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Does Digital Transformation Improve Business Resilience? The Role of Organizational Adaptation with Innovation, Digitalization, and Marketing Strategies

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Abstract. This study investigates the role of digital transformation to business resilience for Indonesian Micro, Small, and Medium Enterprises (MSMEs), with organizational adaptation as the mediator. Using a quantitative approach and Structural Equation Modeling with Partial Least Squares (SEM-PLS), this research investigates 180 MSME respondents' data. The findings indicate that digital transformation operational digitalization, product innovation, and digital marketing strategies has a tendency to impact business resilience both directly and indirectly via organizational adaptation. Organizational adaptation per se is discovered to be a key contributor to resilience, implying MSMEs' ability to respond effectively, innovate, and reorganize activities when faced with external shocks. The evidence also confirms that adaptive capability mediates digital transformation and business resilience. These findings add depth to theory on dynamic capabilities in the context of digital disruption and offer practical implications for MSME digital strategy and policy formulation in emerging economies.

Keywords: Business Resilience; Digital Transformation; MSMEs; Organizational Adaptation.

Abstrak. *Studi ini mengeksplorasi dampak transformasi digital terhadap ketahanan bisnis di kalangan Usaha Mikro, Kecil, dan Menengah (UMKM) Indonesia, dengan adaptasi organisasi sebagai mediator. Menggunakan pendekatan kuantitatif dan Pemodelan Persamaan Struktural dengan Partial Least Squares (SEM-PLS), penelitian ini mengkaji data dari 180 responden UMKM. Hasil penelitian menunjukkan bahwa transformasi digital, digitalisasi operasional, inovasi produk, dan strategi pemasaran digital berdampak pada ketahanan bisnis baik secara langsung maupun tidak langsung melalui adaptasi organisasi. Adaptasi organisasi, itu sendiri, ditemukan sebagai kontributor utama terhadap ketahanan, yang menyiratkan kemampuan UMKM untuk merespon secara efektif, berinovasi, dan mengatur ulang aktivitas ketika menghadapi guncangan eksternal. Bukti juga menegaskan bahwa kemampuan adaptif memediasi transformasi digital dan ketahanan bisnis. Temuan ini memperkuat teori kemampuan dinamis dalam*

konteks disrupsi digital dan memberikan implikasi praktis untuk pengembangan strategi dan kebijakan digital UMKM di negara berkembang.

***Kata kunci**:* Ketahanan Bisnis; Transformasi Digital; UMKM; Adaptasi Organisasi.

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BACKGROUND

Micro, Small, and Medium Enterprises (MSMEs) are placed strategically to increase national economic resilience, not only as engines of growth but also as the pillars of socio-economic stability. In Indonesia, MSMEs contribute approximately 61% of the Gross Domestic Product (GDP), and micro-enterprises are the largest contributors (Fauziah et al., 2024; Suhaili & Sugiharsono, 2019), and employ more than 97% of the country's labor force, hence play a vital role in the economic system (Fauziah et al., 2024; Sinha et al., 2024). MSMEs act not only as an economic foundation but also as a social security network, especially in rural areas, by improving well-being, poverty alleviation, and the alleviation of social inequality through job creation and support of local economies (Fauziah et al., 2024; Santoso et al., 2020). Their adaptability and resilience play a central role in addressing external uncertainties, bespeaking their significance in promoting economic stability. However, MSMEs face various challenges, primarily in accessing international supply chains and export markets and digital technology (Wahyudi et al., 2024), which compromises their competitiveness. These issues must be addressed through improved human resource quality and regulatory simplicity (Fauziah et al., 2024; Shohibboniawan Wahyudi et al., 2024). Therefore, policy support is essential ranging from digital transformation initiatives and financing access to facilitating cross-sector collaboration (Wahyudi et al., 2024). MSMEs must be strengthened by balanced provision of resources and open economic policy-making in order to make them sustainable and able to continue contributing to national resilience (Santoso et al., 2020).

