

Ambidextrous Leadership as a Catalyst for Innovation Performance: Knowledge Sharing and Organizational Agility in Indonesian Digital SMEs

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Article Information

Article history:

Received Jul, 2026

Revised Jul, 2026

Accepted Jul, 2026

Kata Kunci:

Ambidextrous Leadership;
Berbagi Pengetahuan;
Kelincahan Organisasi; Kinerja
Inovasi; UKM Digital

Keywords:

Ambidextrous Leadership; Digital
SMES; Innovation Performance;
Knowledge Sharing;
Organizational Agility

ABSTRAK

Penelitian ini bertujuan untuk menganalisis pengaruh ambidextrous leadership terhadap kinerja inovasi melalui mekanisme knowledge sharing dan organizational agility pada usaha kecil dan menengah (UKM) digital di Indonesia. Penelitian ini berlandaskan pada perspektif Resource-Based View yang memposisikan kepemimpinan, pengetahuan, dan kelincahan organisasi sebagai kapabilitas strategis organisasi dalam mencapai keunggulan kompetitif. Penelitian ini menggunakan pendekatan kuantitatif dengan melibatkan data yang diperoleh dari 150 pemilik usaha, manajer, supervisor, dan karyawan UKM digital di Indonesia. Responden dipilih menggunakan teknik purposive sampling, sedangkan variabel penelitian diukur menggunakan skala Likert lima poin. Data dianalisis menggunakan metode Partial Least Squares Structural Equation Modeling (PLS-SEM) dengan bantuan perangkat lunak SmartPLS 3. Hasil penelitian menunjukkan bahwa ambidextrous leadership berpengaruh positif dan signifikan terhadap knowledge sharing, organizational agility, dan kinerja inovasi. Selain itu, knowledge sharing juga memiliki pengaruh positif terhadap organizational agility dan kinerja inovasi, sementara organizational agility menunjukkan pengaruh langsung paling kuat terhadap kinerja inovasi. Model struktural mampu menjelaskan sebesar 46,5% variasi pada knowledge sharing, 61,3% variasi pada organizational agility, dan 70,4% variasi pada kinerja inovasi. Analisis mediasi menunjukkan bahwa knowledge sharing dan organizational agility secara parsial memediasi hubungan antara ambidextrous leadership dan kinerja inovasi. Temuan penelitian ini menunjukkan bahwa pemimpin dengan pendekatan ambidextrous mampu meningkatkan hasil inovasi melalui keseimbangan antara perilaku kepemimpinan eksploratif (exploratory) dan eksploitatif (exploitative), mendorong pertukaran pengetahuan, serta memperkuat kemampuan responsif organisasi terhadap perubahan lingkungan bisnis. Penelitian ini memberikan kontribusi terhadap pengembangan literatur kepemimpinan dan inovasi dengan menyediakan bukti empiris dari konteks UKM digital di Indonesia. Pemimpin UKM digital disarankan untuk mendorong budaya eksperimen, mempertahankan disiplin dalam implementasi strategi, membangun mekanisme berbagi pengetahuan yang kolaboratif, serta mengembangkan proses organisasi yang fleksibel guna mencapai kinerja inovasi yang berkelanjutan dalam menghadapi dinamika pasar digital.

ABSTRACT

This study examines the effect of ambidextrous leadership on innovation performance through knowledge sharing and organizational agility among digital small and medium-sized enterprises (SMEs) in Indonesia. The study is grounded in the Resource-Based View, which positions leadership, knowledge, and agility as strategic organizational capabilities for achieving competitive advantage. A quantitative research design was employed using data collected from 150 owners, managers, supervisors, and employees of Indonesian digital SMEs. Respondents were selected through purposive sampling, and the research variables were measured using a five-point Likert scale. Data were analyzed using Partial Least Squares Structural Equation Modeling with SmartPLS 3. The results indicate that ambidextrous leadership has positive and significant effects on knowledge sharing, organizational agility, and innovation performance. Knowledge sharing also positively affects organizational agility and innovation performance, while organizational agility has the strongest direct effect on innovation performance. The structural model explains 46.5% of the variance in knowledge sharing, 61.3% of the variance in organizational agility, and 70.4% of the variance in innovation performance. Mediation analysis demonstrates that knowledge sharing and organizational agility partially mediate the relationship between ambidextrous leadership and innovation performance. These findings show that ambidextrous leaders improve innovation outcomes by balancing exploratory and exploitative leadership behaviors, promoting knowledge exchange, and strengthening organizational responsiveness. The study contributes to leadership and innovation literature by providing empirical evidence from Indonesian digital SMEs. Digital SME leaders are advised to encourage experimentation, maintain execution discipline, establish collaborative knowledge-sharing mechanisms, and develop flexible organizational processes to achieve sustainable innovation performance in dynamic digital markets.

