrelationships among these factors—particularly within the Indonesian context—remains limited. Most existing research has been conducted in developed economies, resulting in a knowledge gap regarding how these elements interact and influence organizational outcomes in emerging markets like Indonesia. Addressing this gap, the present study investigates whether digital competence and learning culture affect agility and innovation through the mediating role of knowledge sharing in Indonesian organizations.

2. LITERATURE REVIEW

2.1 Digital Competence

Digital competence is a vital asset in Indonesia's growing digital economy, shaping the success of digital transformation by encompassing both individual and organizational abilities to use digital tools for communication, information management, problem-solving, and innovation. As industries increasingly adopt digital technologies to boost productivity, the demand for digital skills rises, especially in sectors like e-commerce, digital marketing, and data analytics [21] This shift requires a workforce that is both technically proficient and adaptable, as digital competencies help employees remain employable and responsive to automation and changing job demands [21] In line with global trends, Indonesia needs a digitally skilled workforce capable of managing complex tasks to support efficient and sustainable operations [22] Digital competence directly enhances employee performance by enabling productive engagement with digital environments [22] It is a multidimensional construct involving technological, information, and communication literacies essential for functioning in the digital age, while also requiring awareness of digital ethics and responsibilities for responsible technology use [23].

2.2 Learning Culture

A learning culture within an organization fosters an environment where continuous learning, knowledge acquisition, and skill application are prioritized, leading to greater organizational agility and innovation. This culture is grounded in norms and values that promote ongoing development and adaptability, enabling organizations to navigate change effectively while enhancing overall performance. Organizations with a strong learning culture not only become more innovative and resilient but also attract and retain top talent by offering motivation, satisfaction, and opportunities for personal and professional growth [11], [24]. Such a culture encourages collaboration and team learning, which are strongly linked to improved organizational outcomes [13]. Developing a learning culture requires a supportive environment that offers motivation, access to learning resources, and infrastructure conducive to continuous development [12] Moreover, it must be rooted in cultural norms and values that

champion growth and innovation [24], supported by organizational policies that foster team spirit, encourage learning, and invest in employee training and development [25].

2.3 Knowledge Sharing

Knowledge sharing is a critical component in fostering innovation and organizational learning, as it facilitates the exchange and integration of existing knowledge to generate new solutions. In Indonesian organizations, where collectivist cultural values are prominent, creating a supportive environment for knowledge exchange is essential to achieving knowledge-intensive outcomes. Knowledge sharing mediates the relationship between organizational resources and key outcomes such as agility and innovation, and is influenced by various factors including trust, technological infrastructure, organizational support, and individual willingness. Organizational culture plays a significant role in shaping knowledge sharing behaviors, with elements such as communication, trust, reward systems, and structural design proving crucial for its success, particularly in ICT firms where it directly enhances performance, innovation, and competitive advantage [26]. Managerial practices are also vital, as effective leadership can reduce barriers and amplify the benefits of knowledge sharing by boosting productivity and strategic capacity [17] Moreover, information technology—through systems and infrastructure—serves as a key enabler, offering platforms and tools for efficient knowledge exchange [27]. At the individual level, factors such as self-efficacy and perceived social expectations significantly influence employees' willingness to share knowledge [27]. Organizational support, particularly through a strong learning culture and digital competence, further reinforces an environment conducive to effective and sustained knowledge sharing [27].

2.4 Organizational Agility

Organizational agility is a vital capability that allows companies to swiftly adapt to changes in both internal and external environments, ensuring long-term competitiveness and resilience. This agility is supported by key elements such as technological readiness, learning orientation, and effective knowledge sharing, which collectively enhance an organization's ability to process information, make timely decisions, and respond to dynamic market conditions. Technological readiness, including IT competence and innovation, enables rapid adaptation and process optimization, as seen in Siemens' strategic investments to stay competitive in a changing global landscape [28], [29] A strong learning orientation, driven by organizational learning capabilities and supported by effective leadership and human resource practices, further reinforces agility by fostering continuous learning and adaptation [30] Knowledge sharing plays a critical role in disseminating insights across the organization, facilitating strategic responsiveness and fostering collaboration, particularly when managing cultural diversity and engaging with business partners [28], [29] Moreover, strategic adaptation requires flexible resource management, balanced structures, and the capacity to respond to crises, all of which are essential for sustaining agility in today's uncertain and fast-paced environment [29].

