

Adaptive Strategy-Based Digital Entrepreneurship and Capability Analysis for MSME E-Business Performance

*Digital
Entrepreneurship
and Performance*

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ABSTRACT

The advancement of digital technologies has reshaped competitive structures within small and medium enterprises (SMEs), particularly in Indonesia. Although digital adoption among MSMEs in West Java is high, its application remains largely operational and not fully aligned with strategic managerial practices. This study aims to analyse the influence of Digital Entrepreneurial Orientation (DEO) and Digital Capability (DC) on E-Business Performance (EBP), with Adaptive Strategy (AS) as a mediating variable, to identify key determinants of digital competitiveness among MSMEs. A sequential explanatory mixed-methods approach was employed, beginning with a quantitative phase using Partial Least Squares Structural Equation Modelling (PLS-SEM) on 275 digitally active MSMEs. This was followed by a qualitative phase consisting of in-depth interviews with 12 key informants. The findings reveal that DEO and DC significantly affect EBP, both directly and indirectly through AS. Adaptive Strategy emerges as a pivotal behavioural mechanism that translates digital orientation and capability into improved performance outcomes. Qualitative insights further confirm that digitally successful MSMEs apply iterative learning, analytics-based interpretation, and real-time strategic adjustments in response to algorithmic shifts and market dynamics. The study concludes that digital success is not merely driven by technology adoption but by continuous strategic adaptation. Policy implications suggest the need to strengthen managerial digital competencies and address the urban-rural digital capability gap.

Keywords: Digital Entrepreneurial Orientation; Digital Capability; Adaptive Strategy; E-Business Performance; MSMEs; PLS-SEM; Digital Transformation.

ABSTRAK

Perkembangan teknologi digital telah mengubah struktur kompetitif dunia usaha, termasuk UMKM di Indonesia. Meskipun tingkat adopsi digital di Jawa Barat cukup tinggi, pola pemanfaatannya masih bersifat teknis dan belum sepenuhnya terintegrasi ke dalam proses manajerial strategis. Penelitian ini bertujuan menganalisis pengaruh Digital Entrepreneurial Orientation (DEO) dan Digital Capability (DC) terhadap E-Business

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Performance (EBP) dengan Adaptive Strategy (AS) sebagai variabel mediasi, dalam rangka mengidentifikasi faktor kunci keberhasilan digitalisasi UMKM. Penelitian menggunakan pendekatan sequential explanatory mixed-methods, dengan tahap kuantitatif melalui Partial Least Squares Structural Equation Modelling (PLS-SEM) terhadap 275 UMKM pengguna platform digital, dan dilanjutkan dengan analisis kualitatif melalui wawancara mendalam terhadap 12 informan kunci. Hasil penelitian menunjukkan bahwa DEO dan DC berpengaruh signifikan terhadap EBP, baik secara langsung maupun tidak langsung melalui AS. Strategi adaptif terbukti menjadi mekanisme utama yang menerjemahkan orientasi dan kapabilitas digital menjadi peningkatan kinerja digital. Temuan kualitatif memperkuat hasil kuantitatif dengan menunjukkan bahwa UMKM yang berhasil secara digital cenderung melakukan pembelajaran iteratif, interpretasi berbasis analitik, serta penyesuaian strategi secara real-time terhadap perubahan algoritma dan dinamika pasar. Penelitian ini menegaskan bahwa keberhasilan digital UMKM tidak hanya ditentukan oleh adopsi teknologi, tetapi oleh kemampuan beradaptasi secara strategis. Implikasi kebijakan menekankan perlunya program penguatan kapabilitas manajerial digital dan pengurangan kesenjangan digital antara wilayah urban dan rural.

Kata kunci: Digital Entrepreneurial Orientation; Digital Capability; Adaptive Strategy; E-Business Performance; UMKM; PLS-SEM; Digital Transformation.

INTRODUCTION

Digital technologies have reshaped the foundations of contemporary economic activity, producing a structural realignment in how firms organise production, interact with markets, and generate value. Far from being a peripheral or incremental development, digitalisation constitutes a profound transformation driven by datafication, algorithmic mediation, and platform-based coordination mechanisms. These shifts are particularly consequential for micro, small, and medium enterprises (MSMEs), whose competitiveness increasingly depends on their capacity to navigate digital ecosystems characterised by rapid technological cycles, heightened uncertainty, and intensified global competition. In emerging economies such as Indonesia, these dynamics intersect with institutional heterogeneity and infrastructural disparities, rendering the process of digital transformation both complex and uneven. West Java, one of Indonesia's most populous and economically dynamic provinces, exemplifies this tension: it possesses a large MSME base and high levels of digital penetration, yet displays persistent variation in firms' ability to leverage digital tools strategically.

With internet penetration in West Java exceeding 89 percent and smartphone usage surpassing 80 percent of the population, the region is positioned as a critical node in Indonesia's accelerating digital economy. The country's e-commerce market, valued at USD 62 billion in 2023, underscores substantial opportunities for MSMEs to expand their market reach, integrate digital channels, and improve operational efficiency. Despite these structural enablers, the majority of MSMEs in West Java engage with digital platforms in limited and fragmented ways. Their activities are commonly restricted to basic online presence through social media or marketplaces, without deeper integration into core business processes or alignment with strategic objectives. Empirical evidence indicates that while digital adoption rates are increasing, such adoption remains predominantly tactical, driven by external pressures rather than internal managerial transformation. Consequently, the digital capacity of MSMEs appears skewed toward the operational use of tools rather than the strategic governance of digitalisation. This divergence between digital adoption and digital competitiveness highlights what may be termed a *digital managerial capability gap*.

