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Entrepreneurial Competency, AI Capability, and Learning Agility in Business Sustainability: The Mediating Role of Knowledge Sharing among Women Batik Entrepreneurs

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ABSTRACT

Women-owned micro and small enterprises are central to keeping traditional creative industries competitive, yet their capacity to endure over the long run is being tested by fast-moving digital change. Although digital technology and entrepreneurial capability have attracted considerable scholarly interest, few studies have explored whether entrepreneurial competency, AI capability, and learning agility relate to business sustainability through knowledge sharing. Building on the Knowledge-Based View (KBV), this study models the links among these five constructs in the setting of women batik entrepreneurs, with particular attention to knowledge sharing as a channel connecting the three capabilities to sustainability. Survey data were gathered from women who run batik businesses in the main production clusters of Cirebon Regency, Indonesia, yielding 245 usable questionnaires, which were analysed with PLS-SEM in SmartPLS 4. Entrepreneurial competency, AI capability, and learning agility each displayed a positive link with knowledge sharing. AI capability and learning agility were also directly and positively linked to business sustainability, while the direct path from entrepreneurial competency was non-significant. All three capabilities had significant indirect links to sustainability via knowledge sharing. In line with KBV, the results point to knowledge sharing as a route by which capabilities held by the owner translate into a more durable business. The evidence, drawn from women-led batik firms, carries implications for agencies that support entrepreneurs and wish to foster knowledge exchange, technological skills, and a learning orientation within traditional creative sectors.

Keywords: AI Capability; Business Sustainability; Entrepreneurial Competency; Knowledge Sharing; Learning Agility; Women Entrepreneurs

1. INTRODUCTION

Micro and small businesses led by women help safeguard cultural heritage, create jobs, and broaden the base of economic growth (Gunawan and Listiyani, 2025; Visiana, 2025). Within Indonesia, women who run batik businesses keep the creative economy alive by carrying forward artisanal techniques while also adjusting to shifting demand, evolving consumer tastes, and the spread of digital tools (Prasadja and Singgalen, 2025; Hussein *et al.*, 2026). Batik producers now face growing technological and competitive pressures; therefore, they must protect inherited craft knowledge and rework how they operate in an unstable market (Elia et al., 2020; Tsalko et al., 2025). Keeping such firms viable therefore depends on more than having technology at hand; owners also need entrepreneurial competency, a habit of ongoing learning, and the capacity to put useful knowledge to work in daily operations (Marjerison et al., 2022; Somwethee et al., 2023; Alharthi, 2025).

Artificial intelligence (AI) is gaining importance for entrepreneurs because it can aid judgement, streamline operations, deepen relationships with customers, and sharpen reactions to

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market signals (Giuggioli and Pellegrini, 2023; Le Dinh et al., 2025; Gagoshidze, 2026). Yet, merely adopting AI or having it within reach offers no guarantee of lasting business benefit. Owners must be able to make sense of AI, apply it, and embed it in their work, a demand that weighs heavily on small firms with thin technological and managerial resources (Mikalef and Gupta, 2021; Rastogi and Pandita, 2025). Entrepreneurial competency and learning agility matter here because they help owners cope with market shifts, pick up new knowledge, and draw on past experience when novel problems arise (DeRue et al., 2012; Somwethee et al., 2023). Recent work has linked AI and agility to women's entrepreneurship and has explored how AI-led change and agile workforces relate to sustaining entrepreneurial ventures (Iram *et al.*, 2025; Parihar *et al.*, 2025).

The knowledge-based view (KBV) treats knowledge as a strategic asset from which firms build capabilities and maintain an edge over rivals (Kogut and Zander, 1993; Grant 1996). What gives knowledge its worth is less the fact of owning it than the way it is obtained, combined, passed on, and put into practice (Nonaka, 1994). Knowledge sharing matters for this reason: it allows know-how, experience, and information to circulate so that they can inform learning, choices, and everyday operations (Setiono et al., 2025). For entrepreneurs, personal competencies and technological capabilities can serve as sources from which knowledge is produced or accessed, and sharing processes are the vehicle through which that knowledge is circulated and used in running the firm (Schou et al., 2022; Mele *et al.*, 2024). This reasoning offers a theoretical footing for studying whether owner-level capabilities connect to business sustainability by way of knowledge sharing.

Earlier research sheds light on parts of this chain of relationships but leaves an important theoretical question open. Al Koliby *et al.*, (2024) showed that knowledge management carries the influence of entrepreneurial competencies onto sustainable performance in manufacturing SMEs, underlining that knowledge processes matter for this link. (Setyanti *et al.*, 2026) investigated how AI adoption and human resource competence relate to competitive advantage via knowledge-sharing behaviour within Indonesia's creative sector. Further work has addressed the bearing of entrepreneurial competency on sustainable performance and firm outcomes (Khan *et al.*, 2023), the role of AI and agility for women entrepreneurs (Iram *et al.*, 2025), and the connections among AI-enabled transformation, workforce agility, and the endurance of entrepreneurial ventures (Rastogi and Pandita, 2025). Scholars have likewise pointed to digital entrepreneurial capability, human capital, and sustainability under shifting conditions (Parihar *et al.*, 2025; Skandalis, 2025). Although this body of work lays useful groundwork, it does not settle whether distinct owner-level capabilities reach business sustainability through one shared knowledge-sharing route, nor whether the capabilities behave alike or differently in relation to sustainability.

This gap deserves attention because simply placing well-known constructs side by side in one model is not, on its own, a meaningful theoretical advance. The sharper question is how various kinds of owner-level capability come to matter for sustainability through knowledge-related processes. Entrepreneurial competency captures how well the owner runs operations, spots openings, and copes with difficulties (Khan *et al.*, 2023; Al Koliby *et al.*, 2024). AI capability captures how well AI can be applied in work tasks and how technological resources are integrated into business routines (Mikalef and Gupta, 2021; Le Dinh et al., 2025; Setyanti *et al.*, 2026). Learning agility captures how readily a person absorbs, makes sense of, and uses new knowledge when circumstances are novel or in flux (DeRue et al., 2012; Pennetta *et al.*, 2025). Taken together, the three capabilities offer related yet separate foundations for knowledge-based activity in the firm. Instead of presuming that each capability bears the same relationship to sustainability, this study treats knowledge sharing as a possible conduit through which they may become relevant to it (Mele *et al.*, 2024).

Here, business sustainability denotes a firm's ability to keep operating and maintain its performance steady over time while it adjusts to market and technological changes. Thus, the concept centres on economic continuity and adaptability rather than environmental or social goals (Lutfi *et al.*, 2022; Somwethee et al., 2023; Rastogi and Pandita, 2025). It is accordingly kept separate from neighbouring notions such as competitiveness, short-run performance, resilience, growth, and survival, even though each of these may feed into a firm's broader ability to stay viable

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(Lutfi *et al.*, 2022; Sadeghi *et al.*, 2024; Hussein *et al.*, 2026). Drawing this boundary matters because the outcome variable in this research concerns the ongoing operation and stable performance of the enterprise, not a wider, multidimensional sustainability agenda.

