Cross-border Knowledge Search in Fostering Indonesian Batik Innovation: The Sequential Mediation of Knowledge Absorptive Capacity and Organizational Agility

Widiya Dewi Anjaningrum[1*], Widi Dewi Ruspitasari[2], Risa Santoso[3], Alma Pia G. Reyes[4], Khriz N. Fernandez[5]
widiya.dewi.a@asia.ac.id, wididewi@asia.ac.id, risasantoso@asia.ac.id, apgarcia@ineust.ph.education, khrizken28@ineust.ph.education
*Corresponding author. Email: widiya.dewi.a@asia.ac.id[1]
[1,2,3]Institut Teknologi dan Bisnis Asia Malang, Indonesia
[4,5]Nueva Ecija University of Science and Technology, Philippines

Abstract. Batik, a prominent textile product of Indonesia, exhibits weakness in its innovation. The main aim of this study is to explore the extent to which cross-border knowledge search, mediated serially by absorptive capacity and organizational agility, enhances the performance of Batik innovation. The study population consisted of 815 small Batik businesses registered in the BBKB Ministry of Industry of the Republic of Indonesia. A total of 268 small Batik businesses were selected using random sampling methods. Online questionnaires collected quantitative data, which PLS-SEM subsequently analyzed from both the outer and inner model perspectives. The results suggest that cross-border knowledge search can greatly improve innovation performance, with absorptive capacity and organizational agility acting as sequential mediation. As small firms pursue more knowledge, they can better assimilate it as a foundation for navigating VUCA; additionally, the more flexible the organisation, the more successful it can be in innovation. Future research is recommended to elucidate the role of digital technology in facilitating the search, processing, and dissemination of knowledge to foster innovation in the contemporary digital landscape.

Keywords: Cross-border Knowledge Search, Absorptive Capacity, Organizational Agility, Innovation Performance, Batik.

1 Introduction

Batik symbolizes a meaningful textile export product for Indonesia, particularly following its designation as an Intangible World Heritage of Humanity by UNESCO in 2009. The volume and value of Indonesian textile exports significantly declined in 2020 due to the Covid-19 pandemic, which weakened the global economy and diminished consumer purchasing power. In 2021, textile exports experienced a significant increase, although both the volume and value remain below 2019 levels. Notably, the export volume in 2021 surpassed that of 2018. The volume and value of exports, which had previously returned to high levels, experienced a decline once more in 2022 [1]

This reduction in 2022 after normal sales in 2021 may result from insufficient innovation which indicates that sustainable batik manufacturing remains inadequate in both quantity and

BISTIC 2025, July 30, Malang, Indonesia

DOI 10.4108/eai.30-7-2025.2360550

innovation, particularly with advancements in clean, aesthetically appealing, and ecologically sustainable batik [2]. Indeed, innovation serves as the competitive edge for corporate entities navigating intense rivalry in a rapidly evolving landscape in the post-digital pandemic era [3] [4] [5] SMEs may use their inventive capacity to grow their firm despite a significant local market slump, since innovation enables items to access the worldwide market [6].

Nevertheless, enhancing innovation potential is a formidable obstacle [7]. Furthermore, the batik sector in Indonesia mostly consists of small enterprises, which face several constraints in implementing innovation, particularly with financial and human resource. Consequently, it is essential to assess the innovation performance of Batik SMEs in Indonesia.

[8] highlight the ability of knowledge management to transform and adjust to novel circumstances, while also fostering faster, better, and more intelligent innovation. The new idea of Knowledge-Based Dynamic Capabilities (KBDC) has become a key part of today's business and management studies, showing how knowledge can be effectively used to improve skills and adaptability. KBDC places an emphasis on knowledge and knowledge-related behaviours as essential to successful innovation performance, drawing on the theoretical foundations of the Resource-Based View (RBV) and dynamic capacities [9].

Meanwhile, if the company's internal resources are inadequate to meet its knowledge needs, then it becomes urgent for the company to do cross-border knowledge searches [10]. Cross border knowledge management enhances the quality of innovation inside organizations [11]. Consequently, it is reasonable to conjecture that a strong correlation exists between cross-border knowledge management activities and innovation performance. Cross-border knowledge significantly influences innovation performance [12]. Cross-border Knowledge Search of organizations can bring heterogeneous knowledge to the company, which is conducive to generating new ideas [13]. Information acquisition has emerged as a crucial strategy for organizations to get diverse information, bridge knowledge gaps, and adapt to their environment, eventually fostering innovation [14].

An empirical gap exists in another study indicating that cross-border knowledge does not consistently confer innovation advantages to companies [15], necessitating an examination of the underlying conditions that affect the impact of cross-border knowledge on corporate innovation performance. Research revealed that a firm's capacity to assimilate many forms of information significantly enhances its agility; when a company increases its knowledge absorption, it becomes more adaptable to changes, hence augmenting its innovation performance [16]. Recent research demonstrates that a company's knowledge base affects its agility in navigating the VUCA environment, which leads to innovation [14].

