



RESEARCH

The Role of Digital Financial Literacy and Sharia Financial Inclusion in Post-Pandemic MSME Resilience: Dynamic Capabilities as Mediator and Government Support as Moderator

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Received: 01/09/2026

Accepted: 05/09/2026

Abstract

Post-pandemic resilience requires micro, small, and medium enterprises (MSMEs) to combine financial resources with adaptive capabilities. This study examines the relationships of digital financial literacy and Islamic financial inclusion with MSME resilience, the mediating role of dynamic capabilities, and the moderating role of government support. A cross-sectional survey of 200 MSME owners or managers was analysed using partial least squares structural equation modelling in SmartPLS 3 with 500 bootstrap samples. Digital financial literacy and Islamic financial inclusion were positively associated with dynamic capabilities ($\beta = 0.556$ and 0.393) and resilience ($\beta = 0.221$ and 0.218). Dynamic capabilities had the largest reported direct coefficient for resilience ($\beta = 0.419$). Positive indirect associations supported partial statistical mediation for digital financial literacy ($\beta = 0.233$) and Islamic financial inclusion ($\beta = 0.165$). Government support had a positive direct association with resilience ($\beta = 0.114$, $p = 0.014$), but its interaction with dynamic capabilities was not significant ($\beta = 0.047$, $p = 0.122$). The model explained 72.2% of the variance in dynamic capabilities and 74.2% in resilience. The contribution is an integrated examination of financial resources, adaptive capability, and institutional support. However, supplementary full-collinearity diagnostics exceeded the 3.3 threshold for two constructs, and cross-sectional self-reports limit causal inference. Financial education and inclusion initiatives may benefit from practical adaptation activities, while programme quality, accessibility, and timing require further investigation.

Keywords Digital Financial Literacy, Sharia Financial Inclusion, MSME Resilience

INTRODUCTION

Micro, small, and medium enterprises (MSMEs) need to sustain operations while adjusting to changes in demand, payment practices, and access to working capital. In a post-pandemic setting, resilience concerns both continuity and adaptation: maintaining essential activities, responding to disruption, and reorganising resources as business conditions change. Digital financial literacy and access to appropriate financial services may support these responses, but their usefulness depends on how owners and managers apply them in business decisions.

Research on Indonesian ultra-micro, micro, and small enterprises links digital adoption with business performance and financial literacy, while also identifying differences associated with enterprise characteristics and connectivity infrastructure (Affandi et al., 2024). Research on small entrepreneurs further highlights the development of digital financial skills in the context of online lending (Uthaileang & Kiattisin, 2023). These studies motivate attention to financial knowledge and technology use, but neither relationship should be assumed to explain resilience through the same organisational mechanism. This study therefore examines dynamic capabilities as a potential link between financial resources and adaptive outcomes.

Islamic financial inclusion (IFI), referred to as Sharia financial inclusion in the title, concerns access to and use of Sharia-compliant financial services. It is conceptually distinct from financial inclusion in general because contractual rules and value alignment may affect participation and financing choices. The prohibition of *riba*, the emphasis on legitimate underlying transactions, and risk-sharing arrangements provide a different basis for allocating finance. Islamic inclusion can also involve redistribution and social inclusion mechanisms (Mohieldin et al., 2011). These features motivate an IFI-specific argument rather than treating Islamic services as interchangeable with conventional credit.

Rationale and theoretical contribution

The resource-based view explains how differences in strategically valuable resources can contribute to differences in organisational outcomes (Barney, 1991). Here, digital financial literacy (DFL) is treated as a knowledge resource and IFI as access to financial resources. Neither is assumed to be rare or inimitable merely because it is available. Their strategic usefulness depends on the routines through which firms apply knowledge and allocate finance. Dynamic capabilities theory identifies sensing, seizing, and reconfiguring as processes through which enterprises renew their resource base in changing environments (Teece, 2007).

The proposed contribution is an integrated test of resource access, adaptive capability, and perceived institutional support in one MSME model. It asks whether DFL and IFI are associated with resilience both directly and indirectly through dynamic capabilities, and whether government support changes the capability–resilience relationship. This is a contextual extension of established theory, rather than a claim that the individual constructs or mediation logic are new. The model also distinguishes government support as a potential moderator from its possible direct contribution to resilience.

Hypothesis development

DFL includes understanding digital financial information, assessing costs and risks, and using services in financial decisions. In the proposed model, these skills may help firms detect changes in transaction patterns, evaluate financing options, and revise resource allocations. Access to Islamic financial services may similarly enable firms to act on identified opportunities and reorganise working capital. These arguments imply two positive associations with dynamic capabilities (DC).

H1: Digital financial literacy is positively associated with dynamic capabilities.

H2: Islamic financial inclusion is positively associated with dynamic capabilities.

DFL may also relate to resilience through everyday financial practices such as monitoring cash flow, comparing service costs, and maintaining payment continuity. IFI may offer access to savings,

payments, and financing aligned with an entrepreneur's requirements and beliefs. These routes need not operate entirely through the broad DC construct. They motivate direct relationships with MSME resilience (RES), while recognising that service access alone does not guarantee affordability or effective use.

H3: Digital financial literacy is positively associated with MSME resilience.

H4: Islamic financial inclusion is positively associated with MSME resilience.