Batik enterprises run by women offer a fitting setting for studying these links, as they sit where inherited craft knowledge, entrepreneurship, cultural preservation, and digitalisation meet (Prasadja and Singgalen, 2025). Owners in this sector have to keep long-standing production know-how intact while reacting to new customer demands, digital tools, and rivalry in the market (Elia et al., 2020; Tsalko et al., 2025; Hussein *et al.*, 2026). Ongoing learning and the exchange of knowledge are likely to matter most when owners blend traditional know-how with newer technological practices (Marjerison et al., 2022). In this research, the focus on women-led firms serves chiefly as the empirical setting, not as a gender-based theoretical explanation. Gender is not assumed to drive the hypothesised links; women-owned batik businesses simply furnish a setting in which the connections among owner-level capabilities, knowledge sharing, and sustainability can be observed.

The level at which the theory operates also needs to be made explicit. Entrepreneurial competency, AI capability, and learning agility are conceived as attributes of the owner, not as direct indicators of firm-level capability. In owner-managed micro and small firms, where ownership and management are tightly intertwined, the owner acts as the principal decision-maker and the most informed respondent (Schou et al., 2022; Al Koliby *et al.*, 2024). Such personal capabilities matter for the firm because they are exercised in decisions, learning, exchanges of knowledge, and day-to-day management. Viewed through KBV, knowledge sharing is a key route by which the owner's knowledge and capabilities are put to use within the business {Formatting Citation}. Therefore, the hypothesised links do not equate personal capability with firm resources; they examine how owner-level capabilities relate to sustainability through knowledge sharing.

Accordingly, this study models the connections among entrepreneurial competency, AI capability, learning agility, knowledge sharing, and business sustainability for women who run batik businesses (Harini et al., 2020; Ismail, 2022; Lee and Song, 2022; Setiono et al., 2025). It first tests whether each of the three capabilities relates to knowledge sharing and whether each has a direct link with sustainability. It then tests whether knowledge sharing serves as an intervening route between these owner-level capabilities and sustainability. Such a design makes it possible to detect differing direct and indirect patterns, rather than presuming that every capability bears the same relationship to the outcome. The pattern of results is thus of interest not only for whether hypotheses receive statistical support but also for how each capability connects to sustainability, both on its own and through knowledge sharing.

This study contributes to the entrepreneurship and knowledge management literature by clarifying how knowledge sharing link distinct owner-level capabilities to business sustainability. The novelty does not lie in bundling entrepreneurial competency, AI capability, and learning agility together; rather, KBV is used to test whether knowledge sharing operates as an intervening process linking these capabilities to sustainable outcomes (Grant, 1996; Al Koliby *et al.*, 2024; Setyanti *et al.*, 2026). The study further supplies evidence from women-run batik firms in a traditional creative sector that is undergoing digitalisation (Kapota et al., 2023; Prasadja and Singgalen, 2025). Its contribution is therefore framed as a refinement and context-specific application of KBV in owner-managed firms, focusing on whether different owner capabilities display distinct direct and indirect links with sustainability (Parihar *et al.*, 2025; Rastogi and Pandita, 2025; Skandalis, 2025).

2. LITERATURE REVIEW AND HYPOTHESES DEVELOPMENT

2.1 Knowledge-Based View

The theoretical anchor of this research is the Knowledge-Based View (KBV), in which knowledge is regarded as the strategic resource of greatest value for building a durable competitive position (Grant, 1996). In contrast to physical assets, knowledge allows firms to form distinctive capabilities that rivals find hard to copy (Kogut and Zander, 1993). KBV holds that firms outperform others when they obtain, combine, circulate, and use knowledge well throughout their operations (Nonaka, 1994; Grant, 1996). For entrepreneurs, knowledge underpins innovation,

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adaptation to change, and staying competitive over time {Formatting Citation}. Entrepreneurial competency, AI capability, and learning agility can be seen as knowledge-related capabilities that help owners produce and exploit useful knowledge (Jarrahi, 2018). This study posits that knowledge sharing acts as the intervening route connecting these capabilities to business sustainability (Brenner, 2018).

2.2 Entrepreneurial Competency and Knowledge Sharing

Entrepreneurial competency denotes a blend of know-how, skills, and abilities that allow owners to spot market openings, tackle management problems, and make sound strategic choices (Man *et al.*, 2002; Pennetta *et al.*, 2025). Owners who are more competent tend to feel more at ease swapping experience and business insight with their peers (Ismail, 2022). Such exchanges spread practical know-how and foster joint learning within communities of entrepreneurs (Schou et al., 2022). By sharing knowledge, what one person is good at can become a common pool of knowledge that supports wider business development (Ullah *et al.*, 2025). KBV holds that knowledge yields more value when others can draw on it than when it stays locked in one person's expertise (El Khatib and Kaakour, 2024). Owners with stronger entrepreneurial competency are therefore anticipated to share knowledge more actively.

2.3 AI Capability and Knowledge Sharing

AI capability describes how well an owner can apply AI tools to back up operations, choices, and innovation (Mikalef and Gupta, 2021). As AI applications become easier to obtain, owners can gather information, read customer needs, and run their operations more efficiently (Al-Mamary, 2025). AI yields more benefits when owners share their experiences about using AI and digital practices (Alsharah, 2025). These exchanges support joint learning and enlarge the pool of knowledge available to entrepreneurs. From a KBV standpoint, technological capability generates strategic value when it helps create and exchange knowledge (Bednář et.al., 2023). Owners with stronger AI capabilities are therefore anticipated to share knowledge more actively.

2.4 Learning Agility and Knowledge Sharing

Learning agility is a person's capacity to quickly pick up new knowledge, cope with unfamiliar circumstances, and draw on earlier experiences to resolve fresh problems (DeRue et al., 2012; Lee and Song, 2022). Owners high in learning agility keep searching for new ideas and stay receptive to viewpoints that can lift their business results (Pennetta *et al.*, 2025). This eagerness to learn tends to draw them into more contact and exchange with other entrepreneurs (Setiono et.al, 2025). Learning together gives owners useful insight into running the firm, what customers want, and where market openings lie (Pham *et al.*, 2023). KBV stresses that ongoing learning adds value to the firm when the knowledge gained is passed on and used.

2.5 Entrepreneurial Competency and Business Sustainability

Entrepreneurial competency underpins long-run sustainability because it helps owners spot opportunities, deploy resources wisely, and devise fitting strategies (Ismail, 2022). Competent owners are usually better equipped to react to market shifts and maintain their firms competitiveness (Ramadhan et.al., 2024). Prior evidence indicates that such competency feeds innovation, resilience, and lasting growth (Khan *et al.*, 2023). Women who have stronger entrepreneurial competencies also tend to improve performance by making better managerial choices (Iram *et al.*, 2025; Parihar *et al.*, 2025; Gagoshidze, 2026). These capabilities help firms stay competitive under uncertain conditions.