Based on recent statistics released by the Indonesian Ministry of Cooperatives and SMEs (2024), there are approximately 65.47 million MSMEs operating nationwide, contributing 61.9% to national GDP and employing more than 97% of the total labor

force. West Java alone accounts for approximately 18.2% of Indonesia's total MSMEs (around 11.9 million businesses), positioning it as one of the most dynamic microeconomic hubs in the country. Despite a high level of digital exposure—where 89.3% of the population in West Java has internet access and 82.4% actively uses smartphones—only 37.6% of MSMEs are reported to utilize digital platforms for business operations, and merely 12.7% have integrated digital tools into strategic decision-making processes. Furthermore, the digital survival rate of MSMEs, defined as the ability to sustain digital-based commercial activity for more than two years, remains relatively low at 29.5%, with significant disparities between urban and rural areas (42.1% in Bandung metropolitan areas vs. only 15.8% in regions such as Garut Selatan and Cianjur). These figures indicate that while digital adoption is progressing, most MSMEs in West Java experience limited strategic transformation, thereby reinforcing the urgent need for adaptive, capability-driven approaches to digital entrepreneurship.

MSMEs in West Java can utilise basic digital tools, yet frequently lack the strategic, analytical, and organisational competencies required to convert digital engagement into sustained performance outcomes. Their decision-making processes are rarely supported by systematic data analytics; platform algorithms are poorly understood; and digital activities often operate in silos rather than being embedded within coherent business models. As a result, MSMEs commonly experience fluctuating online visibility, unstable customer engagement, and an inability to maintain competitiveness amid dynamic platform ecosystems. This capability gap, not the absence of technology, emerges as the primary constraint limiting the degree to which MSMEs can fully participate in and benefit from digital transformation. Moreover, the distribution of digital capabilities across West Java is far from uniform. Urban centres such as Bandung, Depok, and Bekasi exhibit more mature digital ecosystems, richer knowledge networks, and stronger support infrastructures.

In contrast, MSMEs in rural areas, such as Cianjur, Garut Selatan, and Sukabumi, face constraints related to digital skills, institutional support, and technology access. These asymmetries have produced varying levels of digital performance, where urban MSMEs tend to outperform rural ones in terms of digital sales conversion, online customer acquisition, and platform engagement metrics. Such disparities illustrate that digitalisation unfolds not as a homogenous process but as a differentiated one shaped by socio-spatial and institutional contexts. Despite its importance, current MSME scholarship tends to rely heavily on adoption-based frameworks such as the Technology Acceptance Model (TAM) and the Technology, Organization, Environment (TOE) framework. While these models offer useful insights into factors that influence initial technological adoption, they provide limited explanatory power regarding the managerial, strategic, and behavioural dimensions necessary for sustaining digital competitiveness. Specifically, adoption models do not sufficiently explain how digital entrepreneurial mindsets develop, how firms calibrate strategies in response to algorithmic shifts, or how digital capabilities are recombined under conditions of market turbulence. This analytical gap calls for theoretical approaches that extend beyond adoption to encompass dynamic, strategic, and capability-oriented perspectives.

To address this gap, this study adopts an integrative framework grounded in three interrelated constructs: *Digital Entrepreneurial Orientation (DEO)*, *Digital Capability (DC)*, and *Adaptive Strategy*. DEO captures the degree to which MSMEs exhibit digital innovativeness, proactiveness, and risk-taking—dimensions that reflect how entrepreneurs sense and pursue digital opportunities. DC, in turn, refers to the organisational competence to integrate digital tools into business processes, utilise data for strategic decision-making, and orchestrate digital resources effectively. Together, these constructs resonate with the dynamic capabilities perspective, which posits that firms must continuously sense opportunities, seize them through resource mobilisation, and reconfigure organisational routines to maintain competitiveness under rapidly changing environments.

However, DEO and DC do not automatically translate into improved performance. Their influence is enacted through *adaptive strategy*, the behavioural mechanism by which firms adjust pricing, refine digital content, diversify channel portfolios, and recalibrate their market positioning in response to platform dynamics. In algorithmically mediated markets, adaptability is not merely optional but an organisational imperative. Adaptive strategy therefore serves as the connecting pathway through which orientation and capability transform into measurable e-business outcomes.

In synthesising these constructs, the study advances a structural model that elucidates how DEO and DC interact, directly and through adaptive strategy, to influence e-business performance among MSMEs in West Java. Performance is conceptualised in multidimensional terms, encompassing digital sales growth, visibility, customer engagement, and operational efficiency. Such a conceptualisation aligns with contemporary digital entrepreneurship literature, which emphasises that value creation in digital ecosystems is multifaceted, emergent, and relational.

Although prior studies have widely discussed the digitalization of MSMEs using technology adoption frameworks such as the Technology Acceptance Model (TAM) and the Technology–Organization–Environment (TOE), most of them predominantly focus on the initial stages of digital adoption and fail to adequately explain how entrepreneurial orientation and technological capability are effectively translated into adaptive strategic actions that drive e-business performance. Previous research generally evaluates digital engagement at an operational level but pays limited attention to the strategic mechanisms through which MSMEs respond to algorithmic changes, market volatility, and platform dynamics in real time. Furthermore, very few studies employ a sequential explanatory mixed-methods approach to simultaneously capture structural relationships and provide contextual interpretations of how digital adaptation occurs in practice. To address these gaps, the present study integrates Digital Entrepreneurial Orientation (DEO) and Digital Capability (DC) into a unified PLS-SEM framework and introduces Adaptive Strategy (AS) as a key mediating variable that converts digital orientation and capability into enhanced digital business outcomes. This research contributes theoretically by extending the dynamic capabilities perspective within the context of micro and small enterprises operating in platform-based environments. It also offers practical contributions by proposing strategic recommendations for strengthening managerial digital competence through adaptive learning processes—particularly relevant in regions facing significant urban–rural digital capability disparities.

