“Knowledge sharing and absorptive capacity in improving the innovation performance of MSMEs handicrafts in Indonesia”

AUTHORS	Satria Mirsya Affandy Nasution Raihanah Daulay Nadia Ika Purnama Isma Alryani Neni Liana Purba

ARTICLE INFO	Satria Mirsya Affandy Nasution, Raihanah Daulay, Nadia Ika Purnama, Isma Alryani and Neni Liana Purba (2025). Knowledge sharing and absorptive capacity in improving the innovation performance of MSMEs handicrafts in Indonesia. *Problems and Perspectives in Management*, *23*(2), 357-370. doi:10.21511/ppm.23(2).2025.25
DOI	http://dx.doi.org/10.21511/ppm.23(2).2025.25
RELEASED ON	Tuesday, 29 April 2025
RECEIVED ON	Monday, 16 December 2024
ACCEPTED ON	Tuesday, 08 April 2025

JOURNAL	"Problems and Perspectives in Management"
ISSN PRINT	1727-7051
ISSN ONLINE	1810-5467
PUBLISHER	LLC “Consulting Publishing Company “Business Perspectives”
FOUNDER	LLC “Consulting Publishing Company “Business Perspectives”

NUMBER OF REFERENCES	NUMBER OF FIGURES	NUMBER OF TABLES
53	1	11

BUSINESS PERSPECTIVES

LLC "CPC "Business Perspectives"
Hryhorii Skovoroda lane, 10,
Sumy, 40022, Ukraine

www.businessperspectives.org

Satria Mirsya Affandy Nasution (Indonesia), **Raihanah Daulay** (Indonesia), **Nadia Ika Purnama** (Indonesia), **Isma Alryani** (Indonesia), **Neni Liana Purba** (Indonesia)

KNOWLEDGE SHARING AND ABSORPTIVE CAPACITY IN IMPROVING THE INNOVATION PERFORMANCE OF MSMES HANDICRAFTS IN INDONESIA

Abstract

Knowledge sharing in MSMEs refers to sharing information, skills, or experiences between business owners, employees, customers, or other parties such as mentors, business communities, or educational institutions. This study aims to analyze the relationship between innovation performance and knowledge-sharing outcomes within handicraft MSMEs in Medan, Indonesia. It highlights the role of absorptive capacity as a crucial intermediary, emphasizing its importance in enhancing the connection between shared knowledge and improved innovation performance. A quantitative methodology is applied in alignment with the study's objectives, as the research involves numerical and statistical data. Methods for collecting the data included interviews and questionnaires. The total population for this study comprises 165 managers/owners of handicraft MSMEs in Medan, Indonesia. The analysis is conducted using the SEM-PLS technique. The findings indicate that knowledge-donating and knowledge-collecting, as pillars of knowledge sharing, are key in bolstering absorptive capacity and advancing innovation performance. This relationship is statistically supported with a p-value of less than 0.05. Indirectly, knowledge-donating significantly affects innovation performance through absorptive capacity ($p < 0.05$), and knowledge-collecting significantly affects innovation performance through absorptive capacity in handicraft MSMEs in Medan, Indonesia ($p < 0.05$). Based on this study's results, MSMEs in the craft sector can increase innovation by building a culture of knowledge sharing internally among employees and externally with business partners, communities, or clients.

Keywords innovation, knowledge sharing, absorptive capacity, SEM-PLS, Indonesia

JEL Classification D83, L89, M31

Received on: 16th of December, 2024
Accepted on: 8th of April, 2025
Published on: 29th of April, 2025

Satria Mirsya Affandy Nasution, SE., M. Si, Lecturer, Department of Management, Faculty of Economics and Business, Universitas Muhammadiyah Sumatera Utara [Muhammadiyah University of North Sumatra], Indonesia. (Corresponding author)

Raihanah Daulay, SE., M. Si, Associate Professor, Department of Management, Faculty of Economics and Business, Universitas Muhammadiyah Sumatera Utara [Muhammadiyah University of North Sumatra], Indonesia.

Nadia Ika Purnama, SE., M. Si, Lecturer, Department of Management, Faculty of Economics and Business, Universitas Muhammadiyah Sumatera Utara [Muhammadiyah University of North Sumatra], Indonesia.

Isma Alryani, Student, Department of Management, Faculty of Economics and Business, Universitas Muhammadiyah Sumatera Utara [Muhammadiyah University of North Sumatra], Indonesia.

Neni Liana Purba, Student, Department of Management, Faculty of Economics and Business, Universitas Muhammadiyah Sumatera Utara [Muhammadiyah University of North Sumatra], Indonesia.

Conflict of interest statement:
Author(s) reported no conflict of interest

INTRODUCTION

In today's globalized market, intense competition requires businesses to develop and sustain a long-term competitive edge to secure their market presence (Teece, 2018). Innovation is critical for small and large enterprises to continuously establish and uphold this competitive edge. The capacity of a business to achieve innovative commercial goals hinges on efficiently managing its knowledge assets (Nawaz et al., 2024). Innovation is vital because it significantly influences consumer appeal. A firm that effectively manages its knowledge assets can transform into a more inventive organization. Therefore, organizations must manage and reward knowledge appropriately to foster successful innovation (Zamiri & Esmaeili, 2024).

Knowledge sharing goes beyond simply transferring information; it represents a process or social interaction where knowledge is exchanged (Chang et al., 2017). Through knowledge sharing, businesses can optimize existing information and insights to grow and improve

(Stelmaszczyk, 2020). This process encompasses two primary actions: collecting, which involves employees or business owners acquiring and storing knowledge, and donating, which entails sharing the acquired information with colleagues (Kang & Lee, 2017). This study concentrates on the MSME sector, which remains a relatively underexplored area with limited existing research. Although MSMEs face challenges like limited capital and human resources, they also possess strengths, such as a simple organizational structure, fewer employees, and minimal bureaucratic processes. These strengths are crucial for MSMEs to maximize the use of their knowledge resources.

1. LITERATURE REVIEW

Cohen and Levinthal (1990), who originated the idea of absorptive ability, assert that external information sources are frequently essential for innovation. Therefore, leveraging external knowledge is essential for a firm's innovative capabilities. A firm's absorptive power is its capacity to detect and interpret the worth of innovative external data, incorporate it, and apply it to accomplish fiscal targets. This capacity reflects a dynamic skill set that allows for generating and applying knowledge, ultimately amplifying the organization's potential to acquire and retain a competitive advantage (Zahra & George, 2002). Absorptive capacity represents a company's capacity to gather, interpret, and commercially apply outside information, essential for companies aiming to enhance their adaptability and develop new products (Cohen & Levinthal, 1990). According to Grandinetti (2016), absorptive capacity refers to observing, assessing, and acquiring or retaining external knowledge. It signifies a company's capability to effectively identify, manage, and evaluate external information, leveraging that knowledge to achieve a competitive edge. Thus, absorptive capacity helps companies manage external information effectively, essential for competitive advantage. The research has shown it positively influences innovation in firms (Xie et al., 2018; Stelmaszczyk, 2020; Ortigueira-Sánchez et al., 2020; Lo & Tian, 2020; Müller et al., 2021).