DC represents the proposed adaptive mechanism: identifying emerging needs, selecting responses, and reconfiguring business activities. For example, a firm may interpret digital sales records, redirect working capital, and adjust its payment or delivery arrangements. The model predicts that stronger DC is associated with greater resilience and statistically mediates the relationships of DFL and IFI with resilience. Because all constructs are observed at one time, these hypotheses specify a theoretical ordering that the survey cannot establish causally.

H5: Dynamic capabilities are positively associated with MSME resilience.

H6: Dynamic capabilities mediate the association between digital financial literacy and MSME resilience.

H7: Dynamic capabilities mediate the association between Islamic financial inclusion and MSME resilience.

Government support (GS) may complement DC by providing resources or reducing obstacles to implementing business changes. Relevant forms include training, mentoring, financing facilitation, digital infrastructure, and market access. The proposed positive interaction assumes that such support is accessible, timely, and relevant to the firm's adaptation needs. It therefore tests a conditional institutional argument, not the general proposition that public assistance is beneficial in every setting.

H8: Government support positively moderates the association between dynamic capabilities and MSME resilience.

Research objective and model

The objective is to test the direct relationships specified in H1–H5, the indirect relationships in H6–H7, and the interaction in H8 among MSME owners or managers using digital payment services. Figure 1 summarises the conceptual framework. GS is included as a main-effect term in the resilience equation as well as in the interaction. The study evaluates the measurement and structural models and then considers the theoretical and practical limits of the results.

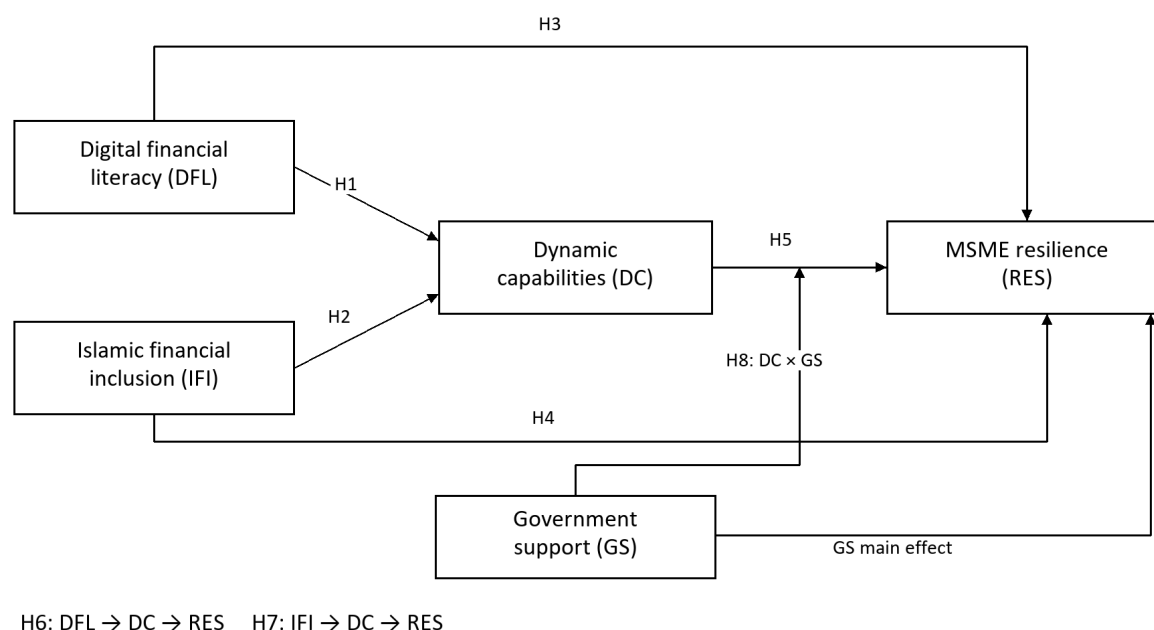


Figure 1. Conceptual framework. H6 and H7 represent indirect relationships through DC; H8 tests DC × GS. Source: Authors' proposed model.

RESEARCH METHODS

Research design

The study used a quantitative, cross-sectional survey design. The unit of analysis was the MSME, represented by an owner or manager. The model was estimated in SmartPLS 3 (Ringle et al., 2015), as identified in the exported analysis reports. PLS-SEM allowed the reflective measurement models and proposed direct, indirect, and interaction relationships to be evaluated together. The resulting estimates describe associations; neither temporal precedence nor causal effects can be established from this design.

Sampling and data collection

Purposive sampling selected MSME owners or managers whose businesses had operated for at least three years and used at least one digital payment platform, including QRIS, an e-wallet, or mobile banking. The final analytical sample contained 200 respondents. These eligibility criteria restrict inference to established businesses with digital payment experience; they do not provide a representative sample of all MSMEs or of businesses that closed during the pandemic. The criterion did not explicitly require use of Islamic finance, so the distinction between perceived access and actual use is important when interpreting IFI.

The original sample planning specified G*Power 3.1, $f^2 = 0.15$, $\alpha = .05$, and a power target above .80, with a recruitment target of 150–200 respondents. These parameters alone do not reproduce a minimum sample size: the selected test, exact power target, and predictor counts also matter (Faul et al., 2009). An omnibus regression calculation does not establish adequate power for a small interaction or a mediated relationship. Consequently, the sample size is not treated as proof that an interaction as small as the observed H8 estimate would be detected reliably.