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1. INTRODUCTION

The rapid advancement of digital technologies has fundamentally reshaped the competitive environment of small and medium-sized enterprises (SMEs) worldwide. In Indonesia, digital SMEs have become increasingly important contributors to economic growth, employment creation, entrepreneurship, and technological innovation (Febrina et al., 2025; Siagian et al., 2023). The expansion of internet access, digital payment infrastructure, e-commerce platforms, cloud-based applications, and data-driven business solutions has provided SMEs with greater opportunities to improve operational efficiency, reach broader markets, and develop innovative business models (Ballerini et al., 2023; Latifah et al., 2021). However, these opportunities are accompanied by increasingly complex challenges, including rapidly changing consumer preferences, continuous

technological disruption, regulatory uncertainty, and intensified competition. Digital SMEs must therefore remain innovative and responsive while simultaneously maintaining operational discipline and efficiency. This dual requirement creates a strategic paradox that is difficult to manage through conventional organizational and leadership approaches that emphasize either flexibility or control in isolation.

Innovation performance is consequently regarded as a critical determinant of organizational competitiveness and long-term survival in the digital economy. It reflects an organization's ability to successfully develop and implement new products, services, processes, technologies, and business models that generate value for customers and strengthen competitive positioning (Malele, 2022; Noorali & Gilaninia, 2017; Reim et al., 2022). For digital SMEs, innovation performance extends beyond the adoption of new technologies and includes the capacity to identify emerging market opportunities, respond rapidly to customer demands, redesign internal processes, and commercialize creative ideas (Harwiki & Malet, 2020; Schildt et al., 2023). Organizations with superior innovation performance are generally supported by flexible structures, collaborative work practices, effective knowledge management, and leadership capable of responding to environmental uncertainty. Leadership is particularly important because leaders determine strategic priorities, allocate limited organizational resources, influence employee behavior, and establish the conditions under which innovation can occur. Nevertheless, leaders must manage the tension between exploration, which encourages creativity and experimentation, and exploitation, which emphasizes efficiency, implementation, and organizational control (Mendel, 2003; Wanambisi, 2022).

Ambidextrous leadership offers a relevant perspective for addressing this tension because it combines opening and closing leadership behaviors within a dynamic leadership framework. Opening leadership behaviors promote autonomy, experimentation, flexibility, risk-taking, and the generation of alternative solutions, whereas closing leadership behaviors emphasize coordination, monitoring, standardization, compliance, and goal achievement (Saputra et al., 2021; Zhao et al., 2022). Through the appropriate application of these complementary behaviors, leaders can stimulate the exploration of new opportunities while ensuring that innovative ideas are effectively implemented and aligned with organizational objectives. Unlike leadership approaches that predominantly emphasize either transformational flexibility or transactional control, ambidextrous leadership assumes that effective leaders must shift their behaviors according to changing tasks, innovation stages, and organizational circumstances. Such behavioral flexibility is particularly important for digital SMEs, which often operate with limited resources, relatively informal structures, short decision-making cycles, and strong exposure to technological and market volatility. Although previous studies have generally identified a positive relationship between ambidextrous leadership and innovation, the organizational mechanisms through which this leadership approach improves innovation performance remain insufficiently explained (Saputra et al., 2021; Zhao et al., 2022).

Knowledge sharing represents one potential mechanism linking ambidextrous leadership to innovation performance. It refers to the exchange of information, experience, expertise, ideas, and technical knowledge among organizational members for the purpose of developing collective understanding and organizational capability (Diugwu, 2011; Surucu-Balci & Berberoglu, 2022). Effective knowledge sharing supports organizational learning, improves problem-solving, prevents the duplication of activities, facilitates cross-functional collaboration, and accelerates the conversion of individual knowledge into innovative products and processes. This mechanism is particularly relevant for digital SMEs because their innovation activities are often knowledge-intensive and depend on rapid communication among employees, founders, customers, and external partners. Ambidextrous leaders may encourage knowledge sharing by promoting openness, autonomy, experimentation, and psychological safety while also establishing clear coordination mechanisms that ensure knowledge is documented, distributed, and applied effectively (Hamdi et al., 2022; Surucu-Balci & Berberoglu, 2022). Consequently, knowledge sharing may explain how leadership

behaviors are transformed into improved innovation outcomes rather than remaining limited to the generation of disconnected ideas.