Knowledge sharing involves exchanging implicit and explicit information among individuals (Becerra-Fernandez & Sabherwal, 2014). It extends beyond simple knowledge transfer, functioning as a social practice for exchanging ideas (Gupta & Govindarajan, 2000). Van den Hooff and de Ridder (2004) state that tacit and explicit knowledge among individuals fosters the generation of new insights. This process involves transferring information between individuals and organizations to align with shared goals, enabling entities to maximize their knowledge assets for competitive advantage. Tacit knowledge, personal and derived from experience, often remains unspoken and unshared, while explicit knowledge is more structured and easily communicated. Explicit knowledge refers to information disseminated, communicated, and recognized by others. As such, knowledge sharing involves the exchange of information between individuals. It is a social practice of exchanging ideas and creating new insights. Tacit knowledge is personal and difficult to share, while explicit knowledge is more structured and easy to communicate. Research indicates that knowledge-sharing practices are crucial across various sectors, such as technology, electronics, and IT. The studies in China, Korea, and Pakistan have shown that these practices enhance absorptive capacity, promote innovation, and improve project outcomes (Wang et al., 2017; Kang & Lee, 2017; Ali et al., 2018).

Kabir (2019) asserts that innovation is a mechanism for organizations' continuous enhancement and evolution. This is attainable through the implementation of novel technologies, the release of new offerings and products, the identification of undiscovered markets, and the establishment of trailblazing organizational models. Alongside integrating diverse elements of innovation, Kabir (2019) asserts that innovation creates an innovation arena. Li et al. (2019) characterize performance innovation as a reciprocal process wherein individuals share knowledge and collaboratively develop novel ideas to enhance organizational performance. Innovation performance refers to generating fresh ideas, knowledge, and insights that contribute to developing new services and products (Nham et al., 2020; Nasution et al., 2020). The capacity for innovation is embedded in every aspect of business operation, including resource

http://dx.doi.org/10.21511/ppm.23(2).2025.25

management, production, and product development. Organizations that foster innovation can identify emerging opportunities, technologies, skills, and valuable knowledge assets for the firm (Tassabehji et al., 2019). By improving innovation performance, companies can enhance their overall quality performance. Hernández-Perlines et al. (2019) discovered that innovation performance can significantly impact company performance. Effective implementation of innovation leads to strong innovation performance. For MSMEs, innovation performance can be determined by various benchmarks, including creating new offerings or products, enhancing process innovations, implementing new management techniques, and adopting innovative marketing approaches (Soto-Acosta et al., 2017). Thus, effective implementation of innovation improves the performance and quality of the company. From previous studies, it is clear that maintaining company sustainability relies on innovation, which can be boosted through knowledge-sharing (Muafi, 2020; Kang & Lee, 2017; Chang et al., 2011; Ratasuk & Charoensukmongkol, 2020) and absorptive capacity (Müller et al., 2021; Ortigueira-Sánchez et al., 2020; Lo & Tian, 2020).

Several authors, such as Soto-Acosta et al. (2017), Müller et al. (2021), Tassabehji et al. (2019), have investigated MSME innovation. To enhance innovation in these businesses, it is essential to develop both employee and organizational skills. Key areas include knowledge sharing (Khan & Tao, 2022; Chang et al., 2017; Kang & Lee, 2017; Müller et al., 2021; Nham et al., 2020; Ratasuk & Charoensukmongkol, 2020) and absorptive capacity (Stelmaszczyk, 2020; Ortigueira-Sánchez et al., 2020; Lo & Tian, 2020; Xie et al., 2018; Müller et al., 2021). The research indicates that these elements are crucial for improving a company's ability to innovate (Abourokbah et al., 2023; Balle et al., 2020; Naqshbandi & Jasimuddin, 2023). In past studies, absorptive capacity and knowledge sharing were frequently seen as direct contributors to innovation. On the other hand, absorptive capacity might be viewed as an intermediary, channeling the effect of knowledge sharing on innovation success, aligning with Davenport and Prusak (1998) view that effective knowledge transfer requires absorption capabilities. Liao et al. (2007) also support this by showing that knowledge sharing enhances absorptive capacity, which can be used to achieve innovative business goals.

This study's objective is to analyze how the integration of knowledge-sharing strategies and absorptive capacity influences the enhancement of innovation performance in MSMEs operating in Medan, Indonesia. Figure 1 visually depicts this evaluation's structural model and hypotheses to provide a comprehensive overview of the research framework:

H1: The knowledge-donating affects absorptive capacity.

H2: The knowledge-collecting affects absorptive capacity.

H3: The knowledge-donating affects innovation performance.

H4: The knowledge-collecting affects innovation performance.

H5: Absorptive capacity affects innovation performance.

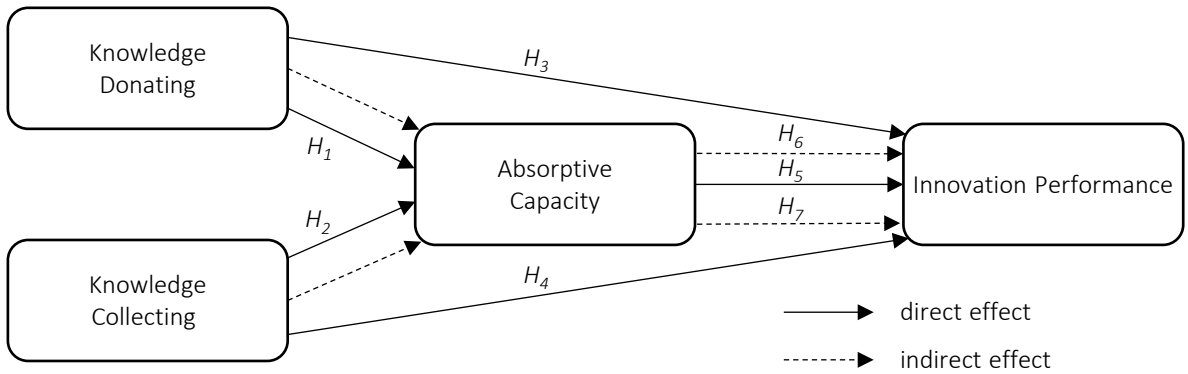

Figure 1. Research model

H6: The knowledge-donating affects innovation performance mediated by absorptive capacity.

H7: The knowledge-collecting affects innovation performance mediated by absorptive capacity.

Figure 1 depicts the research framework.