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2.6 AI Capability and Business Sustainability

AI capability allows owners to raise efficiency, deepen engagement with customers, and ground decisions in evidence (Giuggioli and Pellegrini, 2023). Bringing AI into business tasks can also spur innovation, make marketing more effective, and strengthen a firm's competitive position (Rane *et al.*, 2024). Lasting business performance rests on how well owners actually make use of AI, not on merely acquiring digital tools (Cimino *et al.*, 2025). Owners who weave AI into their daily routines are more likely to see growth over the long term (Shemshaki, 2024). In KBV terms, AI capability supports sustainability by improving how valuable knowledge is generated and used.

2.7 Learning Agility and Business Sustainability

Learning agility enables owners to adapt to a shifting business environment by taking in and using new knowledge (Ismail, 2022). More agile learners are ready to try innovations, refine how they work, and act ahead of market changes (Karimi and Walter, 2021; Pennetta *et al.*, 2025). This adaptive behaviour builds resilience and supports the steady development of the business (Nosike et.al., 2024). Earlier studies suggest that learning agility improves performance through flexibility, innovation, and continual improvement (Gouda and Tiwari, 2022; Tripathi, 2024). For women entrepreneurs, such agility is especially valuable for staying competitive in fast-changing markets.

2.8 Knowledge Sharing and Business Sustainability

Knowledge sharing is the willing exchange of information, experience, and expertise among people to strengthen joint learning and performance (Yeboah, 2023). Owners who share knowledge actively encounter new ideas, workable solutions, and novel practices that sharpen their decision making. Ongoing exchanges also build cooperation, trust, and reciprocal learning among entrepreneurs (Grimaldi *et al.*, 2025). Under KBV, knowledge becomes a valuable resource when it is shared and applied effectively in business tasks (Wendo et.al., 2025). Learning of this kind helps owners become more innovative and adaptable and supports performance over the long run.

Research Hypotheses

Drawing on KBV and the arguments set out above, Entrepreneurial Competency, AI Capability, and Learning Agility are each expected to relate positively to Knowledge Sharing, and each is also expected to relate positively to Business Sustainability. Knowledge Sharing is further posited as an intervening route linking the three capabilities to Business Sustainability among women batik entrepreneurs. The hypotheses are therefore stated as follows:

H1: *Entrepreneurial competency is positively related to knowledge sharing.*
H2: *AI capability is positively related to knowledge sharing.*
H3: *Learning agility is positively related to knowledge sharing.*
H4: *Entrepreneurial competency is positively related to business sustainability.*
H5: *AI capability is positively related to business sustainability.*
H6: *Learning Agility is positively related to Business Sustainability.*
H7: *Knowledge sharing positively relates to business sustainability.*
H8: *Knowledge sharing mediates the relationship between entrepreneurial competency and business sustainability.*
H9: *Knowledge sharing acts as a mediator in the relationship between AI capability to business sustainability.*
H10: *Knowledge sharing mediates the relationship between learning agility and business sustainability.*

3. METHODS

3.1 Research Design

A quantitative cross-sectional survey was used to study the relationship between entrepreneurial competency, AI capability, learning agility, knowledge sharing, and business

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sustainability. PLS-SEM was chosen because the analysis is chiefly oriented toward prediction and accounting for variance in the endogenous constructs, namely Knowledge Sharing and Business Sustainability, while also estimating the hypothesised direct and indirect paths. The model contains five latent variables: three owner-level capabilities, one intervening construct, and one outcome variable. This structure allows the analysis to gauge how much the capabilities explain Knowledge Sharing as well as their direct and indirect links to Business Sustainability.

PLS-SEM was favoured over covariance-based SEM because the research prioritised explaining and predicting the endogenous variables, not confirming a pre-established covariance structure or judging global model fit. The technique therefore suits the aim of assessing how the three capabilities connect to Knowledge Sharing and Business Sustainability for women batik entrepreneurs. It also allows the reflective measurement model and the structural model to be assessed together, covering reliability, validity, R^2, f^2, collinearity, and bootstrapped direct and indirect effects (Hair and Alamer, 2022).

3.2 Participants and Sampling

Respondents were chosen purposively according to a set of eligibility rules and had first-hand experience running a batik business. To qualify, a respondent had to (1) be a woman batik entrepreneur, (2) have run her business for two years or more, (3) be aged 18 or above, and (4) be based in one of the main batik production clusters of Cirebon Regency, West Java, Indonesia. The fieldwork took place from January to June 2026. Of the 260 questionnaires distributed, 258 were returned; 13 of these were dropped after checks for completeness and eligibility, leaving 245 usable cases. Given the purposive design, the sample is regarded as an empirical sample of eligible women batik entrepreneurs, not as one that statistically represents every such entrepreneur in Cirebon Regency.

3.3 Ethical Considerations

Participation in the survey was optional. Prior to completing the questionnaire, each respondent was told what the research aimed to do, that participation was voluntary, that answers would be kept confidential, and that they could withdraw at any point. Every participant provided informed consent before data were gathered. The questionnaire recorded no details that could identify a person, and the anonymised answers were used for academic purposes only. The study did not obtain formal approval or an exemption from an institutional ethics committee. It nonetheless adhered to accepted principles concerning voluntary involvement, informed consent, confidentiality, and careful handling of the data.

3.4 Respondent Characteristics

Respondents also reported background details such as age, schooling, years in business, firm size, and monthly turnover. This information helps describe the women's batik entrepreneurs in Cirebon Regency and provides context for interpreting the results. These variables were not entered as controls in the structural model because the theorised links centre on the five focal constructs, and the framework posited no prior control paths for them. Table 1 summarises the respondent profiles.