Consequently, proficient information search enables firms to be more agile in addressing VUCA, hence influencing the resultant innovation. Nevertheless, several studies highlight that knowledge search alone is not powerful enough enhance organizational agility or foster innovation; the company's absorptive capacity for knowledge is crucial in handling incoming information [16] [17]. The innovation process requires a company to be able to absorb new knowledge; therefore, technology licensing is not a separate task, as its link to this ability greatly affects how well the company performs [18]. A crucial aspect of innovation is a company's ability to absorb acquired information [19]. Several studies have indicated that the extent of absorptive capacity may enhance organizational agility [20], so absorptive capacity mediates the relationship between knowledge search and innovation performance [17].

This research introduces a new management approach to boost innovation by using cross-border knowledge, focusing on building the ability to absorb new information, and being agile. The research conceptual model chart (Fig. 1) illustrates the framework and includes 9 research hypotheses.

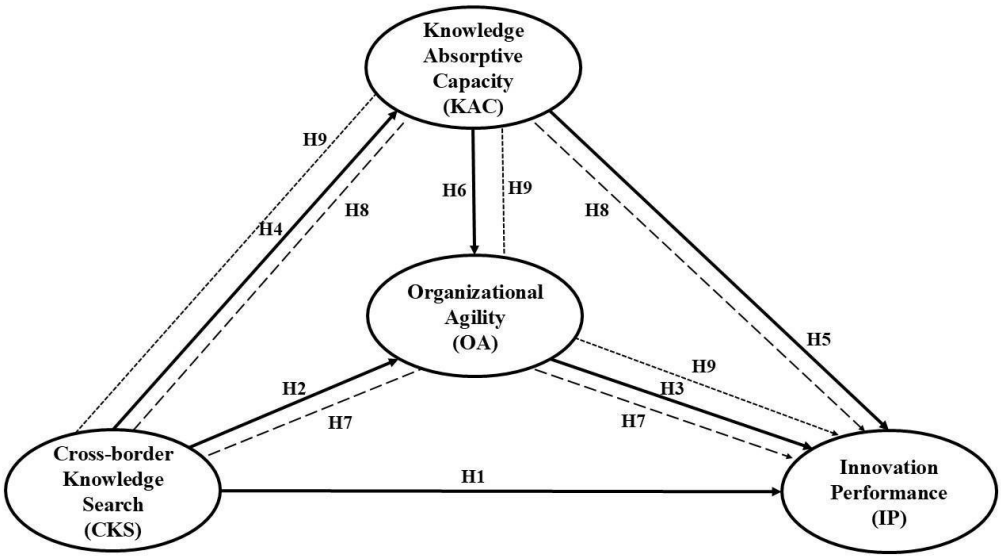

Fig. 1. Conceptual Model

Research Hypotheses

H1: Small enterprises' innovation performance may be enhanced by actively seeking cross-border knowledge.

H2: Cross-border knowledge search levels correlate with small enterprises' agility in the face of VUCA.

H3: Small enterprises' innovation performance will improve in direct proportion to its agility.

H4: Cross-border knowledge search positively correlates with the knowledge absorption capacity of small enterprises.

H5: The ability of small enterprises to maximize innovation performance is positively correlated with the strength of their knowledge absorption capacity.

H6: The stronger a small enterprise's absorption of knowledge, the more agile the organization will be.

H7: If they are well-prepared to deal with VUCA, small enterprises may maximize innovation with a high degree of cross-border knowledge search.

H8: With a good knowledge absorption capacity, small enterprises may maximize innovation to a greater extent when cross-border knowledge search is high.

H9: The ability to quickly adapt to volatile, uncertain, complex, and ambiguous (VUCA) situations to innovate is directly correlated to the degree to which an organization's cross-border knowledge search is robust and well-supported by its knowledge absorption capacity.

2 Method

This research used a quantitative approach, gathering data through online surveys, which were then examined for accuracy and reliability using PLS-SEM in SmartPLS version 4.1.1.2. The research population included all small enterprises engaged in batik production in Indonesia registered with the Center for Crafts and Batik of the Indonesian Ministry of Industry, amounting to 815 entities. A sample of 268 small batik enterprises was chosen using a simple random sampling method and contacted over WhatsApp. We assessed each study variable using numerous items, as presented in Table 1.