In periods of digital upheaval, international economic uncertainty, and post-pandemic recovery, MSMEs face increasingly sophisticated challenges. Rapid technological change, shifting consumer expectations, and heightened digital competition compel MSMEs to rethink strategies beyond adopting new technologies. Overhaul in depth encompassing organizational alertness and strategic creativity is required to stay relevant. Digitalization is at the forefront of wider market access and enhanced efficiency, where MSMEs are better able to make decisions and save expenses (Hariyanti & Kristanti, 2024). In the post-pandemic era, digital marketing via social media, marketplaces, and sponsored ads has greatly boosted sales (Sutarto & Hwihanus, 2025). Flexibility and innovation are needed, even with MSMEs still facing restrictions like financial limitations and cybersecurity risks (Gómez & López, 2024). Successful digital transformation plans are needed to adequately capture digital opportunities (Hariyanti & Kristanti, 2024). With increased market exposure offered by digitalization, MSMEs must overcome digital illiteracy barriers and intense competition (Evanita & Fahmi, 2023). The COVID-19 pandemic subsequently underscored the need for innovative digital strategies in maintaining business continuity (Nata et al., 2022).

Business resilience is the ability of an organization to survive, adapt, and flourish in response to external pressures. While digital transformation has been posited as one of the key drivers of resilience, technology adoption alone does not guarantee long-term agility. The majority of organizations implement digital technologies at a superficial level, thereby achieving limited impacts (Baharuddin & Omar, 2024)). Digital capabilities virtual access and data-driven decisions, for instance allow firms to respond to crises better, as the COVID-19 pandemic has seen (Browder et al., 2024). Firms assume various forms of resilience: some are control-based, but others assume learning-based forms that accept complexity and processes (Sgobbi & Codara, 2022).

True resilience, however, requires internal adaptation process innovation, operational digitization, and strategic data utilization (Baharuddin & Omar, 2024; Pinto et al., 2024). Businesses that invest in continuous learning and align technology to operations achieve long-term gains (Setiawati et al., 2022). Too many continue not to internalize technology, limiting its transformative impact (Baharuddin & Omar, 2024). Strategic leaders are the key to developing an adaptive culture that utilizes emerging and legacy technologies to build resilience (Browder et al., 2024).

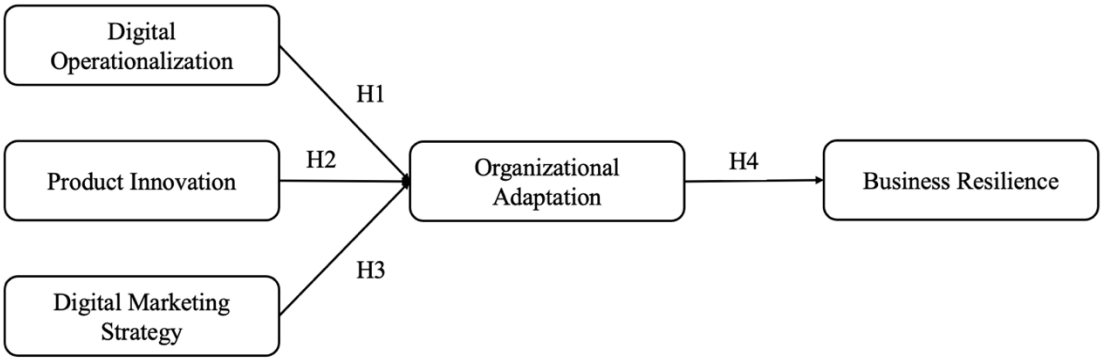
According to a McKinsey & Company report (2024), while over 90% of the world's organizations have been through digital transformation, its success heavily relies on organizational and internal agility, and culture lacking adaptive readiness, this transformation will fail. Digital transformation and sustainability were previously addressed in research, but none of them fully described organizational adaptation as a mediator of the relationship between digitization and business resilience. None but a few papers mention innovation, green marketing, or environmental orientation separately without exploring variable relationships to propel the adaptive ability of MSMEs toward disruption. This research aims to fill this knowledge gap by being specifically concerned with business resilience MSMEs' ability to survive and strategically adapt under uncertainty. This topic has become the focus of attention in the post-pandemic era and acceleration of digitalization, requiring SMEs to be resilient and flexible in responding to external forces (Elshaer & Saad, 2022; Purnomo et al., 2021; Sturm et al., 2023). The novelty of this research is that it integrates five key variables digital operationalization, product innovation, digital marketing strategy, organizational adaptation, and business resilience into one conceptual comprehensive model.