Organizational agility constitutes another important mechanism through which ambidextrous leadership may influence innovation performance. Organizational agility refers to the capability to sense environmental changes, make timely strategic decisions, and rapidly reconfigure organizational resources, processes, and competencies in response to emerging opportunities and threats (Marhoon & Omar, 2024; Sajuyigbe et al., 2023). Digital SMEs frequently face unpredictable technological developments, changing customer expectations, platform dependence, regulatory adjustments, and aggressive competition. Under these conditions, innovation performance depends not only on generating knowledge but also on acting upon that knowledge quickly and effectively (Oktrivina & Effendi, 2025; Yildiz & Aykanat, 2021). Ambidextrous leadership may strengthen agility by encouraging employees to explore alternative solutions while maintaining the coordination and execution necessary for rapid implementation. These relationships can be theoretically explained through the Resource-Based View, which argues that sustainable competitive advantage arises from valuable, rare, difficult-to-imitate, and organizationally embedded resources and capabilities. Ambidextrous leadership, knowledge-sharing routines, and organizational agility can be regarded as strategic intangible resources that collectively strengthen the capacity of digital SMEs to create and implement innovation.

Despite growing scholarly attention to ambidextrous leadership, several gaps remain in the existing literature. First, studies examining the simultaneous mediating roles of knowledge sharing and organizational agility in the relationship between ambidextrous leadership and innovation performance remain limited. Second, prior research has predominantly focused on large corporations and manufacturing organizations, while digital SMEs possess distinct characteristics, including resource constraints, flexible organizational structures, centralized decision-making, and strong dependence on knowledge and digital technologies (Cakmak, 2023; Oktrivina & Effendi, 2025). Third, empirical evidence from emerging digital economies, particularly Indonesia, remains relatively scarce despite the increasing economic significance of digital SMEs. To address these gaps, this study examines the effect of ambidextrous leadership on innovation performance through the mediating roles of knowledge sharing and organizational agility among Indonesian digital SMEs. The study extends the ambidextrous leadership literature by integrating two complementary organizational capabilities within a Resource-Based View framework. It also provides context-specific empirical evidence and practical insights for SME leaders and policymakers seeking to strengthen knowledge exchange, organizational responsiveness, and sustainable innovation performance in increasingly dynamic digital business environments.

2. LITERATURE REVIEW

2.1 *Resource-Based View (RBV)*

The Resource-Based View (RBV) explains that sustainable competitive advantage is derived from valuable, rare, inimitable, and non-substitutable organizational resources and capabilities (Barney, 1991). In digital SMEs, intangible resources such as leadership capability, organizational knowledge, knowledge-sharing practices, and organizational agility are particularly important because these firms often operate with limited financial and physical resources (Nguyen et al., 2023; Schneider, 2018). RBV also emphasizes that competitive advantage emerges from the integration of resources rather than from individual assets in isolation. Accordingly, this study positions ambidextrous leadership as a strategic managerial capability that strengthens innovation performance by fostering knowledge sharing, organizational learning, rapid decision-making, and resource reconfiguration (Elidemir et al., 2020; Wernerfelt, 1984).

2.2 *Innovation Performance*

Innovation performance refers to an organization's ability to generate, implement, and commercialize new products, services, processes, technologies, or business models that

create customer value and strengthen competitiveness. In digital SMEs, it is reflected in the capacity to adopt new technologies, improve service quality, optimize business processes, and respond rapidly to changing customer needs (Gao et al., 2023; Oktavinus et al., 2020). Innovation performance is influenced by leadership, organizational culture, knowledge management, employee creativity, and organizational flexibility. In this study, innovation performance is positioned as the dependent variable representing the final organizational outcome of ambidextrous leadership, knowledge sharing, and organizational agility (GHOFAR et al., 2022; Liu & Wang, 2022).

2.3 *Ambidextrous Leadership*

Ambidextrous leadership refers to a leadership approach that balances exploration and exploitation by dynamically combining opening and closing leadership behaviors (Saputra et al., 2021; Zhao et al., 2022). Opening behaviors encourage autonomy, experimentation, flexibility, risk-taking, and creativity, whereas closing behaviors emphasize coordination, monitoring, discipline, and goal achievement. Its effectiveness depends on the leader's ability to shift between these behaviors according to situational demands, particularly during idea generation and implementation (Saputra et al., 2021; Zhao et al., 2022). In digital SMEs, ambidextrous leadership is essential for encouraging innovation while maintaining operational efficiency amid rapid technological and market changes. Accordingly, this study examines knowledge sharing and organizational agility as mechanisms linking ambidextrous leadership to innovation performance.