Table 1. Variable Measurement

Variables	Items	Source
Cross-border Knowledge Serach	(1) consumer preferences, (2) market trends, (3) distribution channels, (4) regulations, (5) production technology, (6) information and communication technology.	[10]
Knowledge Absorptive Capacity	(1) acquisition, (2) assimilation, (3) transformation, (4) exploitation	[16][21] [22] [23]
Organizational Agility	(1) responsiveness to change, (2) operational flexibility, (3) decision-making speed, (4) capacity to capitalize on opportunities.	[24] [25]
Innovation Performance	(1) employee-driven innovation initiatives, (2) investment in research and development, (3) quantity of successfully launched innovative goods, (4) market share of innovative products, (5) velocity of innovative items entering the market.	[26] [27] [21]

Source: Created by the authors (2025)

3 Result and Discussion

Result

The survey focused on 10 regions that have the most batik SMEs in Indonesia. According to data from the BBKB of the Indonesian Ministry of Industry (2024), there are Central Java (80 respondents, 29.9%), East Java (52 respondents, 19.3%), Jambi (39 respondents, 14.5%), DI Yogyakarta (33 respondents, 12.2%), North Kalimantan (17 respondents, 6.2%), South

Kalimantan (16 respondents, 6.1%), West Sumatra (12 respondents, 4.5%), Bengkulu (8 respondents, 3.1%), West Java (6 respondents, 2.4%), and East Kalimantan (5 respondents, 1.8%).

Regarding gender, there were 123 male respondents (45.9%) and 145 female respondents (54.1%). In terms of responder education, 118 individuals had a high school diploma (44%), 32 held a diploma (11.9%), 105 obtained a bachelor's degree (39.2%), and 13 achieved a master's diploma (4.9%). Of the responders, 67 were under 30 years old (25%), 96 were between 30 and 50 years old (35.8%), and 105 were over 50 years old (39.2%).

PLS-SEM Outer Model Measurement

The evaluation of the research tool looked at how well it measured what it was supposed to, checking both convergent and discriminant validity, and also tested how reliable it was in measuring the outer PLS-SEM model. The validity of the research instrument was assessed by examining the loading factor values of each latent construct measuring item, all of which exceeded 0.7 (refer to Figure 1), along with the AVE values that were greater than 0.5 (refer to Table 2). It was also valid because the Fornell-Larcker value was higher than the correlation values between the different latent constructs (see Table 3), and all HTMT values were below 0.9 (see Table 4). Additionally, the cross-loading value of each item against the intended construct was greater than the cross-loading value against other constructs (see Table 5). In the meantime, the assessment of reliability was conducted using the Cronbach's alpha value, which should exceed 0.6, and composite reliability, which should be greater than 0.8 (refer to Table 2).

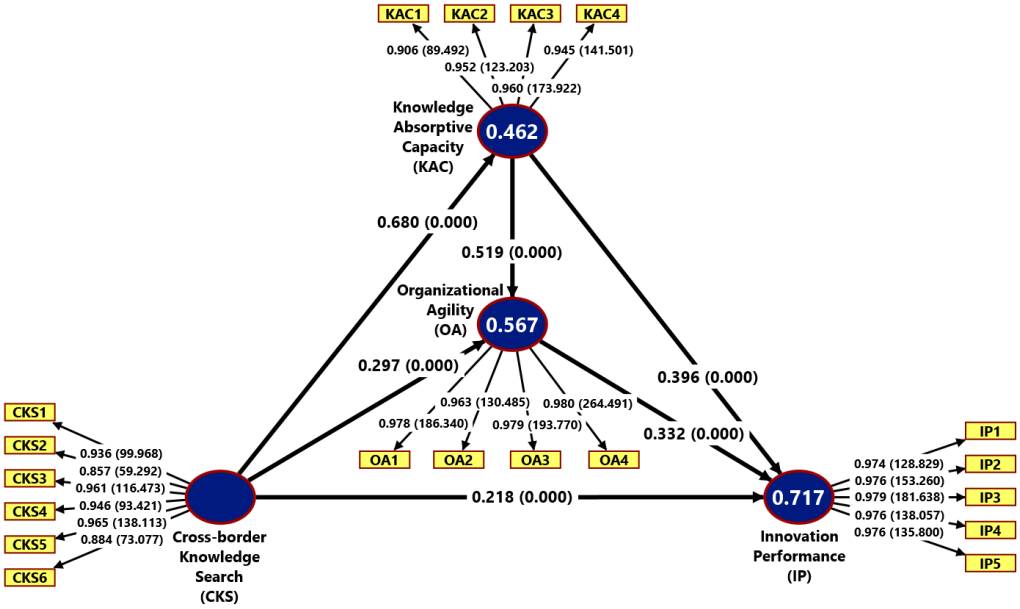

Fig. 1. PLS-SEM Graphical Output of SmartPLS version 4.1.1.3 (2025)