2.5 Innovation

Innovation is a critical driver of organizational success, enabling firms to sustain a competitive advantage in dynamic markets, and is strongly influenced by the

integration of digital competence and a robust learning culture. These foundational elements facilitate the development and application of novel solutions by enabling organizations to effectively manage knowledge and foster an environment conducive to experimentation and the creation of new practices. Knowledge management plays a central role in innovation, involving the accumulation, systematization, and efficient use of knowledge assets to support the development of improved products, services, and processes [31] Through effective knowledge management, organizations can navigate complexity and seize future opportunities. Simultaneously, organizational learning enhances innovation by enabling the creation and dissemination of knowledge, positioning learning organizations to better adapt to change and uncover new business opportunities [31] Moreover, strategic management is essential in aligning organizational capabilities with strategic objectives, ensuring that knowledge is directed toward innovation goals. The integration of strategic management, organizational learning, and knowledge management is therefore vital for fostering innovation and maintaining long-term competitiveness in today's evolving economic landscape [31].

2.6 Conceptual Framework and Hypotheses Development

Based on the above literature, this study proposes that digital competence and learning culture both positively influence knowledge sharing, which in turn positively affects organizational agility and innovation. Furthermore, knowledge sharing is hypothesized to mediate the relationship between digital competence and agility, as well as between learning culture and innovation. This conceptual framework is grounded in the Resource-Based View (RBV) and Knowledge-Based View (KBV) of the firm, which highlight internal capabilities—such as knowledge assets, skills, and organizational culture—as key drivers of sustainable competitive advantage and innovation. Guided by this framework, the study tests a series of hypotheses to empirically examine these proposed relationships.

- H1: Digital competence has a positive effect on knowledge sharing.
- H2: Learning culture has a positive effect on knowledge sharing.
- H3: Knowledge sharing has a positive effect on agility.
- H4: Knowledge sharing has a positive effect on innovation.
- H5: Knowledge sharing mediates the relationship between digital competence and agility.
- H6: Knowledge sharing mediates the relationship between learning culture and innovation.

3. METHODS

This study employs a quantitative research design with an explanatory approach, aiming to test hypothesized relationships between variables based on theoretical foundations through empirical data analysis. A cross-sectional survey method was used to collect primary data from respondents at a single point in time. The population targeted consists of employees from various industries in Indonesia—including education, finance, technology, and manufacturing—chosen for their active engagement in digital environments and organizational learning processes. Using purposive sampling, a total of 100 respondents were selected based on specific criteria: familiarity with digital tools, involvement in learning and development activities, and the ability to assess their

organization's agility and innovation. Data were collected through a structured questionnaire developed from validated instruments and adapted to the Indonesian context, with all items rated on a 5-point Likert scale (1 = Strongly Disagree to 5 = Strongly Agree). The constructs measured include Digital Competence (Ilomäki et al., 2016), Learning Culture (Marsick & Watkins, 2003), Knowledge Sharing (Wang & Noe, 2010), Agility (Tallon et al., 2019), and Innovation (OECD, 2005; Chen & Huang, 2009). The survey was distributed online via email and social media over one month, preceded by a pilot test involving 10 respondents to ensure item clarity and reliability, with minor revisions made accordingly. Participation was voluntary, confidentiality was maintained, and only complete and valid responses were included in the analysis.

The collected data were analyzed using Structural Equation Modeling–Partial Least Squares (SEM-PLS) with SmartPLS version 3, an appropriate method for examining complex models involving multiple variables, especially with small to medium sample sizes. The analysis proceeded in two key stages. First, the measurement model (outer model) evaluation assessed indicator reliability (loading factor > 0.70), internal consistency (Cronbach's Alpha and Composite Reliability > 0.70), and convergent validity (Average Variance Extracted [AVE] > 0.50). Second, the structural model (inner model) evaluation examined path coefficients and R-squared (R²) values to determine the explanatory power of the model. Mediation effects were tested through bootstrapping procedures to evaluate the significance of indirect relationships, particularly the mediating role of knowledge sharing between digital competence, learning culture, and the outcomes of agility and innovation.