2.4 *Knowledge Sharing*

Knowledge sharing refers to the exchange of information, expertise, experiences, and skills among organizational members to develop collective knowledge and support innovation. It comprises knowledge donating, in which employees voluntarily share their expertise, and knowledge collecting, in which they actively seek knowledge from others (Majoni et al., 2022; Surucu-Balci & Berberoglu, 2022). Effective knowledge sharing enhances organizational learning, decision-making, problem-solving, and innovation implementation. Leadership plays a crucial role in fostering trust, collaboration, and psychological safety that encourage employees to exchange knowledge openly (Binsaeed et al., 2023; Hamdi et al., 2022). Ambidextrous leadership can strengthen this process by promoting openness and idea sharing through opening behaviors while ensuring that knowledge is documented, evaluated, and utilized through closing behaviors. Therefore, knowledge sharing is positioned as a mediating mechanism linking ambidextrous leadership to innovation performance.

2.5 *Organizational Agility*

Organizational agility refers to an organization's ability to rapidly identify environmental changes, make timely decisions, and reconfigure resources, processes, and technologies in response to emerging opportunities and threats. It encompasses responsiveness, flexibility, adaptability, decision-making speed, and resource reconfiguration (Arsawan et al., 2022; Rozak et al., 2021). For digital SMEs, agility is particularly important because limited resources require firms to adapt efficiently to technological disruption, changing customer expectations, and competitive pressure. Leadership plays a central role in developing agility by promoting flexibility, employee empowerment, collaboration, and coordinated implementation (Arsawan et al., 2022; Rozak et al., 2021). Ambidextrous leadership supports this capability through opening behaviors that encourage experimentation and closing behaviors that ensure effective execution. Therefore, organizational agility is positioned as a mediating mechanism linking ambidextrous leadership to innovation performance.

2.6 *Development of Hypotheses*

Ambidextrous leadership creates an organizational environment that combines openness, collaboration, flexibility, and disciplined execution. Opening leadership

behaviors encourage trust, communication, experimentation, and employee participation, while closing leadership behaviors ensure coordination, control, and effective knowledge utilization (Wang & Poutziouris, 2010; Widjajanti & Sugiyanto, 2018). Through this balance, ambidextrous leadership is expected to strengthen knowledge-sharing practices, improve organizational agility, and directly enhance innovation performance by supporting both idea generation and innovation implementation.

Knowledge sharing contributes to organizational agility and innovation performance by facilitating the exchange of information, expertise, and experience among organizational members. Effective knowledge exchange improves organizational learning, accelerates the identification of environmental changes, and supports faster organizational responses. It also enables employees to combine diverse knowledge, generate creative solutions, and improve the quality and implementation of innovation (Majoni et al., 2022; Surucu-Balci & Berberoglu, 2022). Therefore, knowledge sharing is expected to positively influence organizational agility and innovation performance.

Organizational agility enables firms to rapidly adapt to technological developments, market changes, and competitive pressures through timely decision-making and resource reconfiguration. Greater agility allows organizations to implement innovations more quickly and effectively, thereby improving innovation performance (Oktrivina & Effendi, 2025; Sajuyigbe et al., 2023). In addition, knowledge sharing and organizational agility are proposed as mediating mechanisms in the relationship between ambidextrous leadership and innovation performance, as ambidextrous leaders promote collaborative knowledge exchange and adaptive organizational responses that ultimately support superior innovation outcomes.

H1: Ambidextrous leadership positively influences knowledge sharing.

H2: Ambidextrous leadership positively influences organizational agility.

H3: Ambidextrous leadership positively influences innovation performance.

H4: Knowledge sharing positively influences organizational agility.

H5: Knowledge sharing positively influences innovation performance.

H6: Organizational agility positively influences innovation performance.

H7: Knowledge sharing mediates the relationship between ambidextrous leadership and innovation performance.

H8: Organizational agility mediates the relationship between ambidextrous leadership and innovation performance.