Table 1. Demographic Profile of Respondents

Characteristic	Category	Frequency	Percentage (%)
Age (years)	≤30	42	17.1
	31–40	74	30.2
	41–50	81	33.1
	>50	48	19.6
Education Level	Senior High School or below	92	37.6
	Diploma	36	14.7
	Bachelor's Degree	102	41.6

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	Postgraduate	15	6.1
Business Experience	2–5 years	58	23.7
	6–10 years	71	29
	11–15 years	66	26.9
	>15 years	50	20.4
Number of Employees	1–5	168	68.6
	6–10	53	21.6
	>10	24	9.8
Monthly Business Turnover	< IDR 10 million	69	28.2
	IDR 10–25 million	92	37.6
	IDR 25–50 million	56	22.9
	> IDR 50 million	28	11.4
Total		**245**	**100**

Source: Survey data by the authors processed

Table 1 profiles the 245 women batik entrepreneurs in the sample. The largest age group was 41–50 years (33.1%), followed by 31–40 years (30.2%), suggesting that most respondents were at an active point in their entrepreneurial careers. Regarding schooling, holders of a bachelor's degree made up the largest share (41.6%), followed by those with senior high school education or less (37.6%), a diploma (14.7%), and a postgraduate degree (6.1%). Close to a third had run their business for 6–10 years (29.0%), and another 26.9% for 11–15 years, pointing to substantial business experience. Firms were mostly micro or small: 68.6% had one to five employees, 21.6% had six to ten, and 9.8% had more than ten. For monthly turnover, the most common band was IDR 10–25 million (37.6%), followed by under IDR 10 million (28.2%), confirming that the sample consisted largely of small batik businesses. Together, these figures describe the sample and help situate the results that follow.

Background variables such as age, schooling, years in business, firm size, and monthly turnover were recorded but excluded from the main structural model as controls because the theoretical framework did not include them. However, they could be related to both the capabilities studied and sustainability and might therefore act as confounders.

3.5 Measurement of Variables

Items were drawn from validated scales in earlier research and tailored to the setting of women batik entrepreneurs. The source scales were Man et al., (2002) for Entrepreneurial Competency, Mikalef and Gupta (2021) for AI Capability, DeRue et al., (2012) for Learning Agility, Yeboah (2023) for Knowledge Sharing, and Lutfi et al., (2022) for Business Sustainability. AI Capability is defined here as the extent to which the owner perceives herself to be grasping, applying, and embedding AI-related tools in her business. The measure reflects self-assessed capability, not how often, how long, which kind, or how intensively AI is actually used by the user. No separate items on real AI use (for example, tools employed, frequency, or length of adoption) were included in the survey. AI Capability should therefore be read as an owner-level self-assessment of capability, not as a measure of how intensively AI is used.

This study moves the unit of analysis from the firm to the individual owner. Instead of gauging a firm's overall ability to marshal and exploit AI resources, this study gauges how capable the owner feels in grasping, applying, and embedding AI-related tools in their work. The aim is to fit the AI Capability construct to women batik entrepreneurs while keeping its original focus on the resources and capabilities that AI use requires.

When transferring AI Capability to the owner level, the study acknowledges that applying AI in business draws not only on personal know-how and skill but also on access to the necessary technology. Item AIC1 therefore taps the owner's perceived access to technological resources for

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using AI, whereas AIC2 to AIC4 tap her perceived skill, knowledge, and ability to apply and embed AI in her work. Including AIC1 reflects the realities of women-run batik firms, for whom access to suitable technology is a precondition for exercising AI-related capability. Thus, AIC1 is retained as part of the adapted owner-level construct and is not treated as an indicator of how intensively AI is used.

Every construct in the measurement model was modelled reflectively, meaning that the indicators were regarded as expressions of the latent variable they belonged to, so that variation in the construct should appear in the item scores. This treatment was applied uniformly to all five constructs. Responses were recorded on a five-point Likert scale from 1 (strongly disagree) to 5 (strongly agree).

Three specialists in entrepreneurship and business management reviewed the questionnaire for clarity, relevance, and content validity prior to the fieldwork. Appendix A lists every item with its code, wording, source scale, supporting theoretical reference, and the contextual changes made, so that the instrument can be scrutinised and replicated.

3.6 Data Collection Procedure

The structured questionnaire was directly handed to women batik entrepreneurs in the main production clusters of Cirebon Regency, Indonesia, between January and June 2026. Of the 260 copies distributed, 258 were completed and returned, and each was checked for missing and contradictory answers. Thirteen returned questionnaires showed inconsistent answers and were removed; therefore, 245 cases were included in the analysis. Before participating, the respondents were briefed on the study's aims, the optional nature of participation, and the confidentiality of their answers. Only women who met the eligibility criteria were approached. Because the sample was chosen purposively, it cannot be taken as statistically representative of all women batik entrepreneurs in Cirebon Regency, and the results should be read within the profile and location of the sampled owners rather than extended to the whole population.

3.7 Common Method Bias

Since a single questionnaire completed by the same respondents supplied the data for the independent, mediating, and dependent variables, common method variance was a possible concern. Procedural safeguards were therefore used, such as promising confidentiality and stressing that answers would serve academic purposes only. As a first check, Harman's one-factor test was run, and the largest factor explained less than half of the total variance. This suggests that no single factor dominated, although the test cannot prove that common method variance is entirely absent. Collinearity was also inspected in the PLS-SEM model: all structural VIFs were under the usual 3.3 cut-off, so serious multicollinearity among predictors was not apparent. These checks reveal no severe collinearity problem but do not conclusively rule out method bias. Because the data come from one source at one point in time, common method variance remains a limitation.

3.8 Data Analysis

Following the guidance of (Hair and Alamer, 2022), the research model was estimated with PLS-SEM in SmartPLS 4. The analysis was conducted in two steps. Step one assessed the measurement model through indicator reliability, internal consistency, convergent validity, and discriminant validity. Step two assessed the structural model via path coefficients, R^2, Q^2, and bootstrapping with 5,000 subsamples. This sequence was used to test the hypotheses and examine whether knowledge sharing mediates the links between the three capabilities and business sustainability.

4. RESULTS

4.1 Measurement Model Assessment

Table 2 presents the measurement model results for indicator reliability, internal consistency, and convergent validity of the constructs. The outer loadings ranged between 0.716 and 0.911, all above the 0.70 benchmark (Hair and Alamer, 2022), indicating that each item

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adequately reflected its respective construct. Internal consistency was likewise satisfactory: Cronbach's alpha ranged from 0.806 to 0.881, and composite reliability ranged from 0.873 to 0.919, both above the 0.70 minimum, showing that the instrument yielded consistent scores for every construct. For convergent validity, the AVE values in Table 2 ranged between 0.632 and 0.739, surpassing the 0.50 cut-off (Fornell and Larcker, 1981), indicating that each construct accounted for a large share of the variance in its items. Overall, the measurement model met the usual reliability and validity standards and was suitable for assessing the structural links between the five constructs.

Table 2. Measurement Model Assessment

Construct	Code	Outer Loading	Cronbach's Alpha	Composite Reliability	AVE
Entrepreneurial Competency (EC)	EC1	0.835	0.839	0.892	0.675
	EC2	0.759			
	EC3	0.823			
	EC4	0.865			
AI Capability (AIC)	AIC1	0.878	0.824	0.883	0.655
	AIC2	0.716			
	AIC3	0.813			
	AIC4	0.822			
Learning Agility (LA)	LA1	0.812	0.806	0.873	0.632
	LA2	0.746			
	LA3	0.791			
	LA4	0.829			
Knowledge Sharing (KS)	KS1	0.911	0.881	0.919	0.739
	KS2	0.813			
	KS3	0.884			
	KS4	0.826			
Business Sustainability (BS)	BS1	0.803	0.855	0.903	0.700
	BS2	0.876			
	BS3	0.898			
	BS4	0.762			

Source: Survey data by the authors processed

4.2 Discriminant Validity

Discriminant validity was first checked using the Fornell–Larcker criterion (Table 3). For every construct, the square root of its AVE is larger than its correlations with the other constructs; thus, the criterion is met (Fornell and Larcker, 1981). Each construct thus shares more variance with its own items than with any other construct in the model.