4. RESULTS AND DISCUSSION

4.1 Demographic Profile of Respondents

The study involved 100 respondents from various industries in Indonesia, with demographic characteristics indicating a diverse and relevant sample. Of the participants, 56% were male and 44% female. In terms of age, 35% were between 20–30 years, 40% between 31–40 years, and 25% were over 40 years old. Educational backgrounds included 10% with a diploma, 60% holding a bachelor's degree, and 30% with a master's degree or higher. Respondents came from different industry sectors: services (35%), manufacturing (25%), education (20%), and technology (20%). Regarding work experience, 30% had less than 5 years, 40% had 5–10 years, and 30% had more than 10 years of experience. All participants had sufficient exposure to digital technologies and organizational practices, making them well-suited to evaluate the constructs under study.

4.2 Measurement Model (Outer Model) Evaluation

To ensure reliability and validity, the outer model was evaluated using several key criteria. All indicator loading factors exceeded the recommended threshold of 0.70, demonstrating strong indicator reliability. Cronbach's Alpha values for all constructs ranged from 0.801 to 0.910, indicating good internal consistency as they surpassed the minimum acceptable level of 0.70. Composite Reliability (CR) values were also high, ranging from 0.876 to 0.934, confirming strong construct reliability. Additionally, the Average Variance Extracted (AVE) for each construct was above 0.50, which validates the presence of convergent validity across the measurement model.

table 1: Weasarement Woder							
Construct	Cronbach's Alpha	Composite Reliability	AVE				
Digital Competence	0.841	0.901	0.692				
Learning Culture	0.879	0.917	0.735				
Knowledge Sharing	0.864	0.909	0.715				
Organizational Agility	0.801	0.876	0.640				
Innovation	0.910	0.934	0.738				

Table 1. Measurement Model

These results confirm that all measurement items reliably reflect their respective latent variables and are suitable for further structural model analysis. The results of the measurement model demonstrate that all constructs meet the required thresholds for reliability and validity. Cronbach's Alpha values range from 0.801 (Organizational Agility) to 0.910 (Innovation), indicating strong internal consistency across all variables. Similarly, the Composite Reliability (CR) scores, ranging from 0.876 to 0.934, further confirm the robustness of the constructs in capturing consistent responses. The Average Variance Extracted (AVE) values, all exceeding 0.640, validate the convergent validity of the constructs, with Innovation showing the highest AVE at 0.738. These findings suggest that the instruments used to measure Digital Competence, Learning Culture, Knowledge Sharing, Organizational Agility, and Innovation are both reliable and valid, providing a solid foundation for subsequent structural model analysis.

4.3 Structural Model (Inner Model) Evaluation

The structural model was evaluated to test the hypotheses and determine the strength and significance of the relationships among the variables.

Table 2. Hypothesis Testing

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Hypothesis	Relationship	Path Coefficient (β)	t- value	p- value	Result		
H1	Digital Competence → Knowledge Sharing	0.442	5.119	0.000	Supported		
H2	Learning Culture → Knowledge Sharing	0.471	5.672	0.000	Supported		
НЗ	Knowledge Sharing → Organizational Agility	0.518	6.220	0.000	Supported		
H4	Knowledge Sharing → Innovation	0.564	6.786	0.000	Supported		
H5	Digital Competence \rightarrow Knowledge Sharing \rightarrow Agility	0.229 (indirect)	4.112	0.000	Supported (Mediation)		
Н6	Learning Culture → Knowledge Sharing → Innovation	0.265 (indirect)	4.672	0.000	Supported (Mediation)		

The hypothesis testing results confirm all proposed relationships, showing strong and statistically significant paths among the studied variables. Digital competence positively affects knowledge sharing (β = 0.442, t = 5.119, p = 0.000), while learning culture exerts an even stronger influence (β = 0.471, t = 5.672, p = 0.000), supporting H1 and H2. Knowledge sharing significantly enhances both organizational agility (β = 0.518, t = 6.220, p = 0.000) and innovation (β = 0.564, t = 6.786, p = 0.000), thus validating H3 and H4. Moreover, mediation analysis shows that knowledge sharing serves as a crucial mediator between digital competence and agility (β = 0.229, t = 4.112, p = 0.000), as well as between learning culture and innovation (β = 0.265, t = 4.672, p = 0.000), confirming H5 and H6. These findings underscore the pivotal role of knowledge sharing in leveraging digital capabilities and fostering a strong learning culture to drive organizational responsiveness and creativity. Additionally, the coefficient of determination (R^2) values indicate that digital competence and learning culture explain 57.3% of the variance in knowledge sharing, while knowledge sharing accounts for 26.8% of the variance in agility and 31.8% in innovation—demonstrating moderate to substantial explanatory power of the model.