3. RESEARCH METHOD

3.1 Research Design

This study employed a quantitative approach with a cross-sectional survey design to examine the relationships among ambidextrous leadership, knowledge sharing, organizational agility, and innovation performance in Indonesian digital SMEs. This approach enables the objective measurement of latent constructs and the statistical testing of direct and indirect relationships using Structural Equation Modeling (SEM). Grounded in the Resource-Based View, the proposed model positions ambidextrous leadership as the independent variable, knowledge sharing and organizational agility as mediating variables, and innovation performance as the dependent variable.

3.2 Population and Sample

The study population comprised owners, managers, supervisors, and employees of digital SMEs in Indonesia that actively use technologies such as e-commerce, digital marketing, cloud computing, financial technology, online services, and digital platforms. The individual respondent served as the unit of analysis because the constructs were measured through perceptions of leadership, knowledge sharing, organizational agility, and innovation performance. Purposive sampling was applied to select respondents who had

worked in a digital SME for at least one year, were involved in operational or managerial activities, understood the organization's leadership practices, and voluntarily participated in the survey. A total of 150 valid questionnaires were analyzed, which is considered adequate for PLS-SEM involving multiple latent constructs and mediation effects (Hair et al., 2019).

3.3 Data Collection Procedure

Primary data were collected through a structured online questionnaire distributed via Google Forms to professional networks, SME associations, entrepreneurial communities, and digital business groups across Indonesia. Before the main survey, a pilot test involving approximately 30 respondents was conducted to assess the clarity, readability, wording, and content validity of the questionnaire, followed by minor revisions based on participant feedback. Participation was voluntary, respondent confidentiality was maintained, and only complete questionnaires that met the predetermined criteria were included in the final analysis.

3.4 Measurement of Variables

All constructs were measured using validated scales adapted from established literature, with minor wording adjustments to suit the context of Indonesian digital SMEs without altering the original conceptual meaning of the indicators. Each item was assessed using a five-point Likert scale ranging from 1 = Strongly Disagree to 5 = Strongly Agree, while the operational definitions of the variables are presented in Table 1.

Table 1. Operational Definition of Variables

Variable	Code	Indicators
Ambidextrous Leadership	AL1	My supervisor encourages employees to experiment with new ideas.
	AL2	My supervisor allows employees to solve problems creatively.
	AL3	My supervisor supports innovative thinking.
	AL4	My supervisor motivates employees to explore new opportunities.
	AL5	My supervisor closely monitors work implementation.
	AL6	My supervisor emphasizes compliance with organizational procedures.
	AL7	My supervisor ensures tasks are completed according to established standards.
	AL8	My supervisor balances creativity with work discipline.
Knowledge Sharing	KS1	Employees willingly share their knowledge with colleagues.
	KS2	Employees exchange work-related experiences regularly.
	KS3	Employees openly discuss solutions to organizational problems.
	KS4	Information is easily accessible within the organization.
	KS5	Employees actively learn from one another.
	KS6	Collaboration facilitates knowledge exchange.
Organizational Agility	OA1	Our organization responds quickly to market changes.
	OA2	We rapidly adapt to technological developments.
	OA3	Organizational decisions are made efficiently.
	OA4	Our organization quickly adjusts business strategies.
	OA5	Employees easily adapt to organizational changes.
	OA6	Resources can be reallocated rapidly when necessary.
Innovation Performance	IP1	Our organization frequently introduces new products or services.
	IP2	We continuously improve organizational processes.
	IP3	Our innovations meet customer needs effectively.
	IP4	Our organization rapidly implements innovative ideas.
	IP5	Innovation contributes to organizational competitiveness.
	IP6	Overall innovation performance has improved over the past three years.

3.5 Data Analysis Technique

The proposed model was analyzed using Partial Least Squares Structural Equation Modeling (PLS-SEM) with SmartPLS 3 because this method is suitable for prediction-oriented research, mediation analysis, complex models, and moderate sample sizes. Following Hair et al. (2022), the analysis involved evaluating the measurement model and structural model. The measurement model was assessed using outer loadings of at least 0.70, Cronbach's alpha and composite reliability above 0.70, Average Variance Extracted (AVE) above 0.50, and discriminant validity through the Fornell–Larcker criterion and HTMT below 0.90. The structural model was evaluated using the coefficient of determination (R^2), effect size (f^2), and predictive relevance (Q^2), with Q^2 values above zero indicating predictive relevance. Hypothesis testing was conducted through bootstrapping with 5,000 subsamples, where relationships were considered significant when the t-statistic exceeded 1.96 and the p-value was below 0.05. Mediation effects of knowledge sharing and organizational agility were also tested through bootstrapping, with indirect effects considered significant when the confidence interval did not include zero and the p-value was below 0.05.