Measures

The questionnaire used 40 reflective indicators scored from 1 (strongly disagree) to 5 (strongly agree). DFL comprised eight indicators covering digital financial information and services, risk and cost evaluation, and decision-making. IFI comprised eight indicators covering accessibility, availability, ease

of use, affordability, and use of Sharia-compliant services. DC comprised nine indicators covering sensing, seizing, and transforming or reconfiguring. RES comprised eight indicators concerning continuity, disruption responses, strategic adjustment, stability, and opportunities. GS comprised seven indicators concerning perceived training, mentoring, financing facilitation, digitalisation, market access, and supporting programmes. The exported outer model specifies DC as one reflective construct with nine indicators, rather than estimating separate sensing, seizing, and transforming constructs.

Appendix A records the indicator codes and construct coverage. The original analysis codes are retained for traceability: LFD for DFL, IFS for IFI, CD for DC, Y for RES, and DP for GS. These code differences do not denote additional constructs. Reporting the original questionnaire wording and its adaptation sources is necessary to assess content validity and distinguish actual service use from perceived availability.

Data analysis and validation

The analytical data contained 200 unique respondent IDs, no missing values, and 40 indicator columns with scores within the stated 1–5 range. All 8,000 indicator values matched the PLS report's original-data block in the same row order. No additional cases were removed during the supplementary checks. The reported algorithm used standardised data (mean zero and variance one), path weighting, initial weights of 1.0, and a maximum of 300 iterations. The export recorded no missing-data treatment. Indicator loadings and AVE assessed convergent validity; Cronbach's alpha, rho_A, and composite reliability assessed internal consistency. Discriminant validity was assessed with HTMT using the stated .90 threshold (Henseler et al., 2015).

The structural model included DFL and IFI as predictors of DC and DFL, IFI, DC, GS, and DC × GS as predictors of RES. The exported interaction is a single product indicator equal to the product of the standardised DC and GS scores. The bootstrap report records 500 samples, two-tailed tests at $\alpha = .05$, and bias-corrected and accelerated (BCa) confidence intervals. Table 7 reports the associated coefficients, t statistics, p values, and 95% BCa intervals. H6 and H7 concern indirect relationships through DC; H8 concerns the interaction. The 500-sample setting limits interval stability, so these results should not be described as a 5,000-sample bootstrap analysis.

Supplementary diagnostics were calculated during revision. Full-collinearity VIFs were obtained by regressing each of the five substantive exported latent-variable scores on the other four scores with an intercept, calculating $VIF = 1/(1 - R^2)$. The deterministic interaction was excluded from this five-construct diagnostic. The 3.3 screening threshold proposed by Kock (2015) was used. As an additional descriptive check, an unrotated principal component analysis of the correlation matrix of all 40 observed indicators was used to determine the proportion of variance represented by the first component. These calculations were added during revision and are distinct from the structural inner-model VIFs originally exported by SmartPLS. Neither diagnostic establishes that shared variance is exclusively methodological.

Predictive relevance was evaluated using blindfolding with omission distance 7. The reported Q^2 values are construct cross-validated redundancy statistics. PLSpredict was not documented in these reports and is not claimed to have been performed.

RESULTS AND DISCUSSION

Respondent characteristics

Table 1 presents the 200 respondents using frequencies recalculated from the analytical CSV. Men accounted for 57.5% and women for 42.5%. The largest age category was 41–50 years (30.0%), followed by 31–40 years (29.0%). Bachelor's degree holders represented 53.0%. Businesses operating for more than ten years accounted for 40.5%. Trade (25.0%), culinary businesses (23.0%), and services (14.5%) were the largest sectors. A total of 28.5% used QRIS, an e-wallet, and mobile banking together.

Volume 1(1), September 2026

These distributions describe the sample and do not establish representativeness or subgroup differences in structural relationships.

Table 1. Demographic profile and characteristics of respondents

Characteristic	Category	n	%
Gender	Men	115	57.50%
	Women	85	42.50%
Owner/manager age	20–30 years	56	28.00%
	31–40 years	58	29.00%
	41–50 years	60	30.00%
	> 50 years	26	13.00%
Highest education	High school/vocational school	54	27.00%
	Diploma	24	12.00%
	Bachelor's degree	106	53.00%
	Master's degree	16	8.00%
Business age	3–5 years	42	21.00%
	6–10 years	77	38.50%
	> 10 years	81	40.50%
Business sector	Trade	50	25.00%
	Culinary	46	23.00%
	Services	29	14.50%
	Manufacturing	25	12.50%
	Agriculture/agro	26	13.00%
	Fashion/craft	24	12.00%
Digital payment platform	QRIS	38	19.00%
	E-wallet	25	12.50%
	Mobile banking	17	8.50%
	QRIS + e-wallet	35	17.50%
	QRIS + mobile banking	28	14.00%
	All three platforms	57	28.50%
TOTAL		200	100.00%

Source: Recalculated from the analytical CSV (N = 200).