2. METHODOLOGY

This study adopts a quantitative approach, aligning with the nature of the data collected, primarily numerical and statistical. Quantitative methods are particularly suitable for inferential research, where hypothesis testing is the focus. The approach evaluates error probabilities to determine the likelihood of rejecting the null hypothesis. This method allows the study to analyze differences among groups and evaluate the significance of relationships between variables, providing a detailed statistical understanding of the data (Barroga & Matanguihan, 2022).

This study was carried out in Indonesia, focusing on handicraft MSMEs in Medan. The data collection techniques used include interviews, namely by conducting interviews with managers/owners of handicraft MSMEs, and then a list of questions, namely by sending surveys (Appendix A) to respondents via Google Forms, which are sent via WhatsApp. The main data was gathered using a survey approach, employing a questionnaire. An attitude scale is employed in the questionnaire to assess the variables. The total population for this study comprises 165 managers/owners of handicraft MSMEs in Indonesia. Given the requirement of using SEM along with the Maximum Likelihood Estimation method, which necessitates a sample size between 100 and 200, all 165 participants were included to satisfy these analytical criteria.

The sampling method in this study is purposive sampling. The purposive sampling method is a sampling method with certain criteria. In this study, the criteria used are as follows:

1) MSMEs that have been established for more than 1 year;
2) MSMEs that have at least five employees;
3) MSMEs that are fostered and recorded by the Office of Cooperatives, Industry and Trade of Medan City – Indonesia; and
4) respondents are owners or managers of MSMEs.

Descriptive statistical analysis was conducted, and SEM was applied using the PLS 3.0 software to process the collected data. SEM integrates factor analysis and regression analysis. This method allows for a detailed analysis of the model's internal connections, examining the associations between each indicator and its respective construct and how the constructs interact throughout the model (Fan et al., 2016).

Partial Least Squares (PLS) is used as it helps predict the relationships between constructs and assists in estimating the value of latent variables. These latent variables are expressed as linear combinations of their indicators, with weight estimates determined based on the specified structural and measurement models (inner and outer models). This process minimizes residual variance within the dependent variables, covering latent and observed indicators (Hair & Alamer, 2022). PLS is chosen due to its versatility and power; the need for multivariate normal distribution does not constrain it and supports a wide range of indicator scales, from categorical to ratio, all within a single model (Hair et al., 2014).

3. RESULTS

Evaluating the indicator measurement model requires a detailed process, including individual item reliability assessment, evaluating internal consistency, calculating the AVE, and examining discriminant validity. The first three assessments are combined under the broader category of convergent validity (Cheung et al., 2023). This validity is tested through several stages: item reliability (ensuring each indicator accurately reflects the construct), composite reliability, and AVE. The function of convergent validity is to evaluate whether indicators effectively align with the dimensions they aim to measure. When stronger, this validity enhances the dimension's role in accurately depicting the latent variable (Lim, 2024).

http://dx.doi.org/10.21511/ppm.23(2).2025.25

Table 1. Outer loading

Variable	Absorptive Capacity	Innovation Performance	Knowledge-collecting	Knowledge-donating
ACP1	0.785	–	–	–
ACP2	0.782	–	–	–
ACP3	0.800	–	–	–
ACP4	0.805	–	–	–
ACP5	0.789	–	–	–
ACP6	0.790	–	–	–
ACP7	0.839	–	–	–
ACP8	0.787	–	–	–
INP1	–	0.563	–	–
INP2	–	0.889	–	–
INP3	–	0.929	–	–
INP4	–	0.608	–	–
KCG1	–	–	0.755	–
KCG2	–	–	0.638	–
KCG3	–	–	0.755	–
KCG4	–	–	0.784	–
KDG1	–	–	–	0.720
KDG2	–	–	–	0.901
KDG3	–	–	–	0.897
KDG4	–	–	–	0.906

The reliability of an item, or indicator validity, is assessed using the standardized loading factor, which shows the strength of the association between an indicator and its construct, with values > 0.70 typically viewed as ideal, demonstrating that the indicator effectively represents the construct. However, values exceeding 0.50 are still considered adequate in some cases. If an indicator's loading factor is below 0.50, it indicates a poor alignment with the construct it measures. Removing such an indicator might be necessary to ensure the model remains precise and valid (Chin, 1998). The specific values for item reliability are displayed in the outer loading column, where each item's correlation with the construct is detailed for further analysis.

Table 1 demonstrates that every indicator's outer loading value surpasses the 0.50 threshold. This finding validates that the indicators and variables used in the research meet the established criteria for validity assessment.

The study uses two primary statistical methods for composite or construct reliability measurement: Cronbach's alpha and D.G rho (PCA). Cronbach's alpha offers a conservative reliability estimate by providing the lowest threshold of a construct's reliability level. It acts as a baseline to measure the minimum value of reliability that can be expected. In contrast, composite reliability provides a more accurate measure of the actual reliability level for the construct. Assessment criteria for these two should be greater than 0.6, ensuring the robustness and consistency of the measurements taken. When these values are above 0.60, it confirms that the construct is reliable and consistent in its measurements (Taber, 2018).

Table 2. Cronbach's alpha, composite reliability, average variance extracted

Variables	CA	CR	AVE
Absorptive Capacity	0.918	0.933	0.636
Innovation Performance	0.742	0.843	0.585
Knowledge-collecting	0.718	0.824	0.540
Knowledge-donating	0.879	0.918	0.739

Table 2 outlines the composite reliability for each variable: Absorptive Capacity at 0.933, Innovation Performance at 0.843, Knowledge-collecting at 0.824, and Knowledge-donating at 0.918. As for Cronbach's alpha, the values recorded are Absorptive Capacity at 0.918, Innovation Performance at 0.742, Knowledge-collecting at 0.718, and Knowledge-donating at 0.879. With all these values exceeding 0.6, it verifies that the constructs are consistent and reliable for measurement. AVE assesses the extent to which items explain variance compared to the influence of measurement error. For the construct to exhibit suf-

ficient convergent validity, a value > 0.5 is necessary, signifying that the latent factor accounts for most of the variation in the indicators. The AVE values reported are Absorptive Capacity at 0.636, Innovation Performance at 0.585, Knowledge-collecting at 0.540, and Knowledge-donating at 0.739, confirming their validity.

Discriminant validity is determined by examining cross-loadings and comparing AVE values to the squared correlations between constructs to ensure they are distinct. Each indicator correlates more with its associated construct than with others (Henseler et al., 2015).

From Table 3, the discriminant validity values assessed through loading factors reveal that each variable presents a stronger association with its respective indicators than with the indicators of other variables. This pattern applies across all indicators, showing they are appropriately associated with their respective variables. The Heterotrait-Monotrait Ratio (HTMT) is also used as a measure; An HTMT value < 0.90 suggests the construct demonstrates strong discriminant validity.

Table 4 shows that the HTMT values are consistently below 0.90, affirming that the indicators are correctly positioned and validated within their constructs.