Table 2. Construct Validity and Reliability

Construct	Cronbach's alpha	CR. (rho_a)	CR. (rho_c)	AVE
CKS	0.966	0.971	0.973	0.857
IP	0.988	0.988	0.990	0.953
KAC	0.957	0.958	0.969	0.886
OA	0.983	0.983	0.987	0.951

Source: SmartPLS version 4.1.1.3 Output (2025)

Table 3. Fornell-Larcker Criterion

Construct	CKS	KAC	OA	IP
CKS	**0.926**	0.680	0.297	0.218
KAC		**0.941**	0.519	0.396
OA			**0.975**	0.332
IP				**0.976**

Source: SmartPLS version 4.1.1.3 Output (2025)

Table 4. HTMT

Construct's Relationship	HTMT
IP <-> CKS	0.716
KAC <-> CKS	0.703
KAC <-> IP	0.806
OA <-> CKS	0.662
OA <-> IP	0.771
OA <-> KA)	0.742

Source: SmartPLS version 4.1.1.3 Output (2025)

Table 5. Cross-Loading

Items	CKS	IP	KAC	OA
CKS1	**0.936**	0.611	0.614	0.609
CKS2	**0.857**	0.536	0.531	0.482
CKS3	**0.961**	0.695	0.652	0.606
CKS4	**0.946**	0.660	0.610	0.568
CKS5	**0.965**	0.717	0.658	0.623
CKS6	**0.884**	0.665	0.688	0.692
IP1	0.684	**0.974**	0.745	0.728
IP2	0.659	**0.976**	0.765	0.744
IP3	0.713	**0.979**	0.774	0.746
IP4	0.678	**0.976**	0.778	0.758
IP5	0.700	**0.976**	0.765	0.730
KAC1	0.659	0.735	**0.906**	0.600

Items	CKS	IP	KAC	OA
KAC2	0.599	0.704	**0.952**	0.683
KAC3	0.641	0.737	**0.960**	0.692
KAC4	0.657	0.773	**0.945**	0.733
OA1	0.615	0.752	0.707	**0.978**
OA2	0.636	0.725	0.698	**0.963**
OA3	0.640	0.757	0.702	**0.979**
OA4	0.641	0.729	0.704	**0.980**

Source: SmartPLS version 4.1.1.3 Output (2025)

PLS-SEM Inner Model Measurement

The inner model assessment is used to evaluate the viability of the PLS-SEM model. An R-square value over 0.67 indicates a high effect of the exogenous on the endogenous latent construct, while a value between 0.33 and 0.67 denotes a moderate influence [28]. The R-square value is shown inside the dark blue ellipse symbol in Figure 1. The R-square value for KAC is 0.462, meaning that about 46.2% of KAC is explained by CKS (moderate influence); the R-square value for OA is 0.567, showing that around 56.7% of OA is explained by CKS and KAC (moderate influence); and the R-square value for IP is 0.717, indicating that about 71.7% of IP is explained by CKS, KAC, and OA (strong influence).

Hypotheses Test

This study's hypothesis was evaluated using the t-test. A t-statistic value greater than 1.96 (the standard z-score for a 5% significance level) and a p-value less than 0.05 showed that exogenous constructs have a significant impact on the endogenous construct. In the meantime, the path coefficient reflects the direction of that influence, indicating whether it is positive or negative. Figure 2 displays the results of the hypothesis test, showing numbers along the lines that link the hidden constructs; the path coefficients are the numbers outside the brackets, and the p-values are the numbers inside the brackets. The outcome of the hypothesis testing is presented in Table 4 for further examination. The main structural model of PLS-SEM is based on the conceptual model and the path coefficient values found in Table 6 and Fig. 1, which include:

Path.1: KAC = 0.680 CKS + e_1

Path.2: OA = 0.297 CKS + 0.519 KAC +e_2

Path.3: IP = 0.218 CKS + 0.396 KAC + 0.332 OA + e_3

where KAC is Knowledge Absorptive Capacity, CKS is Cross-border Knowledge Search, OA is Organizational Agility, and IP is Innovation Performance, while e is error term.

Table 6. Hypotheses Test Results

	Path Coef.	T statistics	P values	Inference
Direct Influences				
CKS -> IP	0.218	3.884	0.000	(+) Sig.; H1 Supported
CKS -> OA	0.297	5.320	0.000	(+) Sig.; H2 Supported
CKS -> KAC	0.680	19.858	0.000	(+) Sig.; H4 Supported
OA -> IP	0.332	7.546	0.000	(+) Sig.; H3 Supported