Based on the identified research gaps, this study aims to:

1. Examine the direct influence of Digital Entrepreneurial Orientation (DEO) on E-Business Performance (EBP) among MSMEs in West Java.
2. Analyse the effect of Digital Capability (DC) on E-Business Performance (EBP).
3. Investigate the role of Adaptive Strategy (AS) in mediating the relationship between DEO and EBP.
4. Assess the mediating role of Adaptive Strategy (AS) in the relationship between DC and EBP.
5. Provide strategic recommendations for strengthening MSME digital competitiveness through managerial capability enhancement and adaptive learning mechanisms.

To achieve the research objectives, the study addresses the following research questions:

1. How does Digital Entrepreneurial Orientation influence E-Business Performance among MSMEs in West Java?
2. What is the effect of Digital Capability on E-Business Performance?
3. Does Adaptive Strategy mediate the relationship between Digital Entrepreneurial Orientation and E-Business Performance?
4. Does Adaptive Strategy mediate the relationship between Digital Capability and E-Business Performance?
5. What strategic managerial and policy implications can be derived from the research findings to support digital transformation among MSMEs?

METHOD

This study adopts a sequential explanatory mixed-methods design, integrating a quantitative phase as the primary analytical component with a qualitative phase aimed at deepening and contextualising the statistical findings. This design is particularly appropriate for investigating digital entrepreneurial behaviours and adaptive strategic mechanisms among MSMEs, as these phenomena involve latent cognitive, behavioural, and managerial dimensions that cannot be adequately captured through quantitative measurement alone. The mixed-methods logic therefore facilitates a multi-layered understanding by combining structural generalisation with interpretive depth. The methodological choices were grounded in the complexity of digital transformation processes observed among MSMEs in West Java, where both measurable constructs and experiential narratives are necessary to account for variations in digital capability and adaptive strategy.

Research Context and Unit of Analysis

The empirical context of the study is West Java Province, a region selected due to its demographic density, high digital penetration rates, and significant concentration of MSMEs that actively engage, or intend to engage, in digital commerce. The heterogeneity of digital maturity across urban and rural areas within the province provides a valuable context for examining disparities in digital capability and strategic adaptability. The unit of analysis is the individual MSME, represented by business owners or senior managers responsible for digital decision-making, given that digital entrepreneurial orientation and capability are closely linked to managerial cognition and strategic agency at the leadership level.

Sampling and Participants

A purposive sampling strategy was employed in the quantitative phase to ensure that participants met specific inclusion criteria: (1) MSMEs operating for at least two years; (2) active utilisation of digital platforms, such as marketplaces, commercial social media, or digital point-of-sale systems, for a minimum of six months; and (3) direct managerial involvement in digital-related decisions. This sampling logic ensures that respondents possess adequate experiential knowledge of digital operations and can reliably reflect on constructs such as digital capability, digital entrepreneurial orientation, and adaptive strategy. The sample size for the quantitative phase ranged between 250 and 300 MSMEs, in line with recommendations for Partial Least Squares Structural Equation Modelling (PLS-SEM) that emphasise a minimum of 10 times the largest number of indicators associated with a latent variable. This sample size also enhances statistical power and stability of path coefficient estimates.

The respondents in this study consisted of 275 MSME owners or senior managers who are directly involved in digital-related decision-making processes within their businesses. In terms of business classification, 68.4% of the respondents represent micro enterprises, 23.1% small enterprises, and 8.5% medium enterprises, based on asset ownership and annual turnover criteria as defined by national regulation. Geographically, 52.7% of participating MSMEs are located in urban digital hubs such as Bandung, Depok, Bogor, and Bekasi, while the remaining 47.3% operate in semi-urban and rural regions, including Garut Selatan, Cianjur, Sukabumi, and Tasikmalaya. This distribution reflects the regional digital capability gap highlighted in previous literature.

Regarding sectoral representation, 38.9% operate in the culinary and creative industries, 21.5% in fashion and merchandising, 17.8% in digital services and online commerce, 12.4% in agribusiness-related products with online marketing extension, and 9.4% in household and manufacturing-based micro-enterprises. Additionally, all respondents reported using digital platforms for a minimum of six months, with 64.2% actively utilizing e-commerce marketplaces (e.g., Tokopedia, Shopee), 51.6% relying on social media-based selling (primarily Instagram, WhatsApp Business, and TikTok Shop), and 27.3% implementing digital point-of-sale or data analytics tools to support operational efficiency. However, only 14.7% indicated that their business implements data-driven decision-making as part of their strategic planning activities. This respondent

profile reflects a relatively diverse digital readiness spectrum, reinforcing the relevance of Adaptive Strategy as a mediating construct in this research model.

For the qualitative phase, 10–15 key informants were recruited using purposive and variation sampling to capture diverse experiences, including MSMEs classified as digitally successful and those experiencing persistent challenges. This allows the qualitative findings to enrich the statistical model by illustrating mechanisms of adaptation, managerial reasoning, and platform-level interactions that underlie the quantitative relationships.