Table 5 demonstrates the application of the Fornell-Larcker criterion, showing that each variable correlates more with its indicators than others. This pattern is also observed with the indicators, confirming the accuracy of their placement and the validity of the constructs.

The GoF index, or Goodness of Fit, is a measure that assesses the overall alignment of the structural model, combining insights from both its measurement and structural components. It is calculated as the product of the AVE and the R-squared value. Scores for GoF range between 0 and 1, where 0.1 indicates a minimal fit, 0.25 suggests a moderate fit, and 0.36 or higher points to

Table 3. Discriminant validity

Variable	Absorptive Capacity	Innovation Performance	Knowledge-collecting	Knowledge-donating
ACP1	0.785	0.680	0.401	0.519
ACP2	0.782	0.588	0.390	0.478
ACP3	0.800	0.657	0.433	0.555
ACP4	0.805	0.639	0.344	0.445
ACP5	0.789	0.602	0.334	0.427
ACP6	0.790	0.577	0.291	0.377
ACP7	0.839	0.658	0.355	0.521
ACP8	0.787	0.653	0.425	0.498
INP1	0.547	0.563	0.277	0.310
INP2	0.651	0.889	0.432	0.511
INP3	0.744	0.929	0.501	0.582
INP4	0.445	0.608	0.402	0.431
KCG1	0.344	0.382	0.755	0.307
KCG2	0.222	0.310	0.638	0.349
KCG3	0.420	0.471	0.755	0.440
KCG4	0.355	0.381	0.784	0.289
KDG1	0.418	0.414	0.282	0.720
KDG2	0.560	0.532	0.460	0.901
KDG3	0.565	0.583	0.389	0.897
KDG4	0.518	0.556	0.481	0.906

Table 4. Heterotrait-monotrait ratio (HTMT)

Variables	Absorptive Capacity	Innovation Performance	Knowledge-collecting
Absorptive Capacity	–	–	–
Innovation Performance	0.859	–	–
Knowledge Collecting	0.556	0.722	–
Knowledge Donating	0.664	0.751	0.586

http://dx.doi.org/10.21511/ppm.23(2).2025.25

Table 5. Fornell-Larcker criterion

Variables	Absorptive Capacity	Innovation Performance	Knowledge-collecting	Knowledge-donating
Absorptive Capacity	0.797	–	–	–
Innovation Performance	0.695	0.765	–	–
Knowledge-collecting	0.470	0.535	0.735	–
Knowledge-donating	0.604	0.611	0.474	0.859

a strong fit (Hair et al., 2014). A higher GoF score indicates a better match between the model and observed data.

Table 6. Average Communalities Index

Variables	AVE	R Square
Absorptive Capacity	0.636	0.408
Innovation Performance	0.585	0.680
Knowledge-collecting	0.540	–
Knowledge-donating	0.739	–
Average	0.625	0.544
GOF	0.557	

As illustrated in Table 6, the average communality value is noted to be 0.625. This value is then used in conjunction with the R-squared score, and its square root is taken to determine the Goodness of Fit (GoF). With a GoF value of 0.557 > 0.36, the model demonstrates a good fit with the data, demonstrating its effectiveness in explaining empirical observations.

The R-squared metric determines how much of the variation in the dependent variable is explained by the independent variables. This measure is essential for evaluating how well a model performs. R-squared value of 0.75 indicates a high-quality model, 0.50 denotes a moderate model, and 0.25 suggests a lower-quality model (Juliandi, 2018). The values were calculated using SmartPLS 3.0, with detailed results provided in the tables and visual charts.

Table 7. R-squared

Variables	R-squared	R-squared adjusted
Absorptive Capacity	0.408	0.400
Innovation Performance	0.680	0.674

Table 7 shows how Knowledge-donating, Knowledge-collecting, and Absorptive Capacity affect Innovation Performance, yielding an R-squared of 0.680. This indicates that 68% of the variability in Innovation Performance can be attributed to these variables, with the remaining 32% explained by other factors. The influence of Knowledge Donating and Knowledge Collecting on Absorptive Capacity is reflected by R-squared value of 0.408, meaning these variables account for 40.8% of the variation, with other factors explaining the remaining 59.2%.

F^2 statistic assesses the degree to which exogenous variables affect the variance of endogenous variables, highlighting the strength of these relationships. F^2 score of 0.02 suggests a minor effect, 0.15 points to a moderate impact, and values of 0.35 or above denote a strong influence (Haryono, 2015). The computations were conducted using SmartPLS 3.0, with the outcomes depicted in the related tables and figures.

Table 8. F-square

Variables	Absorptive Capacity	Innovation Performance
Absorptive Capacity	–	0.715
Innovation Performance	–	–
Knowledge-collecting	0.073	0.064
Knowledge-donating	0.316	0.045

As shown in Table 8, Knowledge-donating has a minimal impact on Innovation Performance, with F^2 value of 0.045. In contrast, it moderately influences Absorptive Capacity, reflected by F^2 value of 0.316. The effect of Knowledge-collecting on Innovation Performance is also small, registering an F^2 value of 0.064, and its effect on Absorptive Capacity is similarly low, with F^2 value of 0.073. However, Absorptive Capacity significantly affects Innovation Performance, as indicated by a much higher F^2 value of 0.715, highlighting a strong relationship.

An in-depth evaluation was performed to examine the structural model's path coefficients structural model's path coefficients, assess the relationships' significance, and confirm the proposed hypoth-

Table 9. Path coefficient

Path coefficient	t-statistics	p-values
Absorptive Capacity → Innovation Performance	9.550	0.000
Knowledge-collecting → Absorptive Capacity	2.649	0.008
Knowledge-collecting → Innovation Performance	2.958	0.003
Knowledge-donating → Absorptive Capacity	5.464	0.000
Knowledge-donating → Innovation Performance	2.581	0.010

Table 10. Specific indirect effects

Path	t-statistics	p-values
Knowledge-collecting → Absorptive Capacity → Innovation Performance	2.428	0.016
Knowledge-donating → Absorptive Capacity → Innovation Performance	4.930	0.000

eses. This research investigates direct and indirect effects, with the findings presented in the accompanying path coefficient table.

As outlined in Table 9, the hypotheses testing results are summarized as follows: the analysis highlights a significant relationship between Knowledge-donating and Innovation Performance. The t-statistic of 2.581 > 1.96 reinforces the strength of this effect and the p-value of 0.010 < 0.05 leads to the rejection of the null hypothesis (Ho). The effect size of 0.156 suggests a noteworthy impact, with the positive coefficient indicating that Knowledge-donating is crucial for enhancing Innovation Performance in handicraft MSMEs in Medan, Indonesia. Concerning the influence of Knowledge-donating on Absorptive Capacity, the t-statistics of 5.464 > 1.96 supports its significance, while the p-value of 0.000 < 0.05 results in the rejection of Ho. With an effect size of 0.491, the positive coefficient confirms that Knowledge-donating significantly affects Absorptive Capacity in the handicraft MSMEs sector in Medan, Indonesia.