Unlike previous emphasis on sustainability, this study shines the light on business resilience the ability of MSMEs to survive, bounce back, and adapt with successive external shocks and unpredictability. This is particularly relevant in post-pandemic reconstruction and accelerated digitalization where MSMEs are forced to be nimble and competitive (Elshaer & Saad, 2022; Purnomo et al., 2021; Sturm et al., 2023). Commercial resilience today is not merely an operational issue but a strategic necessity attuned to Indonesia's national development vision embodied in the Asta Cita, with placing economic competitiveness and entrepreneurial agility at a premium. The value of this current research lies in its integrative conceptual model that synthesizes five variables digital operationalization, product innovation, digital marketing strategy, organizational adaptation, and business resilience into a single empirical platform. Such frameworks have normally been studied separately in earlier studies, focusing on innovation (Muthukrishnan & Bhattacharyya, 2024; Yadav & Tripathi, 2024), marketing responsiveness (Golgeci et al., 2025), or business resilience separately (Do et al., 2024; Pathak et al., 2023; Salem et al., 2023). On the contrary, this study not only explores the relation-

ships among the constructs but also theorizes organizational adaptation as an intervening factor, a direction which has been understudied in previous research. By uncovering how dynamic capabilities enable SMEs to translate digital investments into sustainable outcomes, this paper constitutes a valuable theoretical contribution towards the dynamic capabilities stream of thought (Luu, 2023; Pratono, 2022) and presents policy-relevant findings for policy-making in emerging economies.

This study seeks to explore the influence of digital transformation operational digitization, product innovation, and digital marketing on business resilience of SMEs in Indonesia. This study also seeks to discover evidence of mediation effect of organizational adaptation in this relationship. The findings of the study are expected to provide strategic contribution towards SMEs, policymakers, and stakeholders in developing adaptable digital-based strategies improving business sustainability and resilience.

Based on previous studies, the conceptual framework used in this study is where digital transformation directly influences business resilience and organizational adaptation and organizational adaptation acts as an intervening factor between digital transformation and resilience. This is a resource-based view (RBV) and contingency theory-based model, where it is argued that the performance of a firm is motivated by how well it can align its internal capabilities to match external environmental conditions. Here, digital transformation is a strategic resource provider, while organizational adaptation is a key capability that enables resilience against environmental changes.



Source: Adaptation from literature (2025).

Figure 1. Conceptual Framework

RESEARCH METHODS

This study employs a quantitative design founded on a survey method. The survey method is a technique by which causal association analysis among latent variables can be explored using statistical analysis of data collected from a representative sample in structured form. This study targeted MSME players in Indonesia, including both male and female entrepreneurs aged 16 years and above. Given the broad and vague population scope, a non-probability purposive sampling strategy was utilized with inclusion requirements on MSME owners or decision-makers engaged in digital activities, i.e., online marketing or technology-enabled processes.

By the structural equation modeling (SEM) methodological guidance requesting a sample size of ten or more observed variables (Hair et al., 2017)) 180 MSME respondents were successfully gathered, and the criteria of statistical estimation and generalizability of the model were achieved. The data were gathered through an online and offline structured questionnaire. The survey utilized a 5-point Likert scale (1= Strongly Disagree to 5=Strongly Agree) and was designed with reference to piloted instruments of prior studies, adapted to fit the Indonesian MSMEs' realities. The study utilized both primary data, which were gathered directly from the responses of the survey, and secondary data, which were sourced from academic journals, policy documents, and official statistics for use in the literature review and contextual analysis.

Table 1. Operational Definition of Variables

No	Variable	Indicators	Source
1	Digital Operationalization	(1) Use of digital tools (2) Process automation (3) Data integration	(Rahmatia et al., 2024; Veiga et al., 2024; Yadav & Tripathi, 2024)
2	Product Innovation	(1) New product development (2) Product enhancement (3) Technology-based innovation	(Christofi et al., 2025; Muthukrishnan & Bhattacharyya, 2024; Yodchai et al., 2022)
3	Digital Marketing Strategy	(1) Social media (2) E-commerce (3) Digital advertising (4) Creative content	(Golgeci et al., 2025; Pathak et al., 2023; Su et al., 2023)
4	Organizational Adaptation	(1) Flexibility (2) Responsiveness (3) Process innovation (4) Organizational learning	(Elshaer & Saad, 2022; Luu, 2023; Pratono, 2022; Sturm et al., 2023)
5	Business Resilience	(1) Crisis endurance (2) Recovery capability (3) Operational continuity (4) Risk management	(Behr & Storr, 2022; Do et al., 2024; Purnomo et al., 2021; Salem et al., 2023)

Source: Adapted from prior research (2025).