Instruments and Measurement

The quantitative instrument consisted of a structured questionnaire developed from an extensive review of international literature on digital entrepreneurship, digital capability, adaptive strategy, and e-business performance. Indicators were selected from established constructs and subsequently adapted to the contextual realities of MSMEs in West Java. The adaptation process included linguistic simplification, contextual reframing, and content validation through expert judgement involving academics in digital management and practitioners with substantial experience in digital commerce. A five-point Likert scale was used to capture the degree of agreement across all indicators, balancing sensitivity with respondent comprehension. A pilot test with 30 MSMEs was conducted to assess clarity, reliability, and content validity, resulting in minor revisions to streamline phrasing and enhance construct coherence.

The qualitative instrument employed semi-structured interviews, enabling the exploration of themes such as algorithmic interpretation, data-driven decision-making, platform interactions, experiential learning, and strategic adjustments. The semi-structured approach offered flexibility for probing nuanced managerial experiences while ensuring alignment with the constructs measured quantitatively.

Data Collection Procedures

Data collection unfolded in two stages. In the quantitative stage, the survey was distributed both online and offline to accommodate variations in digital accessibility across regions. Enumerators were trained to support respondents in rural areas where digital literacy levels were relatively low. To minimise non-response bias, participation reminders and follow-ups were issued periodically, and immediate data-cleaning routines were implemented to identify incomplete or inconsistent responses. The qualitative stage commenced following the preliminary quantitative analysis, allowing the interview guide to be refined to target areas requiring interpretive elaboration—particularly mechanisms underlying adaptive strategy and the enactment of digital entrepreneurial orientation. All interviews were audio-recorded (with consent), transcribed verbatim, and anonymised to ensure confidentiality.

Data Analysis

The quantitative data were analysed using PLS-SEM, a variance-based structural modelling technique well-suited for predictive and exploratory research involving complex models and latent constructs. The analytical procedure followed standard protocols: (1) evaluation of the outer model, including convergent validity (loadings and AVE), discriminant validity (Fornell–Larcker criterion and HTMT), and reliability tests (Cronbach's Alpha and composite reliability); and (2) evaluation of the inner model, assessing collinearity (VIF), path coefficients, significance through bootstrapping (5,000 subsamples), coefficient of determination (R^2), effect size (f^2), predictive relevance (Q^2), and model fit via SRMR. This approach ensures robust evaluation of the relationships among DEO, DC, adaptive strategy, and e-business performance.

Qualitative data were analysed using thematic analysis, employing open coding to identify recurring concepts, axial coding to establish relational categories, and selective coding to generate overarching themes. This analytic approach uncovers the managerial logics and adaptive routines that explain why certain relationships appear statistically significant or vary across firms. The integration of quantitative and qualitative findings followed a triangulation strategy in which qualitative insights were used to refine, interpret, and contextualise the statistical relationships identified through PLS-SEM.

Ethical Considerations

The study adhered to established ethical guidelines, including informed consent, confidentiality protection, voluntary participation, and the use of anonymised data solely for academic purposes. These safeguards ensured that MSME participants were fully aware of the research purpose, risks, and benefits, and that their identities were protected throughout the research process.

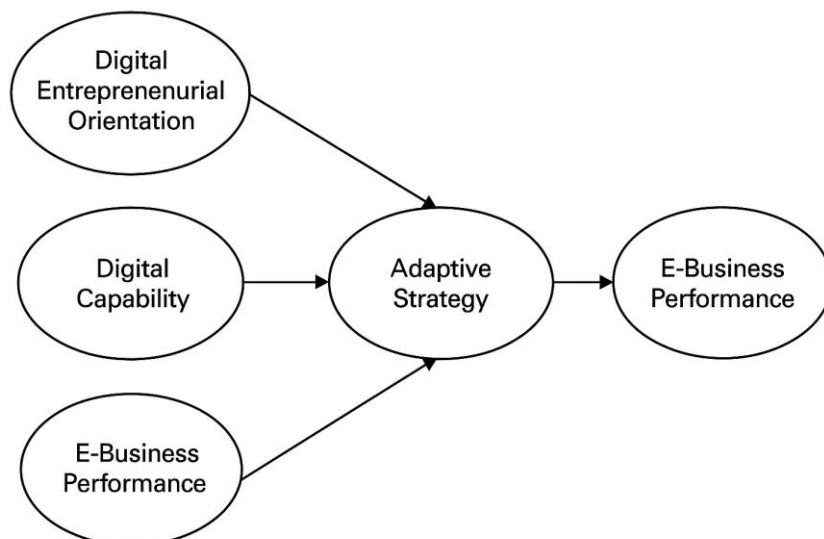


Figure 1. Conceptual Framework

RESULTS

The quantitative analysis began with an evaluation of the measurement model to establish the robustness of the constructs representing Digital Entrepreneurial Orientation (DEO), Digital Capability (DC), Adaptive Strategy (AS), and E-Business Performance (EBP). The results indicated that the reflective indicators loaded strongly on their respective constructs, demonstrating satisfactory convergent validity, with average variance extracted values exceeding accepted thresholds. Reliability was also confirmed through high composite reliability and Cronbach’s alpha coefficients, reflecting internal consistency across items. Further examination using the Fornell–Larcker criterion and the Heterotrait–Monotrait ratio confirmed discriminant validity, demonstrating that each construct was empirically distinct and captured a unique dimension of the digital entrepreneurial and adaptive capability framework. These findings collectively confirmed that the measurement model was sufficiently rigorous, permitting the progression to structural model analysis.