These results show that the five constructs are conceptually separate and do not overlap to any significant extent. Therefore, discriminant validity is adequate, as each construct reflects a distinct part of the model, and structural analysis can proceed.

Table 3. Discriminant Validity (Fornell-Larcker Criterion)

No.	Construct	(1)	(2)	(3)	(4)	(5)
1	Entrepreneurial Competency (EC)	**0.822**				
2	AI Capability (AIC)	0.561	**0.809**			
3	Learning Agility (LA)	0.528	0.481	**0.795**		
4	Knowledge Sharing (KS)	0.592	0.624	0.518	**0.860**	

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5	Business Sustainability (BS)	0.432	0.447	0.683	0.672	**0.837**

Source: Survey data by the authors processed

As Table 4 shows, every HTMT ratio lies under the 0.85 cut-off, with values from 0.563 to 0.803. The largest ratio links knowledge sharing with business sustainability (0.803), and the smallest links entrepreneurial competency with business sustainability (0.563). Therefore, the constructs are empirically separable, which further supports discriminant validity.

Table 4. Heterotrait-Monotrait Ratio (HTMT)

Construct	EC	AIC	LA	KS	BS
Entrepreneurial Competency (EC)	-				
AI Capability (AIC)	0.673	-			
Learning Agility (LA)	0.627	0.589	-		
Knowledge Sharing (KS)	0.741	0.698	0.716	-	
Business Sustainability (BS)	0.563	0.601	0.694	0.803	-

Source: Survey data by the authors processed

4.3 Structural Model Assessment

Before the paths were interpreted, collinearity among predictors was checked using VIF values. Table 5 shows VIFs from 1.473 to 2.081, comfortably under the cut-offs of 3.3 (Kock and Hadaya, 2018) and 5.0 (Hair and Alamer, 2022). Therefore, collinearity was not a concern, and the predictors were sufficiently distinct to yield stable path estimates; thus, the structural model was fit for hypothesis testing.

Table 5. Collinearity Assessment (Variance Inflation Factor)

Endogenous Construct	Predictor Construct	VIF
Knowledge Sharing (KS)	Entrepreneurial Competency (EC)	1.694
	AI Capability (AIC)	1.582
	Learning Agility (LA)	1.473
Business Sustainability (BS)	Entrepreneurial Competency (EC)	1.756
	AI Capability (AIC)	1.641
	Learning Agility (LA)	1.529
	Knowledge Sharing (KS)	2.081

Source: Survey data by the authors processed

Table 6 presents the R^2 values used to evaluate the model's explanatory power. Together, the three capabilities account for 68.7% of the variance in knowledge sharing (R^2 = 0.687), and, together with knowledge sharing, they account for 70.4% of the variance in business sustainability (R^2 = 0.704). Based on Hair and Alamer (2022), both values sit in the moderate-to-substantial band; thus, the model's explanatory power is satisfactory.

Table 6. Coefficient of Determination (R^2)

Endogenous Construct	R^2	Interpretation
Knowledge Sharing (KS)	0.687	Moderate to substantial
Business Sustainability (BS)	0.704	Moderate to substantial

Source: Survey data by the authors processed

f^2 values were computed to gauge the contribution of each predictor to the endogenous constructs (Table 7). For knowledge sharing, entrepreneurial competency had a medium effect (f^2 = 0.278), AI capability had a medium effect (f^2 = 0.154), and learning agility had a small effect (f^2 = 0.092). For business sustainability, the effects of entrepreneurial competency (f^2 = 0.061), AI

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capability (f^2 = 0.048), and learning agility (f^2 = 0.036) were all small, while knowledge sharing had a large effect (f^2 = 0.347), the largest in the model. Thus, the effect magnitudes varied across paths. Because significance and effect size capture different things, significant paths are read alongside the size of their effects.

The sizeable coefficient on the Learning Agility → Business Sustainability path does not imply an equally sizeable f^2. f^2 reflects the extent to which R^2 falls when a given predictor is dropped, that is, the predictor's unique addition to the explained variance. Therefore, a strong path can sit alongside a small f^2 when the predictor shares much of its explanatory power with other variables in the model. The f^2 figures are read as unique explanatory contributions, not as stand-ins for path coefficients.

Table 7. Effect Size (f^2)

Hypothesized Relationship	f^2	Effect Size
Entrepreneurial Competency (EC) → Knowledge Sharing (KS)	0.278	Medium
AI Capability (AIC) → Knowledge Sharing (KS)	0.154	Medium
Learning Agility (LA) → Knowledge Sharing (KS)	0.092	Small
Entrepreneurial Competency (EC) → Business Sustainability (BS)	0.061	Small
AI Capability (AIC) → Business Sustainability (BS)	0.048	Small
Learning Agility (LA) → Business Sustainability (BS)	0.036	Small
Knowledge Sharing (KS) → Business Sustainability (BS)	0.347	Large

Source: Survey data by the authors processed

Blindfolding was used to obtain Stone-Geisser Q^2 values as an indication of predictive relevance. Table 8 shows Q^2 of 0.421 for knowledge sharing and 0.486 for business sustainability; both exceed zero, indicating that the model has predictive relevance for both outcomes. Both values also pass the 0.35 benchmark, suggesting fairly strong predictive relevance under blindfolding. These figures, however, speak to predictive relevance within the data rather than strong out-of-sample prediction, which would need a holdout-based test to establish.

Table 8. Predictive Relevance (Q^2)

Endogenous Construct	Q^2	Predictive Relevance
Knowledge Sharing (KS)	0.421	Predictive relevance
Business Sustainability (BS)	0.486	Predictive relevance

Source: Survey data by the authors processed

Figure 1 shows the SmartPLS 4 estimates for the structural model, including standardised paths, outer loadings, and R^2 values. All three capabilities positively link to knowledge sharing, which in turn positively links to business sustainability. The three capabilities also have direct paths to business sustainability, alongside the route via knowledge sharing. The model accounts for 68.7% of the variance in knowledge sharing and 70.4% in business sustainability. Figure 1 summarises the structural paths, and Table 9 reports their significance tests.