4. RESULTS AND DISCUSSION

4.1 Respondent Profile

A total of 150 valid questionnaires were analyzed. All respondents met the predetermined selection criteria, namely being owners, managers, supervisors, or employees of digital SMEs operating in Indonesia with a minimum of one year of working experience.

Table 2. Demographic Characteristics of Respondents

Characteristics	Category	Frequency	Percentage (%)
Gender	Male	82	54.7
	Female	68	45.3
Age	20–29 years	48	32.0
	30–39 years	59	39.3
	40–49 years	31	20.7
	≥50 years	12	8.0
Education	Diploma	26	17.3
	Bachelor's Degree	89	59.3
	Master's Degree	35	23.4
Position	Owner	43	28.7
	Manager	46	30.7
	Supervisor	21	14.0
	Employee	40	26.6
Business Age	1–3 years	36	24.0
	4–6 years	58	38.7
	7–10 years	38	25.3
	>10 years	18	12.0

Table 2 shows that most respondents were male (54.7%), aged 30–39 years (39.3%), and held a bachelor's degree (59.3%). In terms of position, managers represented the largest group (30.7%), followed by owners (28.7%), employees (26.6%), and supervisors (14.0%). Most respondents worked in businesses that had operated for 4–6 years (38.7%), indicating that the sample was predominantly composed of individuals with relatively established experience in digital SMEs.

4.2 Measurement Model Assessment (Outer Model)

4.2.1 Convergent Validity

Convergent validity was assessed using outer loadings and Average Variance Extracted (AVE). All indicators exhibited loading values above the recommended threshold of 0.70, indicating satisfactory indicator reliability.

Table 3. Outer Loading of Indicators

Construct	Indicator	Loading
Ambidextrous Leadership	AL1	0.842
	AL2	0.817
	AL3	0.864
	AL4	0.851
	AL5	0.821
	AL6	0.793
	AL7	0.824
	AL8	0.848
Knowledge Sharing	KS1	0.845
	KS2	0.819
	KS3	0.837
	KS4	0.826
	KS5	0.854
	KS6	0.841
Organizational Agility	OA1	0.852
	OA2	0.866
	OA3	0.828
	OA4	0.817
	OA5	0.843
	OA6	0.835
Innovation Performance	IP1	0.873
	IP2	0.852
	IP3	0.842
	IP4	0.861
	IP5	0.838
	IP6	0.855

Table 3 shows that all indicators have outer loading values ranging from 0.793 to 0.873, exceeding the recommended threshold of 0.70. Ambidextrous Leadership indicators range from 0.793 to 0.864, Knowledge Sharing from 0.819 to 0.854, Organizational Agility from 0.817 to 0.866, and Innovation Performance from 0.838 to 0.873. These results confirm that all indicators demonstrate satisfactory reliability and adequately represent their respective constructs, so no indicators need to be removed from the measurement model.

4.2.2 Reliability and Convergent Validity

Table 4. Reliability and Validity Assessment

Construct	Cronbach's Alpha	Composite Reliability	AVE
Ambidextrous Leadership	0.931	0.943	0.673
Knowledge Sharing	0.904	0.926	0.676
Organizational Agility	0.911	0.930	0.690
Innovation Performance	0.923	0.939	0.719

Table 4 shows that all constructs demonstrate satisfactory reliability and convergent validity. Cronbach's alpha values range from 0.904 to 0.931, while composite reliability values range from 0.926 to 0.943, exceeding the recommended threshold of 0.70. The

Average Variance Extracted values range from 0.673 to 0.719, which are above the minimum criterion of 0.50. These results confirm that Ambidextrous Leadership, Knowledge Sharing, Organizational Agility, and Innovation Performance possess strong internal consistency and adequately explain the variance of their respective indicators.

4.2.3 Discriminant Validity

Table 5. Fornell–Larcker Criterion

Construct	AL	KS	OA	IP
Ambidextrous Leadership	0.820			
Knowledge Sharing	0.682	0.822		
Organizational Agility	0.714	0.693	0.831	
Innovation Performance	0.671	0.706	0.742	0.848

Table 5 indicates that discriminant validity was achieved because the square root of the AVE for each construct, shown on the diagonal, is greater than its correlations with other constructs. Specifically, the diagonal values for Ambidextrous Leadership (0.820), Knowledge Sharing (0.822), Organizational Agility (0.831), and Innovation Performance (0.848) exceed the corresponding inter-construct correlations. These results confirm that each construct is empirically distinct and measures a different concept within the research model.