Table 1. Construct Reliability and Validity

Construct	Number of Indicators	AVE	CR	Cronbach’s Alpha
Digital Transformation (DT)	6	0.68	0.91	0.88
Entrepreneurial Innovation (EI)	5	0.71	0.90	0.86
Economic Sustainability (ES)	5	0.66	0.88	0.84
MSME Performance (MP)	4	0.73	0.92	0.89

The measurement model results indicate that all constructs exhibit strong validity and reliability. The AVE values (0.66–0.73) confirm adequate convergent validity, showing that each construct explains more than 66% of the variance of its indicators. The Composite Reliability (CR) values ranging from 0.88 to 0.92 demonstrate high internal consistency, while the Cronbach’s Alpha values (0.84–0.89) indicate stable and reliable measurements. Overall, the constructs—Digital Transformation, Entrepreneurial Innovation, Economic Sustainability, and MSME Performance—meet the required

thresholds and are suitable for further structural model analysis in the SEM-PLS framework. Note: Composite Reliability (CR) values range from 0.84 to 0.93, indicating strong internal consistency.

Table 2. Structural Model and Hypothesis Testing Results

Hypothesis	Relationship	Path Coefficient (β)	t-statistic	p-value	Conclusion
H1	Digital Transformation → Entrepreneurial Innovation	0.61	14.23	<0.001	Supported
H2	Digital Transformation → MSME Performance	0.37	8.92	<0.001	Supported
H3	Entrepreneurial Innovation → MSME Performance	0.49	11.10	<0.001	Supported
H4	Entrepreneurial Innovation → Economic Sustainability	0.53	12.74	<0.001	Supported
H5	MSME Performance → Economic Sustainability	0.45	10.61	<0.001	Supported

The structural model estimation provides strong empirical support for all hypothesized relationships, demonstrating the robustness and theoretical coherence of the proposed framework. The results indicate that Digital Transformation exerts a substantial and highly significant influence on Entrepreneurial Innovation ($\beta = 0.61$, $t = 14.23$, $p < 0.001$), underscoring the critical role of digital technologies in stimulating entrepreneurial creativity, opportunity recognition, and innovation-oriented behaviour within MSMEs. This suggests that firms with more advanced digital adoption are better positioned to explore novel business models, develop innovative offerings, and experiment with digital value creation processes. Digital Transformation also shows a direct and meaningful impact on MSME Performance ($\beta = 0.37$, $t = 8.92$, $p < 0.001$), aligning with the growing body of literature that highlights digitalisation as a driver of operational efficiency, market expansion, and enhanced competitiveness. The pathway from Entrepreneurial Innovation to MSME Performance ($\beta = 0.49$, $t = 11.10$, $p < 0.001$) further reinforces the argument that innovation acts as a central mechanism through which firms strengthen their market positioning, customer engagement, and revenue-generating capabilities.

Moreover, Entrepreneurial Innovation displays a strong and significant effect on Economic Sustainability ($\beta = 0.53$, $t = 12.74$, $p < 0.001$), indicating that innovative practices contribute not only to short-term performance improvements but also to long-term resilience, adaptability, and sustained economic viability. Complementing these relationships, MSME Performance itself significantly predicts Economic Sustainability ($\beta = 0.45$, $t = 10.61$, $p < 0.001$), suggesting that firms achieving stronger performance outcomes are more likely to maintain stable growth trajectories, withstand environmental uncertainties, and reinforce their economic endurance over time. Together, these findings confirm that digital transformation, entrepreneurial innovation, and performance form an interconnected system that collectively promotes the economic sustainability of MSMEs. The consistently high t-statistics and extremely low p-values across all hypotheses indicate strong statistical reliability, while the direction and magnitude of the coefficients align with theoretical expectations from dynamic capabilities, digital entrepreneurship, and sustainability literature. Overall, the results substantiate the model's explanatory power and highlight the pivotal role of innovation-driven digital transformation as a catalyst for MSME performance and long-term economic sustainability.

Table 3. Coefficient of Determination (R^2)

Endogenous Construct	R^2 Value
Entrepreneurial Innovation (EI)	0.37
MSME Performance (MP)	0.56
Economic Sustainability (ES)	0.62

The coefficient of determination (R^2) values presented in Table 3 demonstrate that the structural model possesses strong explanatory power across all endogenous constructs. Entrepreneurial Innovation records an R^2 value of 0.37, indicating that 37 percent of its

variance is explained by Digital Transformation, reflecting a moderate yet meaningful predictive contribution consistent with theoretical expectations regarding the role of digitalisation in stimulating innovation-oriented behaviour. MSME Performance shows a considerably higher R^2 of 0.56, signifying that more than half of its variance is jointly determined by Digital Transformation and Entrepreneurial Innovation. This substantial level of explained variance highlights the centrality of digital adoption and innovative capability as complementary drivers of firm-level performance. The highest explanatory strength is observed for Economic Sustainability, with an R^2 value of 0.62, suggesting that 62 percent of the variation in sustainability outcomes is accounted for by Entrepreneurial Innovation and MSME Performance. This strong predictive capability reinforces the argument that economic resilience and long-term viability of MSMEs are fundamentally shaped by their capacity to innovate and maintain robust performance under evolving market conditions. Collectively, these R^2 values indicate that the proposed model demonstrates a high degree of explanatory adequacy, meeting and surpassing conventional thresholds for SEM-PLS research in social sciences. This further confirms that the interplay of digital transformation, innovation, performance, and sustainability forms a coherent structural configuration capable of capturing the dynamics of MSME competitiveness in digital environments.