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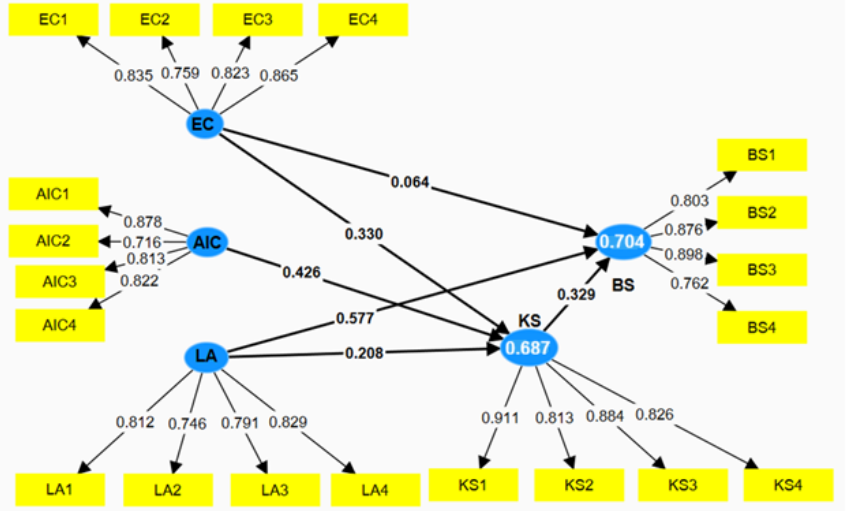


Figure 1. Structural Model Results

4.4 Hypothesis Testing

Hypotheses were tested by bootstrapping in SmartPLS 4, with results shown in Table 9. Of the seven direct hypotheses, six received support and one did not. Entrepreneurial Competency related positively to Knowledge Sharing (β = 0.330, t = 3.953, p < 0.001), so H1 is supported. AI Capability also related positively to Knowledge Sharing (β = 0.426, t = 6.322, p < 0.001), so H2 is supported. Learning Agility had a significant positive link with Knowledge Sharing as well (β = 0.208, t = 2.957, p = 0.003), so H3 is supported.

Entrepreneurial Competency did not relate significantly to Business Sustainability in the direct path (β = 0.064, t = 0.971, p = 0.332), so H4 is rejected. AI Capability had a significant positive direct link with Business Sustainability (β = 0.118, t = 2.164, p = 0.031), supporting H5. Learning Agility also related positively to Business Sustainability (β = 0.577, t = 6.756, p < 0.001), supporting H6. Lastly, Knowledge Sharing had a significant positive link with Business Sustainability (β = 0.329, t = 5.216, p < 0.001), supporting H7.

Table 9. Results of Hypothesis Testing

Hypothesis	Relationship	Path Coefficient (β)	t-value	p-value	95% CI Lower	95% CI Upper	Decision
H1	Entrepreneurial Competency → Knowledge Sharing	0.330	3.953	<0.001	0.166	0.494	Supported
H2	AI Capability → Knowledge Sharing	0.426	6.322	<0.001	0.294	0.558	Supported
H3	Learning Agility → Knowledge Sharing	0.208	2.957	0.003	0.070	0.346	Supported
H4	Entrepreneurial Competency → Business Sustainability	0.064	0.971	0.332	-0.065	0.193	Not Supported
H5	AI Capability → Business Sustainability	0.118	2.164	0.031	0.011	0.225	Supported

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H6	Learning Agility → Business Sustainability	0.577	6.756	<0.001	0.41	0.744	Supported
H7	Knowledge Sharing → Business Sustainability	0.329	5.216	<0.001	0.205	0.453	Supported

Source: Survey data by the authors processed

Bootstrapping was also used to test the mediating paths through Knowledge Sharing (Table 10). All three capabilities showed significant indirect links to Business Sustainability via Knowledge Sharing. For Entrepreneurial Competency, the indirect effect was positive and significant (β = 0.109, t = 2.978, p = 0.003, 95% CI [0.037, 0.181]), so H8 is supported. For AI Capability, the indirect effect was likewise positive and significant (β = 0.140, t = 4.624, p < 0.001, 95% CI [0.081, 0.199]), so H9 is supported. For Learning Agility, the indirect effect was also positive and significant (β = 0.069, t = 2.327, p = 0.020, 95% CI [0.011, 0.127]), so H10 is supported. As the direct path of learning agility was significant as well, it relates to sustainability both directly and via knowledge sharing. In summary, knowledge sharing appears to be a key route connecting the three capabilities to business sustainability for women batik entrepreneurs.

Table 10. Mediation Analysis (Specific Indirect Effects)

Hypothesis	Indirect Relationship	Indirect Effect (β)	t-value	p-value	95% CI Lower	95% CI Upper	Decision
H8	Entrepreneurial Competency → Knowledge Sharing → Business Sustainability	0.109	2.978	0.003	0.037	0.181	Supported
H9	AI Capability → Knowledge Sharing → Business Sustainability	0.140	4.624	<0.001	0.081	0.199	Supported
H10	Learning Agility → Knowledge Sharing → Business Sustainability	0.069	2.327	0.020	0.011	0.127	Supported

Source: Survey data by the authors processed

As a robustness check, the model was re-estimated with age, years in business, firm size, and turnover as covariates. The original and covariate-adjusted models were then compared to determine whether the focal paths were held.

Table 11. Robustness Analysis with Covariates

Structural Path	Main β	Main p	Robustness β	Robustness p	Change in β	Interpretation
EC → KS	0.33	<0.001	0.321	<0.001	−0.009	Stable
AIC → KS	0.426	<0.001	0.414	<0.001	−0.012	Stable
LA → KS	0.208	0.003	0.201	0.005	−0.007	Stable
EC → BS	0.064	0.332	0.059	0.361	−0.005	Stable, not significant
AIC → BS	0.118	0.031	0.112	0.041	−0.006	Stable

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LA → BS	0.577	<0.001	0.563	<0.001	−0.014	Stable
KS → BS	0.329	<0.001	0.318	<0.001	−0.011	Stable

Note: The robustness model includes age, business experience, firm size, and turnover as covariates.

The focal paths hold once the covariates are added. Their signs and significance levels stay the same, and the coefficients shift only slightly. Therefore, adding these covariates does not materially change the main results.

5. DISCUSSION

The results reveal a nuanced pattern in how the four constructs relate to business sustainability among women batik entrepreneurs. Entrepreneurial competency is linked positively to knowledge sharing (β = 0.330, p < 0.001), meaning that owners with stronger competencies also report sharing more knowledge. This agrees with KBV's emphasis on obtaining, combining, circulating, and applying knowledge as the source of value for firms (Grant, 1996) and with earlier evidence connecting entrepreneurial competencies to knowledge management and sustainable SME performance (Al Koliby *et al.*, 2024; Wendo et al., 2025). Thus, for women batik entrepreneurs, competency may be a key foundation for participating in knowledge exchange, although the cross-sectional data cannot show which comes first.