	Path Coef.	T statistics	P values	Inference
KAC -> IP	0.396	8.407	0.000	(+) Sig.; H5 Supported
KAC -> OA	0.519	9.931	0.000	(+) Sig.; H6 Supported
Indirect Influences				
CKS -> OA -> IP	0.099	5.036	0.000	(+) Sig.; H7 Supported Partial Mediation
CKS -> KAC -> IP	0.269	7.980	0.000	(+) Sig.; H8 Supported Partial Mediation
CKS -> KAC -> OA -> IP	0.117	6.123	0.000	(+) Sig.; H9 Supported Sequential Mediation

Source: SmartPLS version 4.1.1.3 Output (2025)

The statistical analysis indicates that CKS have a significant effect on IP, evidenced by a path coefficient value of 0.218 (positive), a t-statistics value of 3.884 (exceeding 1.96), and a p-value of 0.000 (less than 0.05). The results substantiate the initial research hypothesis (H1), indicating that CKS has a direct positive impact on IP. Simultaneously, CKS demonstrates a substantial effect on OA, indicated by a path coefficient of 0.297 (positive), a t-statistics value of 5.320 (exceeding 1.96), and a p-value of 0.000 (below 0.05). The findings substantiate the second research hypothesis (H2), indicating that CKS has a direct positive impact on OA. CKS is shown to significantly affect KAC, with a path coefficient of 0.680 (positive), a t-statistics value of 19.858 (which is greater than 1.96), and a p-value of 0.000 (which is less than 0.05). The findings substantiate the third research hypothesis (H3), indicating that CKS has a direct positive impact on KAC.

The next results show that OA strongly affects IP, with a path coefficient of 0.332 (positive), a t-statistics value of 7.546 (which is higher than 1.96), and a p-value of 0.000 (which is less than 0.05). The results confirm the fourth research hypothesis (H4), demonstrating that OA exerts a direct positive influence on IP. KAC has a notable effect on IP, evidenced by a path coefficient of 0.396 (positive), a t-statistics value of 8.407 (exceeding 1.96), and a p-value of 0.000 (below 0.05). The results confirm the fifth research hypothesis (H5), demonstrating that KAC exerts a direct positive influence on IP. KAC can significantly improve OA, shown by a path coefficient of 0.519 (positive), a t-statistics value of 9.931 (which is more than 1.96), and a p-value of 0.000 (which is less than 0.05). The results confirm the sixth research hypothesis (H6), demonstrating that KAC exerts a direct positive influence on OA.

Later, the indirect impact of CKS on IP through OA is significant, with an indirect path coefficient of 0.099 (positive), a t-statistics value of 5.036 (>1.96), and a p-value of 0.000 (<0.05). Thus, OA was partial mediation. The results confirm the seventh research hypothesis (H7), demonstrating that CKS exerts an indirect positive influence on IP through OA as mediation. Furthermore, the indirect impact of CKS on IP through KAC is significant, with an indirect path coefficient of 0.269 (positive), a t-statistics value of 7.980 (>1.96), and a p-value of 0.000 (<0.05), implying KAC is partial mediation. The results confirm the eighth research hypothesis (H8), demonstrating that CKS exerts an indirect positive influence on IP through KAC as mediation. Lastly, the indirect impact of CKS on IP through KAC and OA sequentially is significant, with an indirect path coefficient of 0.117 (positive), a t-statistics value of 6.123 (>1.96), and a p-value of 0.000 (<0.05). Thus, it indicates that KAC and OA are sequential mediations. The results confirm the ninth research hypothesis (H9), demonstrating that CKS exerts an indirect positive influence on IP through KAC and OA as sequential mediations.

The subsequent analysis reveals that the indirect effect of CKS on IP through OA is significant, evidenced by an indirect path coefficient of 0.099 (positive), a t-statistics value of 5.036 (exceeding 1.96), and a p-value of 0.000 (below 0.05). Therefore, OA exhibited characteristics of partial mediation. The findings validate the seventh research hypothesis (H7), indicating that CKS has an indirect positive effect on IP, mediated by OA. Additionally, the indirect influence of CKS on IP via KAC is significant, evidenced by an indirect path coefficient of 0.269 (positive), a t-statistics value of 7.980 (>1.96), and a p-value of 0.000 (<0.05), indicating that KAC serves as a partial mediation. The findings validate the eighth research hypothesis (H8), indicating that CKS has an indirect positive effect on IP, mediated by KAC. Finally, the indirect effect of CKS on IP through KAC and OA is significant, showing an indirect path coefficient of 0.117 (positive), a t-statistics value of 6.123 (which is greater than 1.96), and a p-value of 0.000 (which is less than 0.05). This evidence suggests that KAC and OA function as sequential mediation. The results confirm the ninth research hypothesis (H9), showing that CKS positively influences IP through KAC and OA as sequential mediations.