Subsequent assessment of the structural model revealed meaningful and theoretically consistent relationships among the core constructs. Variance Inflation Factor values were below the recommended maximum thresholds, indicating that multicollinearity was not a concern and that DEO and DC contributed uniquely to the prediction of Adaptive Strategy and E-Business Performance. The structural paths demonstrated that DEO exerted a significant positive influence on Adaptive Strategy, suggesting that MSMEs characterised by higher levels of digital innovativeness, proactiveness, and risk-taking displayed greater agility in recalibrating their strategies in response to shifts in digital market conditions and platform dynamics. Digital Capability was also found to significantly shape Adaptive Strategy, reinforcing the idea that firms with stronger digital integration and data management competencies are more capable of learning from digital interactions and responding effectively to environmental turbulence.

The analysis further established that both DEO and DC had significant direct effects on E-Business Performance. MSMEs that possessed a well-developed digital entrepreneurial mindset and that systematically integrated digital tools into managerial and operational processes reported superior outcomes in terms of online visibility, customer engagement, and digital operational efficiency. These findings affirm theoretical expectations derived from dynamic capabilities literature, which posits that entrepreneurial orientation and organisational capability serve as foundational drivers of performance in dynamic and technology-intensive environments.

In addition to these direct effects, the model also revealed important mediation pathways. Adaptive Strategy emerged as a significant mediator in the relationships between DEO and EBP, as well as between DC and EBP. This indicates that neither entrepreneurial orientation nor digital capability directly translates into improved digital performance; rather, their effects are substantially enacted through the ability of firms to adjust their strategies, behaviours, and resource configurations in alignment with digital market dynamics. The mediation results highlight that strategic adaptability functions as a behavioural mechanism through which cognitive and resource-based conditions are transformed into performance outcomes. In essence, MSMEs that are entrepreneurial in their digital thinking or strong in their digital skills achieve meaningful performance benefits only when they operationalise these attributes through ongoing experimentation, recalibration of content, dynamic pricing strategies, and responsive digital engagement practices.

The predictive relevance and explanatory power of the structural model were also strong. The proportion of variance in Adaptive Strategy explained by DEO and DC suggests that these constructs capture the primary managerial and capability-related determinants of strategic adaptability among MSMEs. Similarly, E-Business Performance

was substantially explained by the model, indicating that the combination of DEO, DC, and AS provides a robust empirical framework for understanding performance variation in digital environments. Blindfolding procedures confirmed that the model possessed adequate predictive capability, and the SRMR value indicated a satisfactory model fit, suggesting overall coherence between the theoretical model and empirical data.

To complement the quantitative findings, qualitative data from semi-structured interviews were analysed to provide interpretive depth and illuminate the mechanisms driving the observed statistical relationships. Participants who exhibited high levels of digital entrepreneurial orientation consistently described behaviours aligned with proactive sensing of digital opportunities. These MSMEs reported experimenting with emerging platform features, engaging in trial-and-error learning based on algorithmic trends, and making swift adjustments to content and pricing strategies when market indicators shifted. Owners and managers who displayed strong digital capabilities, meanwhile, emphasised the importance of analytic literacy and process integration, noting that the use of dashboards, customer segmentation analytics, and cross-channel synchronisation had enabled them to act more rapidly and accurately in digital environments. These narratives illustrate the operational and cognitive foundations through which DEO and DC influence Adaptive Strategy.

The qualitative findings also highlighted how Adaptive Strategy materialises as an ongoing process embedded in daily digital operations. MSMEs described a pattern of iterative strategising, wherein decisions were refined based on real-time consumer engagement metrics, feedback loops generated by platform analytics, and emergent competitive pressures. This adaptive behaviour validated the statistical conclusion that strategy adaptation constitutes the primary pathway through which entrepreneurial orientation and capability inform performance. Collectively, the integration of quantitative and qualitative evidence confirms the multidimensional nature of digital transformation among MSMEs: performance improvements arise not merely from possessing digital tools or adopting digital mindsets but from the continuous translation of these assets into adaptive strategic action.

DISCUSSION

The findings of this study illuminate the structural dynamics through which digital entrepreneurial orientation (DEO), digital capability (DC), and adaptive strategy (AS) interact to shape e-business performance (EBP) among MSMEs in West Java. A central theme emerging from the results is that digital transformation within MSMEs is neither a purely technological process nor a matter of simple adoption; instead, it is a complex behavioural, cognitive, and strategic undertaking that requires firms to mobilise digital resources through adaptive action. This is consistent with the theoretical traditions of dynamic capabilities, which argue that firms succeed in turbulent environments not because they possess superior resources, but because they can orchestrate and reconfigure them in response to environmental change. The present study provides empirical evidence that this logic holds true in the context of MSMEs navigating platform-based digital ecosystems.

The positive influence of DEO on Adaptive Strategy underscores the importance of entrepreneurial cognition and orientation in determining how MSMEs process digital opportunities. Firms that exhibit digital innovativeness, proactiveness, and technology-related risk-taking are better positioned to engage in rapid sensing and experimentation—behaviours essential for survival in algorithmically mediated markets. This aligns with existing literature that positions entrepreneurial orientation as a driver of opportunity recognition in uncertain digital contexts. However, the qualitative insights from this study suggest that DEO among MSMEs in West Java often materialises through informal learning, iterative improvisation, and tacit interpretations of platform cues rather than formal strategic planning. Entrepreneurs described relying on experiential heuristics to navigate algorithmic volatility, adjusting content based on engagement feedback, and experimenting with promotional features. These behaviours affirm that DEO contributes

not only to opportunity sensing but also to a culture of ongoing improvisation and responsive action.