The analysis of Knowledge-collecting's effect on Innovation Performance reveals a t-statistics of 2.958 > 1.96, with a p-value of 0.003 < 0.05, which results in rejecting the null hypothesis (Ho). An effect size of 0.169 and a positive path coefficient indicate a substantial impact of Knowledge-collecting on Innovation Performance in these MSMEs. For Absorptive Capacity, the t-statistics of 2.649 > 1.96 and a p-value of 0.008 < 0.05 also lead to the rejection of Ho. With an effect size of 0.236 and a positive coefficient, Knowledge-collecting significantly influences Absorptive Capacity. Lastly, the relationship between Absorptive Capacity and Innovation Performance demonstrates a t-statistics of 9.550 > 1.96, with a p-value of 0.000 < 0.05, supporting the rejection of Ho. The effect size of 0.622 and a positive coefficient affirm that Absorptive Capacity significantly enhances Innovation Performance within these MSMEs.

As shown in Table 10, the indirect effects analysis reveals significant results. The relationship between Knowledge-donating and Innovation Performance, mediated by Absorptive Capacity, is supported by t-statistics of 4.930 > 1.96, indicating statistical significance. With a p-value of 0.000 < 0.05, the null hypothesis is rejected. An effect size of 0.306 confirms a substantial indirect impact of Knowledge-donating on Innovation Performance through Absorptive Capacity. Similarly, Knowledge- collecting also plays a significant role in enhancing Innovation Performance through Absorptive Capacity. The t-statistics of 2.428 > 1.96 and a p-value of 0.016 < 0.05 lead to rejecting the null hypothesis. The effect size of 0.147 affirms that knowledge Collecting significantly influences Innovation Performance via Absorptive Capacity.

4. DISCUSSION

The first hypothesis (*H1*) analysis, which examines the relationship between knowledge donating and absorptive capacity, demonstrates a significant impact of knowledge-donating on absorptive capacity. The t-statistics of 5.464 > 1.96 and the p-value < 0.05 confirm the statistical significance, confirming the relevance of this effect. This connection illustrates that knowledge-sharing behaviors benefit individuals and bolster the orga-

http://dx.doi.org/10.21511/ppm.23(2).2025.25

nization's capacity to absorb and utilize external knowledge. Such actions establish a strong basis for fostering innovation and ensuring long-term organizational growth. The results are consistent with earlier research by Wuryaningrat (2013) and Ranto (2015), which similarly highlighted the positive influence of knowledge-donating on absorptive capacity.

The testing of the second hypothesis (*H2*), which investigates the effect of knowledge-collecting on absorptive capacity, reveals that knowledge collecting has a significant impact on absorptive capacity ($2.649 > 1.96$; $p < 0.05$). This substantial influence highlights the importance of knowledge-collecting activities in strengthening an organization's ability to absorb and apply new information effectively. By enhancing the knowledge-collecting process, organizations can boost their competitiveness, facilitating quicker learning, more efficient innovation, and better adaptation to shifting market and technological conditions. The findings align with previous research by Wuryaningrat (2013), Balle et al. (2020), and Ranto (2015), which also demonstrated that knowledge-collecting has a significant effect on absorptive capacity, emphasizing its importance for organizational learning and growth.

The examination of the third hypothesis (*H3*), which assesses the impact of knowledge-donating on innovation performance, reveals that knowledge-donating significantly influences innovation performance ($2.581 > 1.96$; $p < 0.05$). This notable effect reinforces that knowledge sharing is vital in fostering sustainable and impactful innovation. When individuals actively contribute their knowledge, organizations can tap into valuable intellectual resources that drive the creation of novel ideas, enhance operational efficiency, and build a competitive edge in the marketplace. Organizations can strengthen their innovation capacity by cultivating a knowledge-sharing culture, ensuring sustained growth and success. The results are consistent with prior studies by Wuryaningrat (2013), Balle et al. (2020), Nugraha and Hartono (2022) and Ranto (2015), which similarly demonstrated the positive influence of knowledge-donating on innovation performance, emphasizing its critical role in driving organizational creativity and progress.

The evaluation of the fourth hypothesis (*H4*) examines the influence of knowledge-collecting on innovation performance ($2.958 > 1.96$; $p < 0.05$). This substantial effect affirms that knowledge-collecting is essential for driving effective and sustainable innovation. By actively sourcing information from diverse channels, organizations can enhance creativity, speed up innovation, and develop products or services that are both relevant and competitive. Implementing structured knowledge-collecting strategies enables organizations to stay agile and innovative, even amidst market and business landscape shifts. The results align with previous research Wuryaningrat (2013), Balle et al. (2020), Nugraha and Hartono (2022) and Ranto (2015), all of which demonstrate the significant effect of knowledge collecting on innovation performance, reinforcing the value in organizational development and success.

Besides, testing the fifth hypothesis (*H5*) regarding the impact of absorptive capacity on innovation performance reveals that absorptive capacity has a substantial effect on innovation performance ($9.550 > 1.96$; $p < 0.05$). This significant connection highlights the critical role of an organization's ability to absorb and apply external knowledge in driving successful innovations. Organizations with robust absorptive capacity can seize opportunities, enhance their competitive advantage, and create innovations that meet the evolving demands of the market. The findings of this study align with prior research by Kostopoulos et al. (2011), Carrasco-Carvajal et al. (2023), Tseng et al. (2011), and Sancho-Zamora et al. (2022) similarly indicate that absorptive capacity significantly influences innovation performance, further reinforcing its importance in the innovation process.

The analysis of the sixth hypothesis (*H6*), which analyses the effect of knowledge-donating on innovation performance mediated by absorptive capacity, reveals a significant indirect effect between knowledge-donating and innovation performance through absorptive capacity ($4.930 > 1.96$; $p < 0.05$). This relationship underscores the value of collaboration and effective knowledge utilization within organizations. Knowledge-donating is a source of "raw materials," providing critical information and insights that transform into innovations that add value when processed through absorptive capacity. Organizations that excel at managing this process

are better positioned to enhance their competitiveness, improve efficiency, and remain relevant in the market. The findings align with previous research by Wuryaningrat (2013) and Elier et al. (2022), demonstrating the significant impact of knowledge-donating on innovation performance through absorptive capacity, highlighting its role in the innovation process.

Lastly, the examination of the seventh hypothesis (*H7*), which investigates the impact of knowledge-collecting on innovation performance through absorptive capacity, demonstrates that knowledge-collecting significantly influences innovation performance via absorptive capacity (2.428 > 1.96; $p < 0.05$). This indicates that while knowledge-collecting is a crucial initial step in the innovation process, its true impact on innovation performance depends on the effectiveness of absorptive capacity. Organizations that can efficiently manage and integrate knowledge through their absorptive capacity can generate innovations that contribute to business success, enhanced competitiveness, and long-term growth. These findings are consistent with the research conducted by Elier et al. (2022) and Wuryaningrat (2013), which also indicate that knowledge-collecting has a significant effect on innovation performance through absorptive capacity, reinforcing the critical role of knowledge integration in driving innovation outcomes.