4 Discussion

This research highlights the significant direct impact of cross-border knowledge searches on the innovation performance of small batik enterprises in Indonesia. The greater the willingness of small enterprises to acquire knowledge from external sources, including international ones – in this digital age of readily available information – the better their innovation performance will be. Even more intriguing is the fact that this study's findings demonstrate that knowledge absorptive capapacity and organizational agility mediate the link between cross-border knowledge search and innovation performance in a sequential order. Small batik enterprises may gain more information if they actively seek it out. The theory of Knowledge-Based Dynamic Capabilities (KBDC) explains how knowledge management can transform and adapt to new circumstances, particularly when dealing with VUCA. With existing knowledge, a company can improve skills and adaptability [8].

In today's fast-paced world, when internal resources aren't enough to accomplish innovation, every organization is encouraged to seek cross-border expertise, according to (T. [29], which is consistent with the results of this research. An organization's innovation may be greatly enhanced by cross-border knowledge management [11]. Therefore, the high correlation between innovation performance and cross-border knowledge management operations is not surprising. Cross-border knowledge has a substantial impact on innovation performance [12]. Organizational knowledge searching across borders may provide diverse perspectives to the company, which helps with ideation [13]. To innovate, adapt to new settings, and get different information, firms are increasingly turning to information-seeking strategies [14].

However, this finding contradicts another study that found organizations did not always benefit from cross-border expertise in terms of innovation [15]. But this study's findings still show that information absorptive aptitude is crucial for optimum knowledge search, which in turn increases innovation. Knowledge absorption makes a firm more responsive to change, which in turn improves its innovation performance [16]. Agility is directly proportional to a company's ability to absorb various types of information. In addition, the findings of this study corroborate those of other studies that found that the knowledge base of an organization influences its agility in navigating the VUCA environment, which in turn leads to creativity [14]. Consequently, businesses are able to cope with VUCA with more agility thanks to professional information search, which impacts the innovation that follows.

An organization's ability to absorb new information is crucial for its agility in generating innovation [16][17]. Optimal knowledge search may enhance this capability. In addition, in the process of achieving innovation performance, absorptive capacity is needed to absorb new information; this can be assisted by existing technology [18]. By assimilating new knowledge, companies tend to be more agile and able to innovate [19], so that absorptive capacity mediates the relationship between knowledge search and innovation performance [20][17].

Theoretical and Managerial Implication

This study's findings provide theoretical insights into the constraints of strategic management theory from the perspective of Knowledge-Based Dynamic Capabilities (KBDC), which integrates Resource-Based Theory (RBV) and Dynamic Capabilities (DC). This research emphasizes the need for small enterprises in developing nations to leverage resources via cross-border knowledge exploration to achieve superior innovation performance. Moreover, robust knowledge acquisition is essential to ensure that the pursuit of information is fruitful and enhances company agility in navigating VUCA conditions. Consequently, the conceptual model demonstrates that the efficacy of innovation is contingent upon transnational knowledge acquisition via absorptive ability and organizational agility. KBDC may provide useful and supplementary insights to comprehend the factors influencing the capacity of enterprises to seek knowledge for innovation.

The managerial implications for small batik businesses in Indonesia are to achieve high innovation performance, which is reflected by employees' high initiative in innovation, the owner's willingness to budget a certain amount of funds to invest in research and development, the number of innovative products successfully launched, their market share increasing, and their ability to quickly enter the market. Consumer preferences, market trends, distribution networks, legislation, manufacturing technology, and widely utilized ICT are vital to know. Small firms will be more agile in handling VUCA with more information absorbed due to greater knowledge search. Small organizations will be more adaptable, agile, and able to make quick choices and capitalize on chances to improve innovative performance.

5 Conclusion

This research lends credence to the idea that, within a strategic framework, there is a connection between cross-border knowledge search and factors like organizational agility, innovation performance, and absorption capacity. Based on the results, small firms may improve their innovation performance by actively seeking out cross-border information and using a broad absorptive capacity. This will make them more nimble in the face of volatile, uncertain, complex, and ambiguous (VUCA) environments, and finally, they will attain high innovation. This study is limited by its exclusion of micro and medium batik companies, whose management practices differ from those of small companies. Consequently, the findings cannot be generalized to businesses of both scales. Online surveys limit researchers' ability to control the demographics of respondents, raising concerns about whether participants accurately represent the relevant stakeholders in the company. A notable limitation is the framework's failure to incorporate the concept of digitalization, despite the transition into the digital era and the emergence of Society 5.0. Additional research is recommended to elucidate the role of digital technology in facilitating the search, processing, and dissemination of knowledge to foster innovation in the contemporary digital landscape.

Acknowledgement.

The research team would like to express their profound appreciation to the Institute for Research and Community Service (LPPM) of Institut Teknologi dan Bisnis Asia Malang, Indonesia, and Research Services Department, Office of the Vice President for Research, Extension and Training - the College of Management and Business Technology, Nueva Ecija University of Science and Technology Philippines, for their financial support through the International Collaborative Research scheme for the 2025 fiscal year with contract number: 0191/B.1/LP2M/ITB-ASIA/VI/2025.