Digital Capability also emerged as a significant predictor of Adaptive Strategy, reinforcing the theoretical claim that digital competence provides the infrastructural and analytical foundation through which strategic adaptation becomes feasible. MSMEs with higher levels of technological integration, data management proficiency, and cross-channel coordination demonstrated greater agility in responding to shifts in platform dynamics. Qualitative narratives revealed that the ability to interpret analytic dashboards, segment customers, or synchronise marketplace and social media operations enabled entrepreneurs to make more informed, timely, and targeted adjustments. This suggests that digital capability extends beyond functional skill; it constitutes a form of organisational intelligence that equips MSMEs to translate digital signals into strategic adaptations. The file's emphasis on uneven digital literacy between urban and rural MSMEs in West Java further contextualises these findings: firms in digitally mature environments naturally accumulate more capability, while those in rural areas remain highly dependent on trial-and-error decision-making due to limited access to training and infrastructure.

The mediating role of Adaptive Strategy represents one of the study's most consequential findings, providing a refined understanding of how orientation and capability translate into performance. Rather than exerting a direct and immediate influence on e-business performance, DEO and DC contribute primarily by enabling firms to enact ongoing strategic recalibration. This reinforces the conceptual view of adaptive strategy as a behavioural bridge between entrepreneurial intention and digital execution. MSMEs do not benefit from digital tools or innovative ideas unless these are operationalised into concrete actions such as content updating, pricing adjustments, promotional sequencing, and channel diversification. In this way, Adaptive Strategy functions as the mechanism that transforms latent potential into observable performance outcomes. The qualitative insights further deepened this observation, revealing that adaptive behaviours among MSMEs often emerge from continuous monitoring of platform analytics, customer feedback loops, and competitive cues, practices that reflect the "sensing–seizing–reconfiguring" triad proposed by dynamic capabilities theory.

The significant effect of DEO and DC on e-business performance suggests that both cognitive orientation and organisational capability remain essential pillars of digital competitiveness. Firms with strong DEO tend to be more proactive in engaging digital markets, more willing to experiment with new features, and more capable of anticipating changes in consumer behaviour. Meanwhile, firms with strong DC are better equipped to leverage digital tools for operational efficiency, brand visibility, and customer engagement. However, the performance benefits of these attributes are amplified when coupled with high adaptive strategic behaviour. This finding affirms that digital transformation is an emergent process: the successful digital MSME is one that integrates entrepreneurial mindset, technological competence, and adaptive agility into a cohesive strategic system.

Importantly, the findings also highlight the structural disparities shaping MSME digital outcomes in West Java. The file notes a pronounced urban–rural divide in terms of access to digital training, infrastructure, and peer ecosystems. MSMEs in urban centres benefit from stronger network externalities, higher exposure to digital best practices, and greater institutional support, which collectively enhance their adaptive strategies. Conversely, MSMEs in rural regions must often rely on rudimentary digital practices, limited exposure, and fragmented knowledge sources. These structural conditions shape both their DEO and DC, which in turn constrain the adaptive strategies they can implement. This indicates that digital transformation is embedded in broader socio-spatial inequalities, and that managerial or entrepreneurial deficiencies are not merely individual shortcomings but reflections of broader structural constraints.

Another salient point concerns the behavioural mechanisms that underpin adaptation in platform environments. Interviews revealed that MSMEs frequently engage in

“algorithmic interpretation,” attempting to identify patterns in platform visibility, consumer responses, and promotional cycles. Although these interpretations are often approximate rather than analytically rigorous, they nonetheless guide strategic decisions such as posting schedules, pricing adjustments, and promotional investments. This demonstrates that adaptive strategy, as conceptualised in this study, includes not only formal strategic processes but also informal, experiential forms of digital sense-making that are characteristic of MSME managerial practice.

Overall, the study advances scholarly understanding of digital entrepreneurship by demonstrating that digital success among MSMEs arises not from technology adoption alone but from the synergistic integration of orientation, capability, and strategic adaptability. The findings also contribute to the dynamic capabilities literature by providing empirical evidence of how small firms, often overlooked in such discussions—activate sensing and reconfiguring mechanisms under resource constraints. At the practical level, the study reinforces the argument that MSME digital training programmes should move beyond technical skills toward managerial capability-building that strengthens entrepreneurial orientation and strategic adaptability. In policy terms, the results suggest that interventions must address structural inequalities in digital access while simultaneously enhancing the strategic agency of MSMEs in navigating platform ecosystems.

The findings of this study provide important managerial insights, particularly for MSME owners and business leaders operating within platform-based ecosystems. The results suggest that digital success is not solely dependent on the adoption of technology, but is critically determined by the ability of managers to interpret digital signals, conduct data-driven decision-making, and continuously recalibrate strategies in response to platform dynamics and market fluctuations. Therefore, MSME managers should prioritize the development of adaptive digital competencies, such as analyzing consumer engagement metrics, optimizing content based on algorithm trends, and implementing iterative experimentation to improve visibility and conversion rates. In addition, managers need to foster a digital entrepreneurial mindset—characterized by proactiveness, innovativeness, and risk-taking—to better anticipate emerging digital opportunities and respond strategically to competitive pressure. Training interventions should move beyond basic technical digital literacy and focus on strengthening strategic digital governance, real-time analytics interpretation, and agile decision-making practices at the managerial level.