CONCLUSION

This study explores the effect of knowledge sharing on the innovation performance of handicraft MSMEs in Medan, Indonesia, which is mediated by absorptive capacity. The study's findings reveal that knowledge-donating significantly positively impacts innovation performance and absorptive capacity. Similarly, knowledge-collecting positively influences innovation performance and absorptive capacity. Moreover, absorptive capacity significantly enhances innovation performance among managers and owners of handicraft MSMEs in Medan, Indonesia. Indirect effects also show that knowledge-donating and knowledge-collecting positively impact innovation performance through the intermediary role of absorptive capacity in these MSMEs.

The practical implications of these findings suggest that MSMEs need to build a culture of knowledge sharing among owners, managers, and employees to improve their absorptive capacity. The government and relevant stakeholders also need to encourage training programs, collaborative networks, and access to information resources to accelerate the innovation process in the handicraft sector. Thus, strengthening knowledge sharing and absorptive capacity can be a key strategy in improving MSME competitiveness in the global market.

This study has limitations, especially in the choice of cross-sectional methodology. This method only collects the data once, so it cannot represent the whole phenomenon. Future research should use a longitudinal methodology to understand causal relationships. Besides, this study relied on the subjective judgment of MSME owners and managers, which could lead to bias. Future research should use objective metrics to assess innovation. The questionnaire was given directly to the respondents to reduce bias, but there are still limitations in absorbing the information. Future research should consider variables such as age, organizational culture, and trust for a more complete perspective on innovation.

AUTHOR CONTRIBUTIONS

Conceptualization: Satria Mirsya Affandy Nasution, Raihanah Daulay, Nadia Ika Purnama.
Data curation: Raihanah Daulay, Isma Alryani, Neni Liana Purba.
Formal analysis: Satria Mirsya Affandy Nasution, Raihanah Daulay, Nadia Ika Purnama, Isma Alryani, Neni Liana Purba.
Funding acquisition: Satria Mirsya Affandy Nasution, Nadia Ika Purnama.
Investigation: Satria Mirsya Affandy Nasution, Raihanah Daulay, Nadia Ika Purnama, Isma Alryani, Neni Liana Purba.

http://dx.doi.org/10.21511/ppm.23(2).2025.25

Methodology: Satria Mirsya Affandy Nasution, Raihanah Daulay, Nadia Ika Purnama.
Project administration: Satria Mirsya Affandy Nasution, Raihanah Daulay, Nadia Ika Purnama.
Resources: Raihanah Daulay, Isma Alryani, Neni Liana Purba.
Software: Isma Alryani, Neni Liana Purba.
Supervision: Satria Mirsya Affandy Nasution, Raihanah Daulay, Nadia Ika Purnama.
Validation: Raihanah Daulay, Isma Alryani, Neni Liana Purba.
Visualization: Satria Mirsya Affandy Nasution, Nadia Ika Purnama, Isma Alryani, Neni Liana Purba.
Writing – original draft: Satria Mirsya Affandy Nasution, Raihanah Daulay, Nadia Ika Purnama.
Writing – review & editing: Satria Mirsya Affandy Nasution, Raihanah Daulay, Nadia Ika Purnama, Isma Alryani, Neni Liana Purba.

ACKNOWLEDGMENT

The study was funded in 2024 under the Basic Research - Regular (PF-R) category by the Republic of Indonesia's Ministry of Education, Culture, Research and Technology. The administration of the Faculty of Economics and Business, as well as the staff of the Institute for Research and Community Service (LPPM) at Universitas Muhammadiyah Sumatera Utara, were also thanked, along with the other levels of administration at the university.

REFERENCES

1. Abourokbah, S. H., Mashat, R. M., & Salam, M. A. (2023). Role of Absorptive Capacity, Digital Capability, Agility, and Resilience in Supply Chain Innovation Performance. *Sustainability (Switzerland), 15*(4). https://doi.org/10.3390/su15043636
2. Ali, I., Musawir, A. U., & Ali, M. (2018). Impact of knowledge sharing and absorptive capacity on project performance: the moderating role of social processes. *Journal of Knowledge Management, 22*(2), 453-477. https://doi.org/10.1108/JKM-10-2016-0449
3. Balle, A. R., Oliveira, M., & Curado, C. M. M. (2020). Knowledge sharing and absorptive capacity: interdependency and complementarity. *Journal of Knowledge Management, 24*(8), 1943-1964. https://doi.org/10.1108/JKM-12-2019-0686
4. Barroga, E., & Matanguihan, G. J. (2022). A Practical Guide to Writing Quantitative and Qualitative Research Questions and Hypotheses in Scholarly Articles. *Journal of Korean Medical Science, 37*(16), 1-18. https://doi.org/10.3346/jkms.2022.37.e121
5. Becerra-Fernandez, I., & Sabherwal, R. (2014). *Knowledge Management: Systems and Processes*. Routledge.
6. Carrasco-Carvajal, O., García-Pérez-de-Lema, D., & Castillo-Vergara, M. (2023). Impact of innovation strategy, absorptive capacity, and open innovation on SME performance: A Chilean case study. *Journal of Open Innovation: Technology, Market, and Complexity, 9*(2), 100065. https://doi.org/10.1016/j.joitmc.2023.100065
7. Chang, W.-J., Liao, S.-H., & Wu, T.-T. (2017). Relationships among organizational culture, knowledge sharing, and innovation capability: a case of the automobile industry in Taiwan. *Knowledge Management Research & Practice, 15*(3), 471-490. https://doi.org/10.1057/s41275-016-0042-6
8. Chang, Y., Hughes, M., & Hotho, S. (2011). Internal and external antecedents of SMEs' innovation ambidexterity outcomes. *Management Decision, 49*(10), 1658-1676. https://doi.org/10.1108/00251741111183816
9. Cheung, G. W., Cooper-Thomas, H. D., Lau, R. S., & Wang, L. C. (2023). Reporting reliability, convergent and discriminant validity with structural equation modeling: A review and best-practice recommendations. *Asia Pacific Journal of Management, 41,* 745-783. https://doi.org/10.1007/s10490-023-09871-y
10. Chin, W. W. (1998). The Partial Least Squares Approach to Structural Formula Modeling. In G.A. Marcoulides (Ed.), *Modern methods for business research* (pp. 295-336). Lawrence Erlbaum Associates Publishers. Retrieved from https://psycnet.apa.org/record/1998-07269-010
11. Cohen, W. M., & Levinthal, D. A. (1990). Absorptive Capacity: A New Perspective on Learning and Innovation. *Administrative Science Quarterly, 35*(1), 128-152. https://doi.org/10.2307/2393553
12. Davenport, T. H., & Prusak, L. (1998). *Working Knowledge: How Organizations Manage What They Know*. Harvard Business School Press.
13. Elier, I., Kusumawardhany, P. A., & Setyawan, A. B. (2022). The Effect of Knowledge Sharing, Absorptive Capacity, and Individual Creativity on Innovation Performance in East Java Indonesia Manufacturing Companies. *Business and Finance Journal, 7*(2), 175-182. https://doi.org/10.33086/bfj.v7i2.3482