Measurement model

All 40 indicator loadings exceeded .70 (Table 2). The ranges were .859–.891 for DFL, .791–.859 for IFI, .812–.877 for DC, .833–.890 for RES, and .816–.869 for GS. Table 3 reports AVE values from .686 to .767, with composite reliability from .942 to .963. These results support convergent validity and strong internal consistency under the specified reflective model. The very high reliability values also warrant checking the original item wording for redundancy rather than assuming that higher reliability invariably improves measurement quality.

Table 2. Indicator loadings

Construct	Indicator	Outer Loading	Information
Digital financial literacy (DFL)	LFD_1	0.859	Valid
	LFD_2	0.883	Valid
	LFD_3	0.870	Valid
	LFD_4	0.871	Valid
	LFD_5	0.871	Valid
	LFD_6	0.880	Valid
	LFD_7	0.891	Valid
	LFD_8	0.880	Valid
Islamic financial inclusion (IFI)	IFS_1	0.819	Valid
	IFS_2	0.859	Valid
	IFS_3	0.791	Valid
	IFS_4	0.852	Valid
	IFS_5	0.817	Valid
	IFS_6	0.828	Valid
	IFS_7	0.839	Valid
	IFS_8	0.821	Valid
Dynamic capabilities (DC)	CD_1	0.823	Valid
	CD_2	0.833	Valid
	CD_3	0.820	Valid
	CD_4	0.842	Valid
	CD_5	0.812	Valid
	CD_6	0.834	Valid
	CD_7	0.850	Valid
	CD_8	0.854	Valid
MSME resilience (RES)	CD_9	0.877	Valid
	Y_1	0.887	Valid
	Y_2	0.890	Valid
	Y_3	0.868	Valid
	Y_4	0.880	Valid
	Y_5	0.833	Valid
	Y_6	0.848	Valid
	Y_7	0.873	Valid
Government support (GS)	Y_8	0.834	Valid
	DP_1	0.839	Valid
	DP_2	0.830	Valid

Construct	Indicator	Outer Loading	Information
	DP_3	0.829	Valid
	DP_4	0.831	Valid
	DP_5	0.816	Valid
	DP_6	0.869	Valid
	DP_7	0.837	Valid

Source: SmartPLS 3 analysis reports (N = 200).

Note. Original indicator prefixes LFD, IFS, CD, Y, and DP correspond to DFL, IFI, DC, RES, and GS, respectively.

Table 3. Construct reliability and convergent validity

Construct	Cronbach's Alpha	rho_A	Composite Reliability	AVE	Information
Digital financial literacy (DFL)	0.957	0.957	0.963	0.767	Reliable & Valid
Islamic financial inclusion (IFI)	0.935	0.936	0.946	0.686	Reliable & Valid
Dynamic capabilities (DC)	0.947	0.948	0.955	0.703	Reliable & Valid
MSME resilience (RES)	0.952	0.952	0.959	0.747	Reliable & Valid
Government support (GS)	0.928	0.929	0.942	0.699	Reliable & Valid

Source: SmartPLS 3 analysis reports (N = 200).

Note. Original indicator prefixes LFD, IFS, CD, Y, and DP correspond to DFL, IFI, DC, RES, and GS, respectively.

HTMT values ranged from .525 to .870 (Table 4). All were below the stated .90 criterion. However, DC–RES reached .870 and would not meet a stricter .85 rule. The evidence therefore supports discriminant validity under the selected criterion, while leaving a need to examine conceptual overlap and bootstrap HTMT intervals. These results do not rule out common method bias.

Table 4. Heterotrait–monotrait ratios

Construct	DC	DFL	IFI	RES	GS
Dynamic capabilities (DC)	-	0.827	0.765	0.870	0.686
Digital financial literacy (DFL)	0.827	-	0.623	0.779	0.622
Islamic financial inclusion (IFI)	0.765	0.623	-	0.755	0.525
MSME resilience (RES)	0.870	0.779	0.755	-	0.660
Government support (GS)	0.686	0.622	0.525	0.660	-

Source: SmartPLS 3 analysis reports (N = 200).

Note. Original indicator prefixes LFD, IFS, CD, Y, and DP correspond to DFL, IFI, DC, RES, and GS, respectively.

Structural model and fit

DC had $R^2 = .722$ and adjusted $R^2 = .719$; RES had $R^2 = .742$ and adjusted $R^2 = .736$ (Table 5). These values describe substantial explained variance within the sample. Unexplained variance includes residual variation and measurement-related limitations and cannot be assigned solely to omitted substantive causes. Blindfolding used an omission distance of 7 and yielded cross-validated redundancy Q^2 of .502 for DC and .544 for RES. These positive values indicate predictive relevance under the blindfolding criterion, not out-of-sample predictive performance (SmartPLS, n.d.-a).

Using the conventional f^2 reference points of .02, .15, and .35, DFL $\rightarrow$ DC (.724) and IFI $\rightarrow$ DC (.362) were large; DC $\rightarrow$ RES (.172) was medium. DFL $\rightarrow$ RES (.068), IFI $\rightarrow$ RES (.087), and GS $\rightarrow$ RES (.029) were small. The DC $\times$ GS interaction (.010) was below .02 (SmartPLS, n.d.-b). Structural predictor VIFs were 1.535 for each predictor of DC and ranged from 1.045 to 3.965 in the RES equation. The highest value belonged to DC. These equation-specific VIFs are different from the full-collinearity assessment in Table 8.