Discussion

The results of this study confirm the vital role of digital competence in encouraging knowledge sharing among employees. Individuals who are proficient in using digital tools and platforms are more likely to engage in the transfer and dissemination of information, aligning with previous findings. In Indonesia, where digital transformation is accelerating, equipping employees with strong digital skills is essential for enhancing internal communication and collaboration. As

noted by [32] and [22] digital transformation is reshaping organizational operations, requiring a workforce that is digitally adept to meet new demands. Employees with digital competencies are better prepared to adapt to technological changes and maintain their employability in an evolving job market [21]. In sectors like public relations, digital skills have improved efficiency and productivity, although gaps in analytical capabilities, such as data analysis, still persist [33].

Equally important, a strong learning culture has emerged as a significant predictor of knowledge sharing. Organizations that nurture continuous learning, encourage openness, and value the contributions of knowledge create an environment conducive to the exchange of ideas and expertise. This finding supports [32], who highlights that a supportive learning environment facilitates both individual and collective development. When organizations embed learning into their culture, they become more agile and innovative, as they can quickly access, share, and act on relevant information [34]. This aligns with the notion that learning-oriented environments are foundational to building knowledge-based capabilities, which are key to maintaining adaptability and competitive advantage in the digital era.

Furthermore, knowledge sharing significantly contributes to both organizational agility and innovation. Agile organizations rely on timely and relevant information to make swift decisions and allocate resources effectively. Simultaneously, innovation flourishes in collaborative environments where teams merge diverse knowledge to create new solutions. This is consistent with the findings of [34], who emphasize that knowledge sharing acts as a mediator in transforming internal resources into strategic advantages. The synergy between a strong learning culture and digital skills fosters an organizational environment where agility and innovation are not only possible but continuously sustained [22], [32].

Importantly, the mediating effects of knowledge sharing between (1) digital competence and agility, and (2) learning culture and innovation, were statistically significant. This highlights that knowledge sharing is not only a valuable outcome but also a critical mechanism through which foundational capabilities are translated into organizational performance. It suggests that investing in digital skills and learning orientation alone may not yield full benefits unless knowledge is actively shared across the organization.

CONCLUSION

This study provides empirical evidence that digital competence and learning culture significantly influence organizational agility and innovation, primarily through the mediating role of knowledge sharing. The findings affirm theoretical frameworks such as the Resource-Based View (RBV) and Knowledge-Based View (KBV), emphasizing that internal capabilities—particularly technological literacy and a strong learning environment—are vital for fostering adaptive and innovative organizations. In the Indonesian context, where digitalization is advancing rapidly, these results are especially relevant as organizations face growing demands to remain competitive and responsive. Key conclusions highlight that digital competence enables employees to effectively utilize digital tools for accessing and exchanging knowledge, while a supportive learning culture fosters openness, collaboration, and continuous improvement. Knowledge sharing emerges as the pivotal mechanism through which individual skills and cultural assets are transformed into tangible organizational outcomes like agility and innovation. Importantly, the mediating effects underscore that without active and structured knowledge-sharing practices, the full benefits of digital competence and learning culture may not be realized.

The practical implications of this study suggest that organizations should go beyond investing solely in digital infrastructure and training; they must also integrate knowledge-sharing behaviors into their organizational culture to amplify agility and innovation outcomes. For policymakers and business leaders in Indonesia, these findings offer a strategic roadmap to enhance national and sectoral competitiveness in an increasingly digital economy. However, the study is not without limitations. The relatively small sample size and cross-sectional design may limit the generalizability

of results across broader organizational settings. Future research should consider adopting longitudinal approaches and expanding sample diversity across industries to validate and extend these insights. Furthermore, incorporating qualitative methods could enrich understanding of how digital competence and learning culture dynamically interact with knowledge sharing to drive innovation across different organizational contexts.

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