To verify the hypotheses, this research utilizes Structural Equation Modeling (SEM) through the utilization of Smart-PLS software. The three-step analysis is: (1) Descriptive statistics in order to summarize respondent attributes and variable distributions; (2) Measurement model testing, i.e., indicator reliability (outer loadings), internal consistency (Cronbach's alpha, Composite Reliability), convergent validity (AVE), and discriminant validity (HTMT ratio, Fornell-Larcker); and (3) Structural model testing, i.e., path coefficients (t-statistics, p-values via bootstrapping), explanatory power (R^2), effect size (f^2), predictive relevance (Q^2), and multicollinearity (VIF).

RESULTS AND DISCUSSIONS

Descriptive Statistics of Research Variables

Descriptive statistics provide a summary of the variability and central tendency of respondents' attitude towards every construct of the model. Mean scores are the average level of agreement of all the items under every construct, and standard deviation measures variability in responses.

Table 2. Variable Descriptive Statistics

Variables	Number of Items	Mean	Std. Deviation	Interpretation
Digital Operationalization	3	4.12	0.65	High agreement
Product Innovation	3	4.08	0.61	High innovation orientation
Digital Marketing Strategy	4	3.91	0.68	Moderate to high use
Organizational Adaptation	4	4.18	0.59	Strong adaptive capacity
Business Resilience	4	4.21	0.57	High resilience readiness

Source: Author processed (2025).

The results show strong engagement across variables, with Business Resilience scoring highest (M = 4.21, SD = 0.57), indicating that MSMEs feel capable of surviving and sustaining operations amid disruptions. Organizational Adaptation (M = 4.18) reflects high flexibility and responsiveness to change. Digital Operationalization (M = 4.12) suggests widespread use of digital tools and automation. Product Innovation (M = 4.08) shows consistent product development efforts. Meanwhile, Digital Marketing Strategy (M = 3.91) indicates active, though more varied, use of online platforms like social media and e-commerce.

This study involved 180 respondents representing MSME (Micro, Small, and Medium Enterprises) owners or managers across various regions in Indonesia. The selection was based on purposive sampling, targeting individuals actively involved in digital or semi-digital business processes.

Table 3. Respondent Demographic Profile

Category	Subcategory	Frequency	Percentage (%)
Gender	Male	106	58.9%
	Female	74	41.1%
Age	< 25 years	24	13.3%
	25 – 35 years	79	43.9%
	36 – 45 years	49	27.2%
	> 45 years	28	15.6%
Education Level	Senior High School	48	26.7%
	Diploma (D1–D3)	29	16.1%
	Bachelor's Degree (S1)	83	46.1%
	Master/Doctorate (S2/S3)	20	11.1%
Business Tenure	< 3 years	42	23.3%
	3 – 5 years	71	39.4%
	> 5 years	67	37.2%
Business Sector	Food & Beverage	58	32.2%
	Fashion & Apparel	37	20.6%
	Services (e.g., salon, IT)	34	18.9%
	Retail & Wholesale	29	16.1%
	Creative Industry	22	12.2%

Source: Author processed (2025).

Demographics show that most of the respondents are male entrepreneurs (58.9%), whereas the proportion of women (41.1%) shows higher inclusion in MSME ownership. The dominant age bracket is 25–35 years (43.9%), portraying a young and technologically advanced population, which supports the focus on digital transformation in this research. Educationally, 46.1% hold a bachelor's degree, indicating an educated sample that would

be receptive to innovation and technology. With respect to years of operation, the majority have been operating between 3–5 years (39.4%) and more than 5 years (37.2%), indicating that they have passed the startup stage and are facing strategic challenges related to resilience. By industry, food and beverage top the list (32.2%), followed by fashion and services sectors that have been most impacted by digital disruption. These characteristics form the research objective of ascertaining digital uptake and agility among incumbent MSMEs.

Evaluation of External Models

The evaluation of external models aims to estimate the validity and reliability of latent constructs through the utilization of measurement indicator analysis. In SEM-PLS, the external models are evaluated through three main stages: (1) indicator reliability test (loading factor), (2) construct reliability and convergent validity test, and (3) discriminant validity test. The following is an elaboration of the three tests.