Table 5. Explained variance, effect sizes, and blindfolding Q^2

Endogenous Constructs / Pathways	R^2	Adjusted R^2	f^2	Q^2	Interpretation
Dynamic capabilities (DC)	0.722	0.719	-	0.502	Explained variance
MSME resilience (RES)	0.742	0.736	-	0.544	Explained variance
DFL → DC	-	-	0.724	-	Large
IFI → DC	-	-	0.362	-	Large
DFL → RES	-	-	0.068	-	Small
IFI → RES	-	-	0.087	-	Small
DC → RES	-	-	0.172	-	Medium
GS → RES	-	-	0.029	-	Small
DC × GS → RES	-	-	0.010	-	Below small

Source: SmartPLS 3 analysis reports (N = 200).

Note. Q^2 denotes blindfolding cross-validated redundancy, with omission distance 7. Effect-size labels use .02, .15, and .35 as small, medium, and large reference points.

Table 6 reports SRMR values of .038 and .045 for the saturated and estimated models, respectively, and an estimated-model RMS_theta of .094. These meet the thresholds stated in the original analysis. NFI values of .884 and .883 do not meet its .90 reference. The fit evidence is therefore mixed. The d_ULS and d_G statistics cannot establish acceptable fit without their relevant bootstrap reference values. Fit summaries do not validate the proposed causal ordering.

Table 6. Model fit statistics

Indicator	Saturated Model	Estimated Model	Criteria	Information
SRMR	0.038	0.045	< 0.08	Meets criterion
d_ULS	1.161	1.698	-	-
d_G	0.857	0.877	-	-
Chi-Square	908.218	917.109	-	-
NFI	0.884	0.883	> .90	Below .90
RMS_theta	—	0.094	< 0.12	Meets criterion

Source: SmartPLS 3 analysis reports (N = 200).

Direct relationships and statistical mediation

H1–H5 were supported at $p < .001$ (Table 7). DFL and IFI were positively associated with DC ($\beta = .556$ and .393, respectively). Their direct coefficients for RES were .221 and .218. DC had the largest reported direct coefficient for RES ($\beta = .419$). This descriptive ranking has not been tested as a statistical difference between coefficients and should not be interpreted as a ranking of causal intervention effects.

The indirect DFL → DC → RES coefficient was .233 ($p < .001$), and the indirect IFI → DC → RES coefficient was .165 ($p < .001$), supporting H6 and H7. Because both corresponding direct paths remained positive and significant, the pattern is consistent with complementary partial statistical mediation. The products of the rounded component coefficients, $.556 \times .419$ and $.393 \times .419$, are consistent with the reported indirect estimates. These relationships support the proposed mechanism statistically, but do not demonstrate that changes in financial resources preceded changes in capability or resilience.

H8 was not supported: DC × GS → RES yielded $\beta = .047$, $t = 1.550$, $p = .122$, $f^2 = .010$, and 95% BCa CI $[-.014, .101]$. In contrast, the GS main-effect coefficient was positive and significant ($\beta = .114$, $t = 2.460$, $p = .014$, 95% BCa CI $[.026, .207]$). With the interaction included, this main effect describes the association at DC = 0 on its standardised scale. The finding distinguishes a direct conditional association from evidence of amplification: the data support the former at mean DC, but provide insufficient evidence of the proposed positive moderation.

Table 7. Direct, indirect, and interaction tests

Hypotheses	Relationship	β	t	p	95% BCa CI	Decision
H1	DFL $\rightarrow$ DC	0.556	13.750	< .001	[0.473, 0.632]	Supported
H2	IFI $\rightarrow$ DC	0.393	9.176	< .001	[0.300, 0.473]	Supported
H3	DFL $\rightarrow$ RES	0.221	4.191	< .001	[0.116, 0.321]	Supported
H4	IFI $\rightarrow$ RES	0.218	4.282	< .001	[0.101, 0.307]	Supported
H5	DC $\rightarrow$ RES	0.419	6.535	< .001	[0.294, 0.544]	Supported
H6	DFL $\rightarrow$ DC $\rightarrow$ RES	0.233	6.065	< .001	[0.163, 0.311]	Supported
H7	IFI $\rightarrow$ DC $\rightarrow$ RES	0.165	5.267	< .001	[0.103, 0.226]	Supported
H8	DC $\times$ GS $\rightarrow$ RES	0.047	1.550	0.122	[-0.014, 0.101]	Not supported
—	GS $\rightarrow$ RES	0.114	2.460	0.014	[0.026, 0.207]	Significant

Source: SmartPLS 3 analysis reports (N = 200).

Note. The supplied report records 500 bootstrap samples, two-tailed tests, and 95% BCa confidence intervals. H6 and H7 are indirect paths. GS $\rightarrow$ RES is a main-effect term, not an additional numbered hypothesis. Values rounded to three decimals.

Supplementary common method bias diagnostics

Full-collinearity VIFs were 2.886 for DFL, 2.293 for IFI, 4.644 for DC, 3.843 for RES, and 1.811 for GS (Table 8). DC and RES exceeded the prespecified screening threshold of 3.3. The first unrotated principal component accounted for 54.06% of the variance across the 40 indicators. Together, these checks indicate substantial shared variance and leave common method bias as an unresolved threat. They do not prove that method bias caused the significant paths, but they do not support a claim that the data are free from common method bias.