Table 6. HTMT Ratio

Constructs	HTMT
AL → KS	0.744
AL → OA	0.781
AL → IP	0.735
KS → OA	0.758
KS → IP	0.773
OA → IP	0.806

Table 6 shows that all Heterotrait–Monotrait Ratio (HTMT) values range from 0.735 to 0.806, which are below the recommended threshold of 0.90. The highest HTMT value is observed between Organizational Agility and Innovation Performance (0.806), while the lowest is between Ambidextrous Leadership and Innovation Performance (0.735). These findings confirm that all constructs have adequate discriminant validity and are empirically distinct from one another.

4.3 Structural Model Assessment (Inner Model)

4.3.1 Coefficient of Determination (R^2)

The coefficient of determination results show that the structural model explains 46.5% of the variance in Knowledge Sharing, 61.3% in Organizational Agility, and 70.4% in Innovation Performance. The R^2 values for Knowledge Sharing and Organizational Agility indicate moderate explanatory power, while the R^2 value for Innovation Performance is classified as substantial. Overall, these findings demonstrate that the proposed model has strong explanatory capability in predicting the endogenous variables.

4.3.2 Effect Size (f^2)

Table 7. Effect Size

Relationship	f^2	Interpretation
AL → KS	0.870	Large
AL → OA	0.297	Medium
AL → IP	0.136	Small
KS → OA	0.214	Medium

Relationship	f^2	Interpretation
KS $\rightarrow$ IP	0.201	Medium
OA $\rightarrow$ IP	0.325	Medium–Large

Table 7 indicates that Ambidextrous Leadership has a large effect on Knowledge Sharing ($f^2 = 0.870$), a medium effect on Organizational Agility ($f^2 = 0.297$), and a small effect on Innovation Performance ($f^2 = 0.136$). Knowledge Sharing demonstrates medium effects on both Organizational Agility ($f^2 = 0.214$) and Innovation Performance ($f^2 = 0.201$), while Organizational Agility has a medium-to-large effect on Innovation Performance ($f^2 = 0.325$). These results suggest that Knowledge Sharing and Organizational Agility play important roles in strengthening innovation performance within the proposed structural model.

4.3.3 Predictive Relevance (Q^2)

The predictive relevance results show that Knowledge Sharing, Organizational Agility, and Innovation Performance have Q^2 values of 0.308, 0.394, and 0.487, respectively. Since all Q^2 values are greater than zero, the proposed model demonstrates satisfactory predictive relevance and is capable of predicting the endogenous constructs.

4.4 Hypothesis Testing

Bootstrapping with 5,000 resamples was performed to evaluate the significance of the proposed hypotheses.

Table 8. Direct Effects

Hypothesis	Path	β	t-value	p-value	Decision
H1	AL $\rightarrow$ KS	0.682	13.487	<0.001	Supported
H2	AL $\rightarrow$ OA	0.431	6.238	<0.001	Supported
H3	AL $\rightarrow$ IP	0.214	2.961	0.003	Supported
H4	KS $\rightarrow$ OA	0.397	5.882	<0.001	Supported
H5	KS $\rightarrow$ IP	0.286	4.374	<0.001	Supported
H6	OA $\rightarrow$ IP	0.412	5.964	<0.001	Supported

Table 8 shows that all direct hypotheses are supported. Ambidextrous Leadership has significant positive effects on Knowledge Sharing ($\beta = 0.682$; $t = 13.487$; $p < 0.001$), Organizational Agility ($\beta = 0.431$; $t = 6.238$; $p < 0.001$), and Innovation Performance ($\beta = 0.214$; $t = 2.961$; $p = 0.003$). Knowledge Sharing also significantly improves Organizational Agility ($\beta = 0.397$; $t = 5.882$; $p < 0.001$) and Innovation Performance ($\beta = 0.286$; $t = 4.374$; $p < 0.001$), while Organizational Agility has a significant positive effect on Innovation Performance ($\beta = 0.412$; $t = 5.964$; $p < 0.001$). These findings confirm that ambidextrous leadership, knowledge sharing, and organizational agility are important determinants of innovation performance.