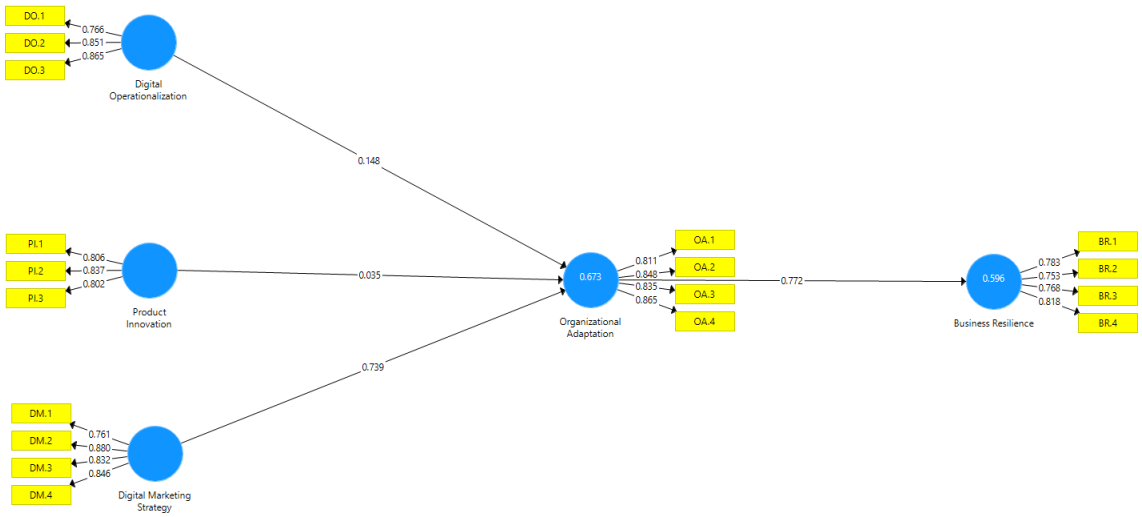


Figure 1. PLS Algorithm

Reliability of indicators is tested by looking at the value of the loading factor of each item on the latent construct. A loading factor that is acceptable should be greater than 0.70 (Hair et al., 2016), indicating that the indicator makes a significant contribution to the variable being measured.

All load factors were above the threshold of 0.70, which means that every indicator highly captures the respective latent construct. This reflects a high degree of indicator reliability. After testing the reliability of the indicators, the second procedure is to test the internal consistency of the construct using Cronbach's Alpha and Composite Reliability (CR), and further test convergent validity using Average Variance Extracted (AVE). A construct can be said to be reliable and valid if Cronbach's Alpha and CR are both > 0.70, and AVE is > 0.50.

Table 4. Loading Factors

Construct	Code	Questionnaire Statement	Loading
Digital Operationalization	DO.1	Our business uses digital tools in daily operations	0.766
	DO.2	We have automated part of our operational processes	0.851
	DO.3	Our systems allow data integration across departments	0.865
Product Innovation	PI.1	We develop new products regularly	0.806
	PI.2	We enhance products based on customer feedback	0.837
	PI.3	We apply technology to improve product quality	0.802
Digital Marketing Strategy	DM.1	We use social media as a main marketing channel	0.761
	DM.2	We sell through e-commerce platforms	0.880
	DM.3	We invest in digital advertising platforms	0.832
	DM.4	We publish creative digital content for promotion	0.846
Organizational Adaptation	OA.1	We respond quickly to market changes	0.811
	OA.2	We continuously improve internal processes	0.848
	OA.3	We implement knowledge gained from experience	0.835
	OA.4	We encourage innovation and adaptability among employees	0.865
Business Resilience	BR.1	We continue operations during crises	0.783
	BR.2	We recover quickly after business interruptions	0.754
	BR.3	We plan for long-term sustainability	0.768
	BR.4	We manage risks effectively	0.818

Table 5. Cronbach's Alpha, Composite Reliability (CR), and AVE

Construct	Cronbach's Alpha	CR	AVE
Digital Operationalization	0.746	0.859	0.648
Product Innovation	0.783	0.867	0.656
Digital Marketing Strategy	0.812	0.871	0.620
Organizational Adaptation	0.828	0.885	0.659
Business Resilience	0.834	0.888	0.668

The results indicate that all the constructs have good internal consistency and convergent validity because all three conditions are met. The values affirm the measure to be reliable and show that the latent constructs are being measured equally well by their indicators. Discriminant validity concerns the extent to which a construct is distinctly differentiated from other constructs within the model. It is assessed using two methods: the Fornell–Larcker Criterion that requires that a construct should exhibit greater variance with its own indicators than with other constructs, and the Heterotrait–Monotrait Ratio (HTMT), where values should be less than 0.90 to confirm appropriate discriminant validity.

