

FORESIGHT-DRIVEN DIGITAL TRANSFORMATION AND INNOVATION PERFORMANCE IN TOURISM MSMEs: A CAPABILITY COMPLEMENTARITY PERSPECTIVE

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Abstract

Tourism micro, small, and medium enterprises (MSMEs) in West Java operate in increasingly dynamic environments shaped by digital platforms, shifting consumer behavior, and rising sustainability expectations. While digital transformation is often promoted as a strategic solution, many MSMEs struggle to translate digital adoption into meaningful innovation outcomes. This study develops and empirically tests a foresight-driven digital transformation framework that explains how strategic foresight capability, digital transformation capability, and green marketing orientation jointly influence innovation performance. Drawing on dynamic capabilities theory and sustainability-oriented marketing logic, this study employs a sequential mixed-method design. The qualitative phase identifies context-specific manifestations of foresight practices, digital transformation activities, and green marketing behaviors among tourism MSMEs. The quantitative phase, using PLS-SEM analysis of 214 MSMEs, examines the relationships among the constructs and the moderating effect. The results reveal that strategic foresight capability significantly enhances digital transformation capability and green marketing orientation, confirming its role as an upstream dynamic capability. Furthermore, digital transformation capability and green marketing orientation both positively influence innovation performance, with a stronger emphasis on marketing innovation. Importantly, the findings demonstrate a significant complementarity effect, where green marketing orientation strengthens the impact of digital transformation capability on innovation performance. This study contributes to the literature by positioning strategic foresight as a micro-foundation of digital transformation capability, and by integrating digital transformation and sustainability orientation into a unified framework. Practically, the findings highlight the importance for MSMEs to develop simple foresight routines, integrated digital capabilities, and credible sustainability-driven marketing strategies to enhance innovation outcomes.

Keywords: Strategic Foresight Capability, Digital Transformation Capability, Green Marketing Orientation, Innovation Performance, Tourism Msmes



1. INTRODUCTION

Tourism micro, small, and medium-sized enterprises (MSMEs) increasingly operate in a competitive environment shaped by platform-mediated demand, algorithmic visibility, and rising sustainability expectations. In Indonesia, these pressures are particularly evident among destination-adjacent MSMEs such as home stays, culinary micro businesses, tour operators, and craft sellers that must convert experience-based and seasonal demand into stable and repeatable revenue streams while operating under constraints of limited capital, skills, and organizational slack. West Java represents a compelling empirical context due to its dense destination clusters, strong tourist flows, and intense competition among small tourism providers [1].

Digital transformation is widely recognized as a strategic pathway for improving customer reach, service quality, and operational efficiency. However, in practice, tourism MSMEs tend to adopt digital tools in a fragmented and tactical manner such as maintaining social media presence, joining online travel agencies, or using messaging applications without developing the underlying capabilities required to redesign processes, learn from digital data, coordinate across channels, and sustain continuous experimentation. This suggests that digital transformation should be understood not merely as technology adoption, but as a capability-building process that enables firms to reconfigure customer engagement and service delivery [2], [3].

At the same time, sustainability has evolved from a peripheral concern into a central issue of competitiveness and legitimacy in the tourism sector. Increasingly, tourists interpret environmental practices as signals of authenticity, quality, and responsibility, while destination governance and community expectations impose additional pressure for sustainable operations. For MSMEs, sustainability is often enacted through marketing practices, how firms design value propositions, communicate credibility, and respond to stakeholder concerns. In this regard, green marketing orientation (GMO) reflects a strategic commitment to integrating environmental considerations into marketing activities and has been shown to influence innovation outcomes through differentiation and trust-building mechanisms [8].

Despite growing attention to digital transformation and sustainability, prior research has largely examined these domains in isolation. Limited attention has been given to how MSMEs develop the capability to translate environmental signals into coherent digital and marketing strategies. This study addresses this gap by proposing a foresight-driven digital transformation perspective, in which strategic foresight capability (SFC) serves as an upstream capability that enables both digital transformation capability (DTC) and green marketing orientation (GMO).

Drawing on dynamic capabilities theory, firms are required to sense opportunities, seize them, and reconfigure resources to adapt to changing environments [4]. In MSMEs, these capabilities are often embedded in the cognition and actions of owner-managers, making foresight particularly critical. Digital transformation capability is therefore conceptualized as the firm's ability to reconfigure customer engagement and service processes through digital technologies, analytics routines, and adaptive organizational practices that support continuous experimentation and scaling [2], [5].

Strategic foresight capability refers to systematic yet often informal activities through which firms identify emerging trends, interpret environmental changes, envision possible futures, and translate insights into strategic actions. While formal foresight systems are rare in MSMEs, owner-managers often engage in pragmatic foresight practices such as monitoring platform changes, observing competitors, and anticipating shifts in customer preferences. These practices can significantly enhance innovation by expanding opportunity recognition and reducing path dependency [6], [7].

Green marketing orientation, in turn, reflects the extent to which firms integrate environmental values into their marketing strategies, including value proposition design, communication credibility, and stakeholder responsiveness. In tourism contexts, GMO supports innovation by enabling differentiation



through sustainability narratives, encouraging experimentation in service design, and strengthening consumer trust, particularly in environments where greenwashing concerns are prevalent [8].

Innovation performance in tourism MSMEs is primarily manifested through customer-facing differentiation and improved market responsiveness. Following the Oslo Manual, innovation performance is defined as the extent to which firms successfully implement and benefit from innovations in products, processes, and marketing [11]. This study focuses on marketing innovation performance, as visibility, engagement, and conversion in tourism are strongly influenced by marketing practices, channel configurations, and experience design [12].

Strategic foresight capability is positioned as an upstream capability that enables the development of digital transformation capability and strengthens green marketing orientation. Digital transformation capability is expected to enhance innovation performance through improved experimentation, feedback loops, and scalable marketing execution. Green marketing orientation is expected to directly influence innovation performance by enabling credible differentiation and stakeholder alignment. Furthermore, this study proposes a complementarity effect, whereby the impact of digital transformation capability on innovation performance is strengthened when green marketing orientation is high. Based on this framework, the following hypotheses are proposed:

H1: Strategic foresight capability positively influences digital transformation capability in tourism MSMEs.

H2: Digital transformation capability positively influences innovation performance, particularly marketing innovation performance.

H3: Strategic foresight capability positively influences green marketing orientation.

H4: Green marketing orientation positively influences innovation performance.

H5: Green marketing orientation strengthens the positive relationship between digital transformation capability and innovation performance ($DTC \times GMO$).

Table 1. Construct definitions and measurement dimensions.
[Source: Synthesis of: [2], [4], [5], [6], [8], [11], [12]]

Construct	Definition	Dimensions-items	Sources
Strategic foresight capability (SFC