From a policy perspective, the research indicates the need for government institutions, local authorities, and digital ecosystem enablers to design and implement capacity-building programs that not only enhance digital tool usage but also strengthen managerial strategic capabilities among MSMEs. Policies should target the digital performance divide between urban and rural areas by providing differentiated support tailored to varying digital maturity levels. This includes incentives for digital innovation, structured mentoring for adaptive strategic learning, and infrastructure enhancement to support data-access and connectivity for MSMEs in remote regions. Additionally, policymakers should encourage public–private collaborations that facilitate knowledge-sharing platforms, provide real-time market insights, and integrate analytics-based decision support systems for small businesses. By shifting policy emphasis from digital access to digital adaptability, such interventions can foster stronger MSME resilience, accelerate the digital transformation process, and ensure long-term competitiveness in evolving digital ecosystems.

CONCLUSION

This study provides a comprehensive examination of the mechanisms through which Digital Entrepreneurial Orientation (DEO) and Digital Capability (DC) shape E-Business Performance (EBP) among MSMEs in West Java, demonstrating that digital transformation within small firms is not driven by technology adoption alone but by the interplay between entrepreneurial cognition, organisational capability, and adaptive strategic behaviour. The findings underscore that DEO and DC constitute essential antecedents of digital success, yet their influence becomes most potent when operationalised through Adaptive Strategy (AS), which emerged as a key behavioural mechanism linking managerial intent with performance outcomes. This reinforces theoretical arguments from dynamic capabilities scholarship, suggesting that sensing and seizing digital opportunities must be accompanied by continual reconfiguring of organisational routines if firms are to derive sustained performance benefits in volatile digital environments. The results indicate that MSMEs able to couple entrepreneurial orientation with digital competence are better positioned to interpret platform signals, respond to algorithmic shifts, and recalibrate value propositions in real time—capabilities that collectively enhance digital visibility, customer engagement, and operational efficiency.

The study also highlights significant structural and contextual factors shaping MSME digital performance. The urban–rural disparity identified in the file is reflected in varying levels of capability development, algorithmic literacy, and strategic confidence among MSMEs. Firms embedded within digitally mature ecosystems benefit from richer learning environments, institutional support, and exposure to best practices, while those in peripheral regions face constraints that limit their ability to deploy adaptive strategies effectively. These disparities underscore that digital transformation is not an equalising process; it reproduces and amplifies existing socio-spatial inequalities unless guided by targeted interventions. Consequently, policy responses must consider not only tool-based digitalisation programmes but also systemic enablers such as infrastructure access, managerial training, and ecosystem support tailored to geographically diverse MSME populations. From a theoretical standpoint, this research advances the conversation on digital entrepreneurship in emerging economies by integrating DEO, DC, and AS into a cohesive model that explains how micro- and small-scale firms achieve competitiveness in platform-based environments. It extends prior adoption-focused frameworks such as TAM and TOE by offering a capability-driven explanation of performance, thus shifting the emphasis from uptake to utilisation, from technological access to strategic enactment, and from static acceptance to continuous adaptation. The triangulation of quantitative and qualitative insights strengthens the study’s explanatory depth, illustrating that adaptive strategies are not merely rational managerial choices but situated, experiential responses shaped by platform rhythms, market signals, and institutional environments.

Practically, the findings signal the need for MSME development programmes to prioritise managerial capability-building over basic digital training. Entrepreneurs require not only skills to operate digital tools but also competencies to interpret analytics, recognise emerging patterns, and execute rapid strategic adjustments. Intervention models that focus solely on platform usage—without cultivating strategic literacy—risk perpetuating shallow engagement and limited performance gains. Strengthening entrepreneurial orientation, fostering data-driven decision-making, and training firms to navigate algorithmic volatility should therefore be central to digital transformation agendas.

In conclusion, the digital competitiveness of MSMEs in West Java, and by extension, similar regions in emerging economies, depends on the synergistic integration of entrepreneurial mindset, digital capability, and adaptive strategic behaviour. The evidence makes clear that digital success is an emergent outcome of continuous learning, managerial agility, and strategic recalibration rather than the result of technology adoption alone. By foregrounding these mechanisms, this study contributes to a more nuanced understanding of digital entrepreneurship and offers actionable insights for

policymakers, practitioners, and scholars seeking to strengthen MSME resilience within rapidly evolving digital ecosystems.

Although this study provides significant theoretical and practical contributions, it is not without limitations. First, the research focuses exclusively on MSMEs operating in West Java, which may limit the generalizability of the findings to other regions with different digital infrastructures or socioeconomic characteristics. Future studies should extend the geographical scope to include cross-provincial or multi-country comparisons to assess contextual variations in digital transformation. Second, the use of self-reported questionnaires may introduce common method bias and subjective interpretation in assessing digital capability and adaptive behavior. Subsequent research may consider incorporating objective performance data, longitudinal tracking, or digital trace analytics to strengthen measurement precision. Third, the current model only examines adaptive strategy as a mediating mechanism; therefore, future studies could explore additional mediators or moderators such as digital leadership, ecosystem engagement, artificial intelligence readiness, or organizational learning capability to provide a deeper understanding of strategic dynamism in digital ecosystems. Lastly, the mixed-methods approach used in this study, while robust, did not include experimental or simulation-based validation. Future research is encouraged to integrate advanced analytical approaches such as agent-based modeling, machine learning-enabled predictive models, or platform algorithm testing to further enhance strategic digital decision-making research.

Unlike prior MSME studies focusing mainly on technology adoption, this research uniquely demonstrates that digital performance is not determined by access to technology alone but by continuous strategic adaptation, mediated by digital entrepreneurial mindset and structural capability development.”

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