The results show that the square roots of AVE (bold diagonal values) are greater than inter-construct correlations, meeting the Fornell–Larcker criterion and confirming that each construct is more strongly correlated with its own indicators than others. Also, all HTMT values are below 0.90, confirming limited overlap among constructs and further supporting the model's discriminant validity.

Table 6. Discriminant Validity

Fornell–Larcker Criterion					
Construct	**DO**	**PI**	**DM**	**OA**	**BR**
Digital Operationalization	0.805				
Product Innovation	0.582	0.810			
Digital Marketing Strategy	0.562	0.574	0.787		
Organizational Adaptation	0.637	0.603	0.611	0.812	
Business Resilience	0.596	0.619	0.582	0.651	0.818
HTMT Ratio					
Construct	DO	PI	DM	OA	BR
Digital Operationalization		0.674	0.621	0.705	0.653
Product Innovation			0.656	0.684	0.677
Digital Marketing Strategy				0.699	0.645
Organizational Adaptation					0.702
Business Resilience					

Inner Model Evaluation

Structural model testing is aimed at evaluating the relationships between latent constructs and estimating the strength and significance of these relationships in the research model. The analysis phases are: multicollinearity testing using the Variance Inflation Factor (VIF) value, determination coefficient (R^2) calculation for assessing the model's predictive ability, the respective predictive value (Q^2) for testing predictive validity, and the assessment of the path coefficients' significance through bootstrapping analysis. Prior to further testing of the structural model, one needs to make sure that there is no multicollinearity among the predictor constructs. The desirable VIF (Variance Inflation Factor) value is < 5.

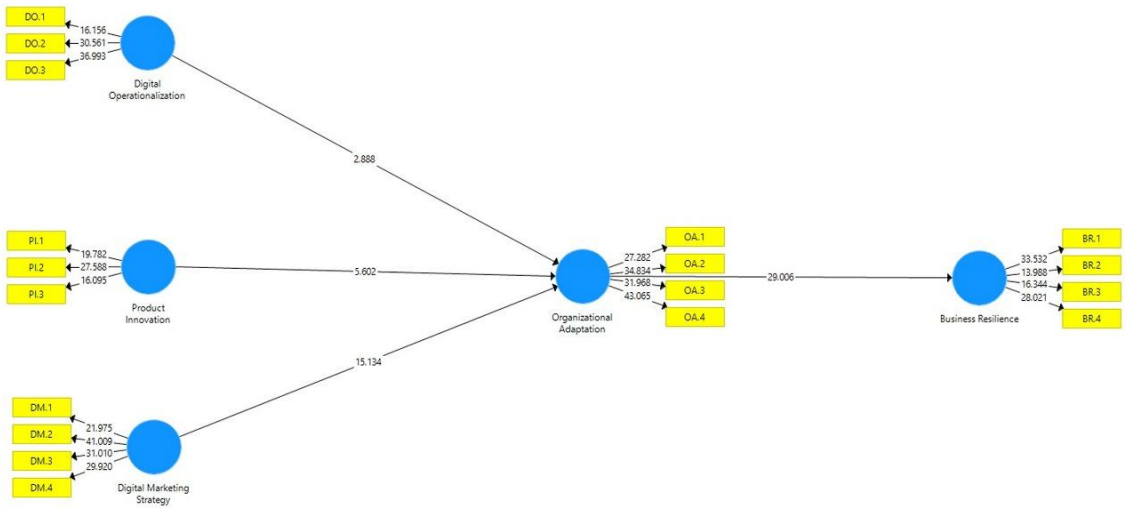
Table 7. VIF Values

Endogenous Variable	Exogenous Variable	VIF
Organizational Adaptation	Digital Operationalization	2.131
	Product Innovation	2.221
	Digital Marketing Strategy	2.346
Business Resilience	Digital Operationalization	2.052
	Product Innovation	2.313
	Digital Marketing Strategy	2.266
	Organizational Adaptation	2.442

All the VIF values are below 5, indicating that there is no multicollinearity problem among the predictor constructs. The model is suitable for structural evaluation. The coefficient of determination (R^2) describes the degree to which the variance in the endogenous construct can be explained by the exogenous construct. According to Hair et al. (2016), R^2 is weak at 0.25, moderate at 0.50, and strong at 0.75. In our research, digital transformation constructs accounted for 67.3% of the variance in organizational adaptation and 59.6% of the variance in business resilience, both indicating moderate model explanatory power.