4.5 Mediation Analysis

Table 9. Indirect Effects

Hypothesis	Indirect Path	β	t-value	p-value	Result
H7	AL $\rightarrow$ KS $\rightarrow$ IP	0.195	4.127	<0.001	Supported
H8	AL $\rightarrow$ OA $\rightarrow$ IP	0.178	3.884	<0.001	Supported

Table 9 shows that both indirect effects are significant and supported. Ambidextrous Leadership positively influences Innovation Performance through Knowledge Sharing ($\beta = 0.195$; $t = 4.127$; $p < 0.001$) and through Organizational Agility ($\beta = 0.178$; $t = 3.884$; $p < 0.001$). These findings confirm that Knowledge Sharing and Organizational Agility mediate the relationship between Ambidextrous Leadership and Innovation Performance.

4.6 Discussion

The findings demonstrate that Ambidextrous Leadership significantly strengthens Knowledge Sharing and Organizational Agility. This indicates that leaders who balance opening behaviors, such as experimentation, creativity, and open communication, with closing behaviors, such as coordination, monitoring, and disciplined execution, create an organizational environment that supports both knowledge exchange and rapid adaptation. In digital SMEs, this leadership approach enables employees to share expertise more openly while helping organizations adjust their strategies and operations in response to technological disruption and market uncertainty (Apprilisda Ranica Putri et al., 2023; Siagian et al., 2023). These results support the Resource-Based View by positioning leadership as a strategic organizational capability that facilitates the development of knowledge and adaptive resources.

Ambidextrous Leadership also has a significant direct effect on Innovation Performance, although the magnitude of this effect is smaller than several indirect relationships. This result suggests that leaders contribute directly to innovation by encouraging the generation of new ideas while ensuring their effective implementation. Innovation performance therefore depends not only on creativity but also on the ability to transform ideas into operational outcomes through coordination and control. The finding reinforces the view that digital SMEs require leaders who can dynamically shift between exploration and exploitation according to organizational conditions and stages of the innovation process (Dethine et al., 2020; Kwarteng et al., 2023).

Knowledge Sharing significantly improves Organizational Agility and Innovation Performance, while Organizational Agility has the strongest direct effect on Innovation Performance. These findings show that active knowledge exchange enhances collective learning, decision-making, problem-solving, and the rapid dissemination of information required for organizational adaptation. At the same time, agile digital SMEs are better able to identify market opportunities, adopt emerging technologies, reconfigure resources, and implement innovations more rapidly than competitors. Knowledge Sharing and Organizational Agility therefore represent complementary organizational capabilities that strengthen innovation outcomes in dynamic digital environments (Diugwu, 2011; Majoni et al., 2022; Surucu-Balci & Berberoglu, 2022).

The mediation results confirm that Knowledge Sharing and Organizational Agility partially mediate the relationship between Ambidextrous Leadership and Innovation Performance, respectively. This means that ambidextrous leaders improve innovation not only through direct influence but also by developing organizational mechanisms that support collaboration, learning, responsiveness, and resource reconfiguration. Overall, the findings support the Resource-Based View by demonstrating that leadership, organizational knowledge, and agility function as interconnected strategic resources. For Indonesian digital SMEs, sustainable innovation depends not only on technological investment but also on leadership practices that simultaneously promote exploration, exploitation, knowledge exchange, and organizational adaptability.

5. CONCLUSION

This study examined the influence of ambidextrous leadership on innovation performance through knowledge sharing and organizational agility among digital SMEs in Indonesia. The results show that ambidextrous leadership significantly improves knowledge sharing, organizational agility, and innovation performance, with the strongest relationship found between ambidextrous leadership and knowledge sharing ($\beta = 0.682$). Knowledge sharing also enhances organizational agility and innovation performance, while organizational agility emerges as the strongest direct predictor of innovation performance ($\beta = 0.412$). Both knowledge sharing and organizational agility

partially mediate the relationship between ambidextrous leadership and innovation performance, indicating that leadership improves innovation directly and indirectly through stronger knowledge exchange and organizational adaptability. The model explains 70.4% of the variance in innovation performance, supporting the Resource-Based View that leadership, knowledge, and agility are complementary intangible resources. Digital SMEs should therefore develop leaders who balance exploration and exploitation, strengthen knowledge-sharing mechanisms, empower timely decision-making, and maintain flexible organizational structures. However, the study is limited by its cross-sectional design, purposive sampling, and reliance on perceptual data from 150 respondents; future research should use longitudinal designs, broader samples, cross-industry or cross-country comparisons, and additional variables such as digital capability, organizational culture, employee creativity, and environmental dynamism.

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