References

[1] Ahdiat, A. (2023, March 17). Volume Ekspor Tekstil Turun pada 2022, Lebih Rendah dari Masa Pandemi. *Databoks.Katadata.Co.Id*. https://databoks.katadata.co.id/perdagangan/statistik/7ec32e2e27b99ff/volume-ekspor-tekstil-turun-pada-2022-lebih-rendah-dari-masa-pandemi

[2] Indarti, Rahayu, I. A. T., & Peng, L. H. (2020). Sustainable Batik Production: Review and Research Framework. *International Conference on Research and Academic Community Services (ICRACOS 2019)*, *390*(Icracos 2019), 66–72. https://doi.org/10.2991/icracos-19.2020.14

[3] Anjaningrum, W. D., Hermawati, A., Yogatama, A. N., & Puji, R. (2021). Creative Industry in the Post-Pandemic Digital Era : Meaningful Incubation , Customer Focus , and High Innovation as Strategies to Compete. *International Conference of Economic , Business, and Entrepreneurship (ICEBE)*, 2–8. https://doi.org/10.4108/eai.7-10-2021.2316784

[4] Anjaningrum, W. D., Yogatama, A. N., Sidi, A. P., Hermawati, A., & Suci, R. P. (2024). The impact of Penta-Helix Collaborative Business Incubation Process on the creative business strategic orientation and innovation capability. *International Journal of Learning and Intellectual Capital*, *21*(1), 60–77. https://doi.org/10.1504/IJLIC.2024.136380

[5] Anjaningrum, W. D., Azizah, N., & Suryadi, N. (2024). Spurring SMEs ' performance through business intelligence , organizational and network learning , customer value anticipation , and innovation - Empirical evidence of the creative economy sector in East Java , Indonesia. *Heliyon*, *10*(7), e27998 (1-16). https://doi.org/10.1016/j.heliyon.2024.e27998

[6] Hanelt, A., Bohnsack, R., Marz, D., & Antunes Marante, C. (2021). A Systematic Review of the Literature on Digital Transformation: Insights and Implications for Strategy and Organizational Change. *Journal of Management Studies*, *58*(5), 1159–1197. https://doi.org/10.1111/joms.12639

[7] Shvindina, H., Taraniuk, L., Kotenko, S., Abayomi, A., Taraniuk, K., & Hongzhou, Q. (2022). Cross-Country Analysis of Competitiveness Towards Innovation Potential Assessment for Industrials. *Journal of Eastern European and Central Asian Research*, *9*(2), 165–182. https://doi.org/10.15549/jeecar.v9i2.711

[8] Peris-Ortiz, M., Ferreira, J. J., & Lindahl, J. M. M. (2019). Knowledge, Innovation, and Sustainable Development in Organizations: A Dynamic Capability Perspective: An Overview. In *Knowledge, Innovation and Sustainable Development in Organizations* (Vol. 11, Issue 1, pp. 1–14). https://doi.org/https://doi.org/10.1007/978-3-319-74881-