The Q^2 index is used to measure the predictive ability of the model for endogenous constructs, which is estimated using the blindfolding process. Predictive relevance is indicated by a Q^2 value greater than 0. In this study, $Q^2 = 0.401$ for business adaptation

and 0.437 for business resilience indicates that the model has moderate and adequate predictive power to describe the variance of the endogenous constructs.



Source: Author processed (2025).

Figure 3. PLS Bootstrapping

This was achieved via the bootstrapping procedure to determine the direct effect between variables and their significance levels. A hypothesis is significant if the t-statistic value is > 1.96 and the p-value is < 0.05.

Table 8. Hypothesis Testing

Hn	Path	Original Sample (OS)	t Statistics	p-value	Decision
H1	Digital Operationalization → Organizational Adaptation	0.148	2.888	0.004	Supported
H2	Product Innovation → Organizational Adaptation Adaptation	0.535	5.602	0.000	Supported
H3	Digital Marketing Strategy → Organizational Adaptation	0.739	15.124	0.000	Supported
H4	Organizational Adaptation → Business Resilience	0.772	29.006	0.000	Supported

Source: Author processed (2025).

All the path coefficients are significant at the 5% level, indicating strong empirical support for the proposed model. Digital transformation has both indirect and direct effects on business resilience, with organizational adaptation being a key mediating variable. Specifically, digital operationalization has a significant effect on organizational adaptation (OS = 0.148; p 0.004) and organizational adaptation (OS = 0.535; p 0.000), and organizational adaptation is a strong predictor of resilience (OS = 0.739; p 0.000). The mediation effect is also confirmed (OS = 0.772; p 0.000), emphasizing that adaptation is a critical mechanism through which digital capabilities are translated into resilient outcomes. These results uphold the conception of the necessity for a concerted strategic

endeavor in leveraging digital transformation in developing MSMEs' resilience, particularly in dynamic and uncertain environments.

Discussions

1. The Direct Impact of Digital Transformation on Business Resilience

The initial hypothesis (H1) that digital transformation through operational digitalization, product innovation, and digital marketing will directly influence business resilience, supports a strong positive relationship. This aligns with previous studies such as (Pratono, 2022) and (Do et al., 2024), which demonstrated that digitally capable SMEs are more resilient to external shocks and more capable of adapting to market fluctuations. In particular, the DO1–DO3 measures (integration of digital tools, automation, and system connectivity) play a pivotal role in enhancing operational efficiency and ensuring business continuity of services during crises such as the COVID-19 pandemic.

Additionally, product innovation (PI1–PI3) supports resilience since it helps firms pivot quickly in response to changing consumer demands. Those firms that leverage technological innovation in products have a higher likelihood of gaining competitive edge amidst emerging disruption, as seen in (Yadav & Tripathi, 2024), who emphasized innovation as the cornerstone of developing resilience.

Digital marketing efforts (DM1–DM4), including e-commerce integration and social media campaigns, enable businesses to retain customer relations even when traditional markets collapse. The last argument is sustained by (Golgeci et al., 2025) work, which asserts that marketing agility, especially in digital environments, is required to preserve visibility, revenue, and interaction during periods of market decline.

2. Digital Transformation and Organizational Adaptation

The second hypothesis (H2) examined the relationship between digital transformation and organizational adaptation. The path coefficient indicates a strong and significant impact, suggesting that effective digital transformation depends heavily on intra-organizational dynamics. This finding resonates with contingency theory in the sense that technological adoption can only be successful when paired with organizational context (Luu, 2023). The organizational adaptation measures (OA1–OA4) flexibility, responsiveness, innovation encouragement, and learning are critical moderating capabilities. Without these, technology remains underutilized and not connected to strategic goals.

As seen in McKinsey's study (2024), over 70% of failed digital initiatives were not because of technological deficits, but cultural resistance and leadership inertia. In the case of Indonesian MSMEs, where resource constraints are the norm, this type of adaptation is not just an enabler, but a survival mechanism.