Table 8. Supplementary full-collinearity assessment

Construct	Full-collinearity VIF	Comparison with 3.3
DFL	2.886	Below threshold
IFI	2.293	Below threshold
DC	4.644	Above threshold
RES	3.843	Above threshold
GS	1.811	Below threshold

Source: Supplementary calculations using exported PLS construct scores (N = 200).

Note. Each substantive latent-variable score was regressed on the other four scores with an intercept; $VIF = 1/(1 - R^2)$. The interaction product was excluded. These supplementary calculations are distinct from structural inner-model VIFs.

Interpreting the non-significant government support interaction

The moderation result challenges the assumption that institutional resources necessarily amplify the association between internal capabilities and resilience. The significant GS main effect indicates that support can be associated with resilience without changing the DC slope detectably. One possible explanation for limited amplification is capability substitution: firms with strong routines and networks may implement adaptations without substantial additional assistance. Support could then have greater marginal value for firms with weaker capabilities. This remains a proposition, not a demonstrated result; the positive and non-significant interaction does not establish substitution or diminishing returns.

Second, perceived programme availability can differ from usable support. Application costs, eligibility rules, information gaps, delayed delivery, or limited follow-up may prevent owners from converting nominal assistance into action. If GS predominantly captures awareness of programmes rather than receipt, intensity, or quality, the interaction may fail to represent the institutional mechanism of interest. The questionnaire wording and programme participation records are needed to evaluate this possibility.

Third, combining support types may conceal different relationships. Training and mentoring may help develop routines over time; financing may ease an immediate liquidity constraint; infrastructure may affect the feasibility of digital operations across many firms. Their timing, beneficiaries, and channels need not be identical. A general GS score may average over these differences. Future analyses should separate support receipt, type, amount or intensity, accessibility, and quality, with an explicit rationale for whether each acts directly, through capability development, or as a moderator.

Fourth, the post-pandemic policy context may involve a mismatch between programme timing and the resilience outcome measured. Emergency relief may sustain operations before capability changes become visible, whereas training benefits may appear later. The present cross-sectional model cannot distinguish these sequences. Programme dates and exposure histories are needed before interpreting the result as evidence about a specific policy phase. A medium-effect sample-planning assumption also cannot justify treating a non-significant small interaction as proof of institutional irrelevance.

Mechanisms specific to Islamic financial inclusion

The IFI results are consistent with the proposition that access to Sharia-compliant services is associated with financial flexibility and adaptation. They do not isolate which contractual features matter. For owners who avoid interest-bearing finance, *riba* prohibition and value alignment may expand willingness to participate in formal finance. Profit-sharing arrangements may link remuneration to business outcomes and require attention to project viability, information disclosure, and partner oversight. Justice-oriented and transparent transactions may influence trust and the acceptability of resource allocation decisions (Mohieldin et al., 2011). These are theoretically motivated mechanisms, not separately measured effects in this model.

Risk-sharing should not be attributed equally to every Islamic product. Profit-sharing partnerships differ from sale-based or lease-based financing, and Sharia compliance does not eliminate repayment obligations, business risk, or transaction costs. The observed IFI coefficient consequently cannot demonstrate that Islamic finance is safer, cheaper, or more effective than conventional finance. Contract-level information and a suitable comparison group are required to examine whether financing structure changes risk-taking, investment horizons, or the allocation of resources during disruption.

Boundary conditions and practical implications

Business scale may alter the proposed relationships. Microenterprises may depend heavily on an owner's personal financial knowledge and face constraints in records, collateral, or staff capacity. Small and medium enterprises may have more specialised routines and greater ability to absorb external resources. These are boundary-condition propositions; the reported data do not provide micro, small, and medium subgroup estimates. Differences cannot be inferred from the pooled coefficients.

Sector may also matter. Trade firms may prioritise inventory and payment continuity, culinary firms may face perishability and changing consumption channels, and service firms may rely more on client relationships and staff skills. Although these sectors are represented, the study has not tested whether their path coefficients differ. Future multigroup analysis requires an adequate sample within each group and evidence that the constructs are measured comparably before interpreting differences.

Urban and rural enterprises may face different infrastructure, travel, provider access, and programme-delivery conditions. These could shape both digital service use and access to Islamic finance, but geographic moderation has not been demonstrated here. The geographic scope and the absence of a probability sample limit transferability. The restriction to surviving firms with digital payment experience may additionally exclude businesses facing the strongest barriers.

For practice, the findings motivate pairing digital financial education with activities that connect information to business decisions: reading transaction records, evaluating service costs and security, comparing financing options, and revising cash-flow plans. Financial providers can explain contract

obligations and support informed product selection. Government programme evaluation can measure accessibility, actual participation, capability development, and subsequent operational outcomes separately. These are implications to evaluate prospectively, not demonstrated causal prescriptions from the present survey.

Limitations and future research

The cross-sectional design leaves reverse causality and unobserved confounding unresolved. Resilient firms may have more resources to acquire financial knowledge or access finance, while managerial experience, prior performance, or business networks could affect multiple constructs. Statistical mediation at one time point cannot establish a temporal mechanism. Panel studies that observe financial resources before capability development and later resilience, or credible intervention designs, would offer stronger tests.