AI capability was also positively linked to knowledge sharing (β = 0.426, p < 0.001), with a medium effect (f^2 = 0.154). This echoes earlier work indicating that AI-related capabilities help people reach, structure, and use information in entrepreneurial and organisational settings (Jarrahi, 2018; Mikalef and Gupta, 2021). It also fits the KBV, since technological capability offers extra channels for obtaining, ordering, and passing on knowledge (Grant, 1996; Mele *et al.*, 2024). The result must, however, be read in light of how the construct was measured. AI capability captures the owner's self-assessed ability to grasp, apply, and embed AI tools, not how often, how long, or how intensively AI is used. The finding therefore shows a link between perceived AI capability and knowledge sharing; it does not show that heavier actual AI use leads to more sharing.

Learning agility is also positively linked to knowledge sharing (β = 0.208, p = 0.003), although its effect is small (f^2 = 0.092). This fits the idea that learning agility entails absorbing and using new knowledge as conditions change (DeRue et al., 2012). Earlier research has also tied learning agility, entrepreneurial learning, and adaptive behaviour to innovation and performance (Bednall *et al.*, 2018; Sadeghi *et al.*, 2024). Through the KBV lens, owners who are more inclined to keep learning may also take a more active part in exchanging knowledge. However, the small f^2 indicates that the unique link between this capability and knowledge sharing is weaker than those of entrepreneurial competency and AI capability in this model.

A noteworthy result concerns entrepreneurial competency and business sustainability. Its direct path was not significant (β = 0.064, p = 0.332), yet its indirect path via knowledge sharing was positive and significant (β = 0.109, p = 0.003), a pattern that matches indirect-only mediation. This does not mean that knowledge sharing is the sole channel linking competency to sustainability. The lack of a significant direct path could also stem from other mechanisms, shared variance with other predictors, features of measurement, contextual factors, or sampling error. It is more accurate to say that, within this model, the link between competency and sustainability appears indirectly through knowledge sharing. Such a reading broadly fits KBV's claim that knowledge creates value by being combined and used, not just by being held (Grant, 1996; Khan, 2019; Al Koliby *et al.*, 2024).

AI Capability and Learning Agility display a different pattern. AI Capability had a significant positive direct link with Business Sustainability (β = 0.118, p = 0.031), but a small effect (f^2 = 0.048). Learning Agility had a much larger standardised coefficient (β = 0.577, p < 0.001), yet its direct f^2 was also small (f^2 = 0.036). These results show why significance must be weighed alongside effect size. The AI Capability path is significant but modest, whereas the larger coefficient for Learning Agility signals a stronger estimated link in the model. Meanwhile, Knowledge Sharing made the largest unique contribution to Business Sustainability (f^2 = 0.347). Knowledge Sharing therefore appears to play an especially prominent part in explaining sustainability, while the direct paths of

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AI Capability and Learning Agility should be judged by their effect sizes as well as their significance. Earlier work likewise points to the importance of AI capability, agility, learning, and knowledge resources for entrepreneurial and sustainable performance (Mikalef and Gupta, 2021; Gouda and Tiwari, 2022; Rastogi and Pandita, 2025).

The mediation tests for AI Capability and Learning Agility lend further support to Knowledge Sharing as an intervening process. AI Capability had a significant positive indirect link with Business Sustainability via Knowledge Sharing ($\beta = 0.140$, $p < 0.001$), as did Learning Agility ($\beta = 0.069$, $p = 0.020$). Since both also had significant direct paths, the results fit a pattern in which direct and indirect links coexist. Therefore, KS does not fully explain either relationship; it is one of the routes through which these capabilities connect to sustainability, in addition to their direct links. This view agrees with research that sees knowledge sharing as a key process tying together organisational learning, agility, digital capabilities, and sustainable performance (Marjerison et al., 2022; Mele et al., 2024; Setyanti et al., 2026).

The results offer a more focused application of KBV, not a fundamental extension of it. Grant (1996) views knowledge as a strategic resource whose worth hinges on its being combined and applied inside the firm, and (Nonaka, 1994) highlights the processes by which knowledge is generated and developed. The present evidence fits this view, since Knowledge Sharing relates significantly to Business Sustainability and carries significant indirect effects from owner-level capabilities. Therefore, the contribution lies chiefly in showing how owner-level capabilities and a knowledge-sharing process can be studied jointly in women-run traditional creative firms. In this way, it adds to the work on knowledge-based capabilities and digital transformation (Mele *et al.*, 2024) and to research tying entrepreneurial competencies to sustainable performance (Al Koliby *et al.*, 2024), without asserting a new KBV proposition.

The study's setting also marks out how far the results can be taken. The sample comprised women batik entrepreneurs in Cirebon, where traditional crafts meet shifting markets and digital conditions. Earlier work has documented sustainability problems facing Indonesian batik SMEs, and research on women's entrepreneurship has stressed the role of knowledge, digital capabilities, and contextual resources in building lasting enterprises (Gunawan *et al.*, 2022; Alfarizi et al., 2025; Parihar *et al.*, 2025; Visiana, 2025). The results are therefore best seen as evidence from women-run batik firms in a traditional creative sector. No gender-specific mechanism was tested, so the results do not show that women entrepreneurs share knowledge in a uniquely different way. Likewise, the batik and Cirebon setting marks where the patterns were found, not a new theoretical mechanism specific to the sector.

Caution is warranted because rival explanations remain possible. Data on the independent, mediating, and dependent variables were collected from the same respondents at a single point in time; therefore, the results can not establish the order of effects or exclude reverse causation. Larger or better-resourced firms, for instance, might have owners with higher perceived AI capability, more chances to share knowledge, richer learning resources, and greater sustainability. Education, years in business, number of employees, and turnover could also bear on the observed links, since they were not modelled as controls in the main analysis. Shared-source measurement may account for part of the observed covariance as well. Longitudinal and multi-source research is therefore needed to check whether these patterns persist over time and whether reverse causation or contextual factors offer further explanations.

6. CONCLUSION

This study investigated how entrepreneurial competency, AI capability, learning agility, knowledge sharing, and business sustainability relate to women batik entrepreneurs in Cirebon Regency. All three capabilities were positively linked with knowledge sharing. AI capability, learning agility, and knowledge sharing were also positively related to business sustainability, whereas entrepreneurial competency had no significant direct link with it. However, entrepreneurial competency was significantly related to sustainability through knowledge sharing, which fits the view that knowledge sharing operates as an intervening route in the model, although cross-sectional data cannot confirm a causal mechanism. Consistent with KBV, the results underline

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the role of knowledge sharing in connecting owner-level capabilities to business sustainability. In practical terms, knowledge sharing, AI capability, and learning agility emerge as worthwhile targets for programmes that support women-run batik firms. Policymakers and SME agencies might design initiatives that encourage knowledge exchange, digital skills, and continuous learning, bearing in mind that the impact of such initiatives still needs to be evaluated empirically.