8_1
[9] Robertson, J., Caruana, A., & Ferreira, C. (2023). Innovation performance: The effect of knowledge-based dynamic capabilities in cross-country innovation ecosystems. *International Business Review*, *32*(2), 101866. https://doi.org/10.1016/j.ibusrev.2021.101866
[10] Lyu, T., Geng, Q., & Zhao, Q. (2023). Understanding the Effort of Cross-Border Search and Knowledge Co-Creation on Manufacturing Enterprises' Service Innovation Performance. *Systems*, *11*(4), 1–15. https://doi.org/https://doi.org/10.3390/systems11010004
[11] Duan, Y., Huang, L., Cheng, H., Yang, L., & Ren, T. (2021). The moderating effect of cultural distance on the cross-border knowledge management and innovation quality of multinational corporations. *Journal of Knowledge Management*, *75*(17), 399–405. https://doi.org/https://doi.org/10.1108/JKM-11-2019-0656
[12] Lyu, C., Peng, C., Yang, H., Li, H., & Gu, X. (2022). Social capital and innovation performance of digital firms: Serial mediation effect of cross-border knowledge search and absorptive capacity. *Journal of Innovation and Knowledge*, *7*(2), 100187. https://doi.org/10.1016/j.jik.2022.100187
[13] An, W., Huang, Q., Liu, H., & Wu, J. (2021). The match between business model design and knowledge base in firm growth: from a knowledge-based view. *Pharmacognosy Magazine*, *75*(17), 399–405. Ahmed, A., Bhatti, S. H., Gölgeci, I., & Arslan, A. (2022). Digital platform capability and organizational agility of emerging market manufacturing SMEs: The mediating role of intellectual capital and the moderating role of environmental dynamism. *Technological Forecasting and Social Change*, *177*(April 2021). https://doi.org/10.1016/j.techfore.2022.121513
[14] Hu, W., & Wang, L. (2025). Knowledge search and firm innovation performance: the role of organizational agility and environmental turbulence. *Knowledge Management Research & Practice*, *Preprint*, 1–15. https://doi.org/https://doi.org/10.1080/14778238.2025.2466594
[15] Bathelt, H., & Li, P. (2020). Processes of building cross-border knowledge pipelines. *Research Policy*, *49*(3), 103928. https://doi.org/10.1016/j.respol.2020.103928
[16] Khan, A., Tao, M., & Li, C. (2022a). Knowledge absorption capacity's efficacy to enhance innovation performance through big data analytics and digital platform capability. *Journal of Innovation and Knowledge*, *7*(3), 1–13. https://doi.org/10.1016/j.jik.2022.100201
[17] Wang, M., & Wang, H. (2022). Knowledge search and innovation performance: The mediating role of absorptive capacity. *Operations Management Research*, *33*(1), 1–12. https://doi.org/https://doi.org/10.1007/s12063-022-00279-3
[18] Aliasghar, O., & Haar, J. (2023). Open innovation: Are absorptive and desorptive capabilities complementary? *International Business Review*, *32*(2), 101865. https://doi.org/10.1016/j.ibusrev.2021.101865
https://doi.org/https://doi.org/10.1080/09537325.2021.1890011
[19] Naqshbandi, M. M., & Jasimuddin, S. M. (2022). The linkage between open innovation, absorptive capacity and managerial ties: A cross-country perspective. *Journal of Innovation & Knowledge*, *7*(4), 100248. https://doi.org/https://doi.org/10.1016/j.jik.2022.100167
[20] Cui, J. (2025). The Impact of Absorptive Capacity, Organizational Creativity, Organizational Agility, and Organizational Resilience on Organizational Performance: Mediating Role of Digital Transformation. *Available at SSRN …*, *January*, 1–10.

https://doi.org/10.13140/RG.2.2.23315.39208
[21] Khan, A., Tao, M., & Li, C. (2022b). 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
[22] Choi, Y., Chang, S. in, & Youn, S. J. (2021). The effect of knowledge absorptive capacity on social ventures' performance. *Cogent Business and Management*, *8*(1), 1–20. https://doi.org/10.1080/23311975.2021.1929032
[23] Shahzad, M., Qu, Y., Ur Rehman, S., Zafar, A. U., Ding, X., & Abbas, J. (2020). Impact of knowledge absorptive capacity on corporate sustainability with mediating role of CSR: analysis from the Asian context. *Journal of Environmental Planning and Management*, *63*(2), 148–174. https://doi.org/10.1080/09640568.2019.1575799
[24] Rozak, H. A., Adhiatma, A., Fachrunnisa, O., & Rahayu, T. (2023). Social Media Engagement, Organizational Agility and Digitalization Strategic Plan to Improve SMEs' Performance. *IEEE Transactions on Engineering Management*, *70*(11), 3766–3775. https://doi.org/10.1109/TEM.2021.3085977
[25] Guo, R., Yin, H., & Liu, X. (2023). Coopetition , organizational agility , and innovation performance in digital new ventures. *Industrial Marketing Management*, *111*(April), 143–157. https://doi.org/10.1016/j.indmarman.2023.04.003
[26] Cheng, Q., Liu, Y., Peng, C., He, X., Qu, Z., & Dong, Q. (2023). Knowledge digitization : Characteristics , knowledge advantage and innovation performance. *Journal of Business Research*, *163*(113915), 1–10. https://doi.org/10.1016/j.jbusres.2023.113915
[27] Benitez, J., Arenas, A., Castillo, A., & Esteves, J. (2022). Information & Management Impact of digital leadership capability on innovation performance : The role of platform digitization capability. *Information & Management*, *59*(2), 103590. https://doi.org/10.1016/j.im.2022.103590
[28] Hair, J. J. F., Sarstedt, M., Hopkins, L., & Kuppelwiesier, V. G. (2014). Partial Least Squares Structural Equation Modeling (PLS-SEM) An Emerging Tool in Business Research. *European Business Review*, *26*(2), 106–121. https://doi.org/10.1108/EBR-10-2013-0128
[29] Lyu, T., Chen, H., & Guo, Y. (2023). Journal of Retailing and Consumer Services Investigating innovation diffusion , social influence , and personal inner forces to understand people ' s participation in online e-waste recycling. *Journal of Retailing and Consumer Services*, *73*(62), 103366. https://doi.org/10.1016/j.jretconser.2023.103366