14. Fan, Y., Chen, J., Shirkey, G., John, R., Wu, S. R., Park, H., & Shao, C. (2016). Applications of structural equation modeling (SEM) in ecological studies: an updated review. *Ecological Processes, 5*(1), 19. https://doi.org/10.1186/s13717-016-0063-3

15. Grandinetti, R. (2016). Absorptive capacity and knowledge management in small and medium enterprises. *Knowledge Management Research and Practice, 14*(2), 159-168. https://doi.org/10.1057/kmrp.2016.2

16. Gupta, A. K., & Govindarajan, V. (2000). Knowledge flows within multinational corporations. *Strategic Management Journal, 21*(4), 473-496. https://doi.org/10.1002/(SICI)1097-0266(200004)21:4<473::AID-SMJ84>3.0.CO;2-I

17. Hair, J., Hult, G., Ringel, C., & Sartsedt, M. (2014). *A Primer on Partial Least Squares Structural Equation Modeling (PLS-SEM)*. Sage Publication Inc.

18. Hair, J., & Alamer, A. (2022). Partial Least Squares Structural Equation Modeling (PLS-SEM) in second language and education research: Guidelines using an applied example. *Research Methods in Applied Linguistics, 1*(3), 100027. https://doi.org/10.1016/j.rmal.2022.100027

19. Haryono, S. (2015). *Metode SEM Untuk Penelitian Manajemen Dengan AMOS LISREL PLS [SEM Method for Management Research with AMOS LISREL PLS]*. PT. Intermedia Personalia Utama.

20. Henseler, J., Ringle, C. M., & Sarstedt, M. (2015). A new criterion for assessing discriminant validity in variance-based structural equation modeling. *Journal of the Academy of Marketing Science, 43*(1), 115-135. https://doi.org/10.1007/s11747-014-0403-8

21. Hernández-Perlines, F., Ariza-Montes, A., Han, H., & Law, R. (2019). Innovative capacity, quality certification and performance in the hotel sector. *International Journal of Hospitality Management, 82,* 220-230. https://doi.org/10.1016/j.ijhm.2019.04.027

22. Juliandi, A. (2018). *Structural Equation Model Based Partial Least Squares (SEM PLS): Menggunakan Smart PLS*. Program Pascasarjana Universitas Batam. Retrieved from https://zenodo.org/records/2532119

23. Kabir, M. N. (2019). Innovation. In M.N. Kabir (Ed.), *Knowledge-Based Social Entrepreneurship: Understanding Knowledge Economy, Innovation, and the Future of Social Entrepreneurship* (pp. 163-204). Palgrave Macmillan US. https://doi.org/10.1057/978-1-137-34809-8_6

24. Kang, M., & Lee, M.-J. (2017). Absorptive capacity, knowledge sharing, and innovative behaviour of R&D employees. *Technology Analysis & Strategic Management, 29*(2), 219-232. https://doi.org/10.1080/09537325.2016.1211265

25. Khan, A., & Tao, M. (2022). Knowledge absorption capacity's efficacy to enhance innovation performance through big data analytics and digital platform capability. *Journal of Innovation and Knowledge, 7*(3). https://doi.org/10.1016/j.jik.2022.100201

26. Kostopoulos, K., Papalexandris, A., Papachroni, M., & Ioannou, G. (2011). Absorptive capacity, innovation, and financial performance. *Journal of Business Research, 64*(12), 1335-1343. https://doi.org/10.1016/j.jbusres.2010.12.005

27. Li, Y., Song, Y., Wang, J., & Li, C. (2019). Intellectual capital, knowledge sharing, and innovation performance: Evidence from the Chinese Construction Industry. *Sustainability (Switzerland), 11*(9). https://doi.org/10.3390/su11092713

28. Liao, S., Fei, W.-C., & Chen, C.-C. (2007). Knowledge sharing, absorptive capacity, and innovation capability: an empirical study of Taiwan's knowledge-intensive industries. *Journal of Information Science, 33*(3), 340-359. https://doi.org/10.1177/0165551506070739

29. Lim, W. M. (2024). A typology of validity: content, face, convergent, discriminant, nomological and predictive validity. *Journal of Trade Science, 12*(3), 155-179. https://doi.org/10.1108/jts-03-2024-0016

30. Lo, M. F., & Tian, F. (2020). Enhancing competitive advantage in Hong Kong higher education: Linking knowledge sharing, absorptive capacity and innovation capability. *Higher Education Quarterly, 74*(4), 426-441. https://doi.org/10.1111/hequ.12244

31. Muafi, M. (2020). A nexus among strategic orientation, social network, knowledge sharing, organizational innovation, and MSMEs performance. *Journal of Asian Finance, Economics and Business, 17*(6), 327-338. https://doi.org/10.13106/jafeb.2020.vol7.no6.327

32. Müller, J. M., Buliga, O., & Voigt, K. I. (2021). The role of absorptive capacity and innovation strategy in the design of industry 4.0 business Models – A comparison between SMEs and large enterprises. *European Management Journal, 39*(3), 333-343. https://doi.org/10.1016/j.emj.2020.01.002

33. Naqshbandi, M. M., & Jasimuddin, S. M. (2023). The linkage between open innovation, absorptive capacity and managerial ties: A cross-country perspective. *Journal of Innovation & Knowledge, 7*(2), 100167. https://doi.org/10.1016/j.jik.2022.100167

34. Nasution, M. I., Fahmi, M., Jufrizen, J., Muslih, M., & Prayogi, M. A. (2020). The Quality of Small and Medium Enterprises Performance Using the Structural Equation Model-Part Least Square (SEM-PLS). *Journal of Physics: Conference Series, 1477*(2020), 1-7. https://doi.org/10.1088/1742-6596/1477/5/052052

35. Nawaz, R., Hina, M., Sharma, V., Srivastava, S., & Briamonte, M. F. (2024). Unleashing knowledge arbitrage potential: empowering startups through knowledge management. *Journal of Knowledge Management, 28*(11), 221-254. https://doi.org/10.1108/JKM-06-2023-0503

36. Nham, T. P., Tran, N. H., & Nguyen, H. A. (2020). Knowledge sharing and innovation capability at both individual

http://dx.doi.org/10.21511/ppm.23(2).2025.25

and organizational levels: An empirical study from Vietnam's telecommunication companies. *Management and Marketing, 15*(2), 275-301. https://doi.org/10.2478/mmcks-2020-0017