Single-respondent perceptual measures create risks of common method bias, social desirability, and recall error. These concerns are reinforced by two full-collinearity VIFs above 3.3 and the 54.06% variance share of the first unrotated principal component. The checks do not identify how much of the observed association is methodological rather than substantive, but they preclude an unqualified claim that common method bias has been ruled out. Future studies should combine surveys with transaction records, revenue recovery, operational downtime, or survival outcomes; use multiple informants where feasible; and document procedural and statistical bias assessments.

Further research should distinguish support types and exposure periods, record Islamic contract use, and examine scale, sector, and location with appropriately powered designs. The supplied bootstrap run used only 500 samples; a larger run is needed to assess the stability of confidence limits, particularly for the small interaction. Reporting the original sample-planning output and the complete questionnaire remains necessary. These extensions would help establish when, for whom, and through which mechanisms financial resources and public support contribute to resilience.

CONCLUSION

Among the 200 surveyed MSME owners or managers, digital financial literacy and Islamic financial inclusion were positively associated with resilience both directly and through dynamic capabilities. The pattern supports an integrated resource and capability interpretation and complementary partial statistical mediation. Government support had a positive direct association at mean dynamic capability, while its interaction with dynamic capabilities was not significant. Thus, direct support and capability amplification should be distinguished. Programme quality, accessibility, type, and timing warrant further investigation. Cross-sectional self-reports, the sampling scope, the 500-sample bootstrap, and unresolved common method bias constrain interpretation. The supplementary diagnostics do not support an unqualified claim that method bias is absent. Longitudinal, contract-specific, and programme-specific evidence is needed to test the proposed mechanisms and their boundary conditions.

ACKNOWLEDGMENT

The authors thank the MSME owners and managers who participated in the study and those who supported its completion.

DECLARATION OF COMPETING INTEREST

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

USE OF ARTIFICIAL INTELLIGENCE (AI)-ASSISTED TECHNOLOGY

The authors declare that no artificial intelligence (AI) tools were used in the preparation, analysis, or writing of this manuscript. All aspects of the research, including data collection, interpretation, and

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REFERENCES

- Abdullayev, K. (2024). Current trends in digital transformation and their impact on the national economy. *Scientific Bulletin of Mukachevo State University Series Economics*, 11(1), 9–18. <https://doi.org/10.52566/msu-econ1.2024.09>
- Affandi, Y. (2024). Digital adoption, business performance, and financial literacy in ultra-micro, micro, and small enterprises in Indonesia. *Research in International Business and Finance*, 70. <https://doi.org/10.1016/j.ribaf.2024.102376>
- Aldreabi, H. (2025). Determinants of Student Adoption of Generative AI in Higher Education. *Electronic Journal of E Learning*, 23(1), 15–33. <https://doi.org/10.34190/ejel.23.1.3599>
- Asadollahi, F. (2025). Barriers and facilitators for mHealth utilization in pregnancy care: A qualitative analysis of pregnant women and stakeholder's perspectives. *BMC Pregnancy and Childbirth*, 25(1). <https://doi.org/10.1186/s12884-025-07244-5>
- Bakhshi, P. (2024). BARRIERS IN ADOPTION OF FINTECH BY STREET VENDORS AND HAWKERS IN INDIA USING INTERPRETIVE STRUCTURAL MODELING. *Business Theory and Practice*, 25(1), 231–240. <https://doi.org/10.3846/btp.2024.19208>
- Becha, H. (2025). Digital financial inclusion, environmental sustainability and regional economic growth in China: Insights from a panel threshold model. *Journal of Economic Structures*, 14(1). <https://doi.org/10.1186/s40008-025-00347-4>
- Bhat, S. A. (2025). Digital financial literacy and financial well-being – evidence from India. *International Journal of Bank Marketing*, 43(3), 522–548. <https://doi.org/10.1108/IJBM-05-2024-0320>
- Buenestado-Fernández, M. (2023). Digital competency as a key to the financial inclusion of young people in complex scenarios: A focus groups study. *Citizenship Social and Economics Education*, 22(1), 48–62. <https://doi.org/10.1177/14788047231170083>
- Chamboko, R. (2024). Digital financial services adoption: A retrospective time-to-event analysis approach. *Financial Innovation*, 10(1). <https://doi.org/10.1186/s40854-023-00568-1>
- Choung, Y. (2023). Digital financial literacy and financial well-being. *Finance Research Letters*, 58. <https://doi.org/10.1016/j.frl.2023.104438>
- Dong, J. (2024). Digital finance's impact on household portfolio diversity: Evidence from Chinese households. *Finance Research Letters*, 70. <https://doi.org/10.1016/j.frl.2024.106347>
- Dzinamarira, T. (2024). COVID-19 and mental health services in Sub-Saharan Africa: A critical literature review. *Comprehensive Psychiatry*, 131. <https://doi.org/10.1016/j.comppsy.2024.152465>