Limitations and Future Research

Several limitations should be noted. First, the cross-sectional, purposive design restricts causal inference and the extent to which the results apply beyond the sampled women batik entrepreneurs in Cirebon Regency. The model posits directional paths on theoretical grounds, but the data cannot show which variable comes first, so reverse effects remain possible; more sustainable or better-resourced firms, for example, may give owners more scope to build or obtain AI-related capability. Second, all variables were self-reported by the same respondents. The diagnostic checks did not point to serious method bias, but common method and reporting effects cannot be wholly excluded. In addition, Business Sustainability was gauged from owners' own perceptions rather than verified business records, and may miss some objective aspects of sustainability. Likewise, AI Capability measures self-assessed ability to grasp, apply, and embed AI tools, not the frequency, duration, type, or intensity of real use. Moreover, background variables (age, schooling, years in business, firm size, and monthly turnover) were recorded but not modelled as controls in the main analysis; thus, they may still act as confounders affecting both the capabilities and sustainability. Finally, the constructs sit at different levels: the capabilities are measured at the owner level, while Business Sustainability captures the perceived state of the firm. Although this structure matches the theorised links, later research should revisit these relationships with longitudinal designs, suitable controls and robustness checks, multiple data sources, objective performance indicators, measures of actual AI use, and wider samples. Such work would give firmer evidence on temporal ordering, reduce confounding, and improve how far and how reliably the results generalise.

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APPENDIX A.

Construct	Code	Original Measurement Source	Supporting Theoretical Reference	Adaptation / Modification	Current Wording
Entrepreneurial Competency (EC)	EC1	Man *et al.,* (2002)	Pennetta *et al.*, (2025)	It was adapted to the context of women batik entrepreneurs by emphasising knowledge and skills related to identifying and pursuing business opportunities.	I have the knowledge and skills required to identify and pursue business opportunities.

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	EC2	Man *et al.,* (2002)	Pennetta *et al.*, (2025)	It was adapted to the context of women batik entrepreneurs by referring to managerial problem-solving in running the business.	I can effectively solve managerial problems in my business.
	EC3	Man *et al.,* (2002)	Pennetta *et al.*, (2025)	The study was adapted to the context of women batik entrepreneurs by emphasising strategic decision-making for business development.	I can make effective strategic decisions for the development of my business.
	EC4	Man *et al.,* (2002)	Pennetta *et al.*, (2025)	It has been adapted to the context of women batik entrepreneurs by emphasising the use of entrepreneurial knowledge and skills in responding to changing business conditions.	I can use my entrepreneurial knowledge and skills to respond to changing business conditions.
AI Capability (AIC)	AIC1	Mikalef and Gupta (2021)	Grant (1996)	Adapted from the AI capability concept to an entrepreneur-level context. The item was modified to capture the respondent's perceived access to technological resources needed to use AI in business activities.	I have access to the technological resources needed to use artificial intelligence in my business activities.
	AIC2	Mikalef and Gupta (2021)	Grant (1996)	Adapted from the AI capability concept to an entrepreneur-level context by focusing on the respondent's perceived skills in using AI.	I have the skills needed to use artificial intelligence effectively in my business activities.
	AIC3	Mikalef and Gupta (2021)	Grant (1996)	Adapted from the AI capability concept to an entrepreneur-level context by focusing on the respondent's knowledge for integrating AI into business processes.	I have the knowledge required to integrate artificial intelligence into my business processes.
	AIC4	Mikalef and Gupta (2021)	Grant (1996)	Adapted from the AI capability concept to an entrepreneur-level context by focusing on the respondent's ability to use AI for decision-making and business operations.	I am capable of using artificial intelligence to support decision-making and improve business operations.

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Learning Agility (LA)	LA1	DeRue et al., (2012)	Lee and Song (2022)	It has been adapted to the business context of women batik entrepreneurs by emphasising the acquisition of new knowledge when facing new business situations.	I can quickly acquire new knowledge when facing new business situations.
	LA2	DeRue et al., (2012)	Lee and Song (2022)	Adapted to the business context by emphasising adaptation to unfamiliar situations in running a business.	I can quickly adapt to unfamiliar situations while running my business.
	LA3	DeRue et al., (2012)	Lee and Song (2022)	It has been adapted to the business context by emphasising learning from new experiences and different perspectives.	I am willing to learn from new experiences and different perspectives to improve my business performance.
	LA4	DeRue et al., (2012)	Lee and Song (2022)	Adapted to the business context by emphasising the application of previous knowledge to new business challenges.	I can apply knowledge gained from previous experiences to solve new business challenges.
Knowledge Sharing (KS)	KS1	Yeboah (2023)	Setiono et al. (2025)	It was adapted to the context of knowledge sharing among entrepreneurs by focusing on sharing useful business information and knowledge.	I regularly share useful business information and knowledge with other entrepreneurs.
	KS2	Yeboah (2023)	Setiono et al. (2025)	It was adapted to the context of entrepreneurship by emphasising the sharing of business experiences and practical knowledge.	I share my business experience and practical knowledge with other entrepreneurs.
	KS3	Yeboah (2023)	Setiono et al. (2025)	It was adapted to the context of entrepreneurship by emphasising the exchange of ideas and information about business practices.	I willingly exchange ideas and information about business practices with other entrepreneurs.
	KS4	Yeboah (2023)	Setiono et al. (2025)	It was adapted to the context of entrepreneurs by emphasising knowledge sharing that can support other entrepreneurs' business activities.	I share knowledge that can help other entrepreneurs improve their business.

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Business Sustainability (BS)	BS1	Lutfi *et al.*, (2022)	Sadeghi *et al.*, (2024) Hussein *et al.*, (2026)	This study was adapted to the context of women-owned batik businesses by focusing on maintaining financial performance over time.	Our business can maintain its financial performance over time.
	BS2	Lutfi *et al.*, (2022)	Sadeghi *et al.*, (2024) Hussein *et al.*, (2026)	It has been adapted to the context of women-owned batik businesses by emphasising the continuity of operations despite changes in the business environment.	Our business can maintain its operations despite changes in the business envir onment.
	BS3	Lutfi *et al.*, (2022)	Sadeghi *et al.*, (2024) Hussein *et al.*, (2026)	The study was adapted to the context of women-owned batik businesses by emphasising sustained competitiveness in the market.	Our business can maintain its competitiveness in the market over time.
	BS4	Lutfi *et al.*, (2022)	Sadeghi *et al.*, (2024) (Hussein *et al.*, (2026)	It has been adapted to the context of women-owned batik businesses by emphasising future continuity and growth prospects.	Our business has good prospects for continued operations and growth in the future.

Source: *Measurement items were adapted from the original measurement sources and contextualized by the authors. Supporting theoretical references are presented separately from the original measurement data.*