3. The Impact of Organizational Adaptation on Business Resilience

Hypothesis three (H3) predicted that organizational adaptation positively influences business resilience. This was also confirmed, indicating internal agility and capacity to change as direct predictors of resilience capacity. The findings align with the work of (Sturm et al., 2023), who established that firms with high organizational learning orientation and adaptive structures recovered more quickly from pandemic shocks. In the Indonesian context, the MSMEs that could modify supply chains, shift to digital operations, or redesign customer service protocols were able to maintain continuity and even grow amidst the turbulent times (Veiga et al., 2024).

Organizational adaptation also enables long-term resilience (BR3), instead of purely reactive response. It encompasses the development of structures for risk management (BR4) and the introduction of flexibility into the operational DNA of the firm. This structural resilience was observed in SMEs that diversified their revenue streams or decentralized decision-making.

4. The Mediating Role of Organizational Adaptation

The fourth hypothesis (H4) tested whether organizational adaptation mediates the effect of digital transformation on business resilience. The indirect path coefficient provides support for partial mediation, meaning that while digital transformation has a direct effect, much of its influence is exerted through internal adaptation.

This is a central finding for policy and strategy. It suggests that technology infrastructure investment is insufficient capacity building in organizational behavior, leadership agility, and process learning is equally vital. This finding is consistent with (Salem et al., 2023), who argued that resilience is not an issue of access to tools, but of how tools become routinized and valued. From a model perspective, the SEM-PLS result validates the mediational model where adaptation serves to connect the external capability (digitalization) with internal strength (resilience).

5. Practical Implications for MSMEs

These findings have important practical implications for MSME development in the digital era. First, digitalization must be accompanied by investment in human capital and organizational procedures not just technological infrastructure. MSMEs must prioritize building internal competencies through strategic training, change management, and cross-functional collaboration to effectively harness digital tools.

Furthermore, adaptive capacity development by external actors such as policy makers, incubators, and government agencies through mentorship, incentives, and adaptive policies should be emphasized. Sectors such as food & beverage and creative industries identified in this study as being very open to digital innovation can be set up as pilot clusters to lead national digitalization efforts more comprehensively.

6. Alignment with National and International Trends

The research is timely and is in line with Indonesia's 2025 Digital Economy Vision, the UN's Sustainable Development Goals (SDG 8 and SDG 9), and ASEAN's inclusive innovation agenda for MSMEs. By way of integrating digital technologies into adaptive organizational designs, MSMEs are not only less vulnerable to disruptions but are also poised to compete in bigger regional markets.

7. Theoretical Contributions

The study contributes theoretically by demonstrating how RBV and contingency theory together explain business resilience, offering a consolidated model that integrates operational, marketing, and innovation aspects with internal dynamic capabilities. It further validates that dynamic capabilities are path-dependent and influenced by organizational structure and leadership, thereby contributing to the knowledge on digital resilience in emerging economies.

8. Limitations and Future Research

Despite its contributions, this study also has several limitations. It relies on cross-sectional data, which restricts the possibility of identifying long-term implications of organizational adaptation. The sample is also limited to Indonesian MSMEs, and the generalizability of the findings to larger firms or outside the Indonesian environment is restricted. These limitations may be addressed by follow-up studies through longitudinal tracking of post-pandemic recovery, cross-sector or cross-national comparisons, and qualitative investigations to explore the micro-processes of adaptation and resilience.

CONCLUSIONS AND RECOMMENDATIONS

This study confirms the pivotal role of digital transformation in constructing business resilience, especially if underpinned by strong organizational adaptation. MSMEs that actively adopt digital tools, product innovation, and digital marketing are more likely to be resilient in withstanding market shocks. The study clarifies, however, that these attempts at digitalization are insufficient adaptive capabilities such as internal flexibility, responsiveness, and learning culture are essential to convert digital investments into business performance in the long run.

Organizational adaptation directly constructs resilience and mediates the impact of digital transformation, underscoring its strategic importance. Practically, this implies that MSMEs must balance investment in technology and internal change management. Policy-makers and business support organizations must promote integrated programs that develop both digital infrastructure and adaptive capacity. Theoretically, this study contributes to the literature by describing how dynamic capabilities mediate technological interventions, particularly in emerging markets. Future studies are encouraged to examine longitudinal impacts, sectoral trends, and cross-national comparisons to add further insight to the notion of digital-age resilience.

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