- Fu, C. (2024). Can digital inclusive finance facilitate productive investment in rural households?—An empirical study based on the China Household Finance Survey. *Finance Research Letters*, 61. <https://doi.org/10.1016/j.frl.2024.105034>
- Hu, S. (2025). Digital economy, financial literacy, and financial risk-taking in rural households. *International Review of Economics and Finance*, 98. <https://doi.org/10.1016/j.iref.2025.103922>
- Hussain, S. (2025). Determinants inhibiting digital payment system adoption: An Indian perspective. *Qualitative Research in Financial Markets*, 17(4), 716–748. <https://doi.org/10.1108/QRFM-09-2023-0223>
- Kerschbaumer, L. (2024). COVID-19 and health inequalities: The impact of social determinants of health on individuals affected by poverty. *Health Policy and Technology*, 13(1). <https://doi.org/10.1016/j.hlpt.2023.100803>
- Liu, J. (2024). Digital financial inclusion and household financial vulnerability: An empirical analysis of rural and urban disparities in China. *Heliyon*, 10(15). <https://doi.org/10.1016/j.heliyon.2024.e35540>
- Liu, T. (2024). Can farmers' digital literacy increase income? Empirical evidence from China. *Plos One*, 19(12). <https://doi.org/10.1371/journal.pone.0314804>
- Lu, X. (2023). Digital financial inclusion and investment diversification: Evidence from China. *Accounting and Finance*, 63, 2781–2799. <https://doi.org/10.1111/acfi.13043>
- Lv, Y. (2025). Carbon reduction effect of digital finance in China: Based on household micro data and input-output model. *China Finance Review International*, 15(2), 363–388. <https://doi.org/10.1108/CFRI-03-2024-0083>
- Lyu, Y. (2023). Can Fintech Alleviate the Financing Constraints of Enterprises?—Evidence from the Chinese Securities Market. *Sustainability Switzerland*, 15(5). <https://doi.org/10.3390/su15053876>
- Mao, F. (2023). Digital financial inclusion, traditional finance system and household entrepreneurship. *Pacific Basin Finance Journal*, 80. <https://doi.org/10.1016/j.pacfin.2023.102076>
- Marhadi, M. (2024). Continuance intention of Fintech Peer-to-Peer (P2P) financing Shariah: Moderating role of brand schematicity and digital financial literacy. *Journal of Open Innovation Technology Markets and Complexity*, 10(2). <https://doi.org/10.1016/j.joitmc.2024.100301>
- McCall, T. (2023). Attitudes Toward Seeking Mental Health Services and Mobile Technology to Support the Management of Depression Among Black American Women: Cross-Sectional Survey Study. *Journal of Medical Internet Research*, 25. <https://doi.org/10.2196/45766>
- Mishra, D. (2024). Digital Financial Literacy and Its Impact on Financial Decision-Making of Women: Evidence from India. *Journal of Risk and Financial Management*, 17(10). <https://doi.org/10.3390/jrfm17100468>
- Ofosu-Asare, Y. (2024). Developing classroom ICT teaching techniques, principles and practice for teachers in rural Ghana without access to computers or internet: A framework based on literature review. *International Journal of Information and Learning Technology*, 41(3), 262–279. <https://doi.org/10.1108/IJILT-04-2023-0045>

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- Payne, R. (2025). Challenges to quality in contemporary, hybrid general practice: A multi-site longitudinal case study. *British Journal of General Practice*, 75(750). <https://doi.org/10.3399/BJGP.2024.0184>
- Qin, H. (2025). Barriers and facilitators to pulmonary rehabilitation in COPD: a mixed-methods systematic review. *BMC Pulmonary Medicine*, 25(1). <https://doi.org/10.1186/s12890-025-03769-9>
- Quarshie, M. A. (2025). Barriers to breakthroughs: The crucial role of support services in advancing accounting practices, financial literacy and performance in disability-led SMEs. *Quality and Quantity*, 59, 955–977. <https://doi.org/10.1007/s11135-024-02050-1>
- Razzaq, A. (2024). Determinants of financial inclusion gaps in Pakistan and implications for achieving SDGs. *Scientific Reports*, 14(1). <https://doi.org/10.1038/s41598-024-63445-6>
- Saluja, O. B. (2023). Barriers and interventions on the way to empower women through financial inclusion: A 2 decades systematic review (2000–2020). *Humanities and Social Sciences Communications*, 10(1). <https://doi.org/10.1057/s41599-023-01640-y>
- Sharma, H. (2023). Digital financial services and human development: Current landscape and research prospects. *Information Technology for Development*, 29(4), 582–606. <https://doi.org/10.1080/02681102.2023.2199189>
- Tagne, J.F. (2025). Challenges for remote patient monitoring programs in rural and regional areas: A qualitative study. *BMC Health Services Research*, 25(1). <https://doi.org/10.1186/s12913-025-12427-z>
- Uthaileang, W. (2023). Developing the capability of digital financial literacy in developing countries: A Case of online loans for small entrepreneurs. *Heliyon*, 9(12). <https://doi.org/10.1016/j.heliyon.2023.e21961>
- Wang, Y. Z. (2025). Digital development and rural financial inclusion: Evidence from China. *Research in International Business and Finance*, 73. <https://doi.org/10.1016/j.ribaf.2024.102637>
- Yang, J. (2023). Digital finance and financial literacy: Evidence from Chinese households. *Journal of Banking and Finance*, 156. <https://doi.org/10.1016/j.jbankfin.2023.107005>

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