37. Nugraha, O. R., & Hartono, A. (2022). Peran Knowledge Sharing dan Absorptive Capacity dalam Meningkatkan Kinerja Inovasi UKM [The Role of Knowledge Sharing and Absorptive Capacity in Improving SME Innovation Performance]. *EKOMBIS REVIEW: Jurnal Ilmiah Ekonomi Dan Bisnis [EKOMBIS REVIEW: Scientific Journal of Economics and Business], 10*(1), 106-115. (In Indonesian). https://doi.org/10.37676/ekombis.v10i1.1844

38. Ortigueira-Sánchez, L. C., Stein, W. C., Risco-Martínez, S. L., & Ricalde, M. F. (2020). The impact of absorptive capacity on innovation in Peru. *Journal of Technology Management and Innovation, 15*(4), 19-29. https://doi.org/10.4067/s0718-27242020000400019

39. Ranto, D. W. P. (2015). Pengaruh knowledge sharing terhadap kemampuan inovasi Usaha Kecil Menengah (UKM) di Yogyakarta dengan absorptive capacity sebagai variabel intervening [The influence of knowledge sharing on the innovation capability of Small and Medium Enterprises (SMEs) in Yogyakarta with absorptive capacity as an intervening variable.]. *Jurnal Siasat Bisnis [Business Strategy Journal], 19*(2), 132-145. (In Indonesian). https://doi.org/10.20885/jsb.vol19.iss2.art4

40. Ratasuk, A., & Charoensukmongkol, P. (2020). Does cultural intelligence promote cross-cultural teams' knowledge sharing and innovation in the restaurant business? *Asia-Pacific Journal of Business Administration, 12*(2), 183-203. https://doi.org/10.1108/APJBA-05-2019-0109

41. Sancho-Zamora, R., Hernández-Perlines, F., Peña-García, I., & Gutiérrez-Broncano, S. (2022). The Impact of Absorptive Capacity on Innovation: The Mediating Role of Organizational Learning. *International Journal of Environmental Research and Public Health, 19*(2). https://doi.org/10.3390/ijerph19020842

42. Soto-Acosta, P., Popa, S., & Palacios-Marqués, D. (2017). Social web knowledge sharing and innovation performance in knowledge-intensive manufacturing SMEs. *The Journal of Technology Transfer, 42*(2), 425-440. https://doi.org/10.1007/s10961-016-9498-z

43. Stelmaszczyk, M. (2020). How absorptive capacity and organisational learning orientation interact to enable innovation capability? An empirical examination. *Entrepreneurial Business and Economics Review, 8*(1), 7-32. https://doi.org/10.15678/EBER.2020.080101

44. Taber, K. S. (2018). The Use of Cronbach's Alpha When Developing and Reporting Research Instruments in Science Education. *Research in Science Education, 48*(6), 1273-1296. https://doi.org/10.1007/s11165-016-9602-2

45. Tassabehji, R., Mishra, J. L., & Dominguez-Péry, C. (2019). Knowledge sharing for innovation performance improvement in micro/SMEs: an insight from the creative sector. *Production Planning & Control, 30*(10-12), 935-950. https://doi.org/10.1080/09537287.2019.1582101

46. Teece, D. J. (2018). Business models and dynamic capabilities. *Long Range Planning, 51*(1), 40-49. https://doi.org/10.1016/j.lrp.2017.06.007

47. Tseng, C., Chang Pai, D., & Hung, C. (2011). Knowledge absorptive capacity and innovation performance in KIBS. *Journal of Knowledge Management, 15*(6), 971-983. https://doi.org/10.1108/13673271111179316

48. van den Hooff, B., & de Ridder, J. A. (2004). Knowledge sharing in context: the influence of organizational commitment, communication climate and CMC use on knowledge sharing. *Journal of Knowledge Management, 8*(6), 117-130.

49. Wang, J., Yang, J., & Xue, Y. (2017). Subjective well-being, knowledge sharing and individual innovation behavior. *Leadership & Organization Development Journal, 38*(8), 1110-1127. https://doi.org/10.1108/LODJ-10-2015-0235

50. Wuryaningrat, N. F. (2013). Knowledge sharing, absorptive capacity and innovation capabilities: An empirical study on small and medium enterprises in North Sulawesi, Indonesia. *Gadjah Mada International Journal of Business, 15*(1), 61-78. https://doi.org/10.22146/gamaijb.5402

51. Xie, X., Zou, H., & Qi, G. (2018). Knowledge absorptive capacity and innovation performance in high-tech companies: A multi-mediating analysis. *Journal of Business Research, 88,* 289-297. https://doi.org/10.1016/j.jbusres.2018.01.019

52. Zahra, S. A., & George, G. (2002). Absorptive Capacity: A Review, Reconceptualization, and Extension. *The Academy of Management Review, 27*(2), 185-203. Retrieved from https://www.jstor.org/stable/4134351

53. Zamiri, M., & Esmaeili, A. (2024). Methods and Technologies for Supporting Knowledge Sharing within Learning Communities: A Systematic Literature Review. *Administrative Sciences, 14*(1), 17. https://doi.org/10.3390/admsci14010017

APPENDIX A

Table A1. Questionnaire survey

No.	Statement	Please put a tick mark (✓) in the appropriate box				
		Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
	INNOVATION PERFORMANCE					
I	MSMEs owners and managers develop new products.					
	MSMEs owners and managers always have creative ideas for process innovation.					
	MSMEs owners and/or managers always develop management systems.					
	MSMEs owners and/or managers always develop marketing methods.					
	KNOWLEDGE-DONATING					
II	I always inform other MSMEs colleagues about new things.					
	I share information about the job I have with my colleagues.					
	My coworkers need to be informed about the work I am undertaking.					
	I frequently inform my colleagues of my activities.					
	KNOWLEDGE-COLLECTING					
III	When I require certain expertise, I ask my coworkers to teach me about it.					
	I want to know about what my colleagues know.					
	When I want to learn something, I ask my coworkers about their skills.					
	When my colleagues are experts, I ask them to teach me how.					
	ABSORPTIVE CAPACITY					
IV	MSMEs owners, managers, and employees work together to hone skills and gain new knowledge.					
	MSMEs owners and/or managers, and employees occasionally collaborate or cooperate with other MSMEs					
	MSMEs owners and/or managers and employees understand the business environment in the industry.					
	MSMEs owners and/or managers and employees can read market opportunities.					
	MSMEs owners and/or managers and employees prepare skills and knowledge for the future.					
	MSMEs owners and/or managers and employees are well aware of the importance of knowledge					
	MSMEs owners and/or managers and employees are responsive to customer wishes.					
	MSMEs owners and/or managers and employees have a clear division of tasks and responsibilities.					

http://dx.doi.org/10.21511/ppm.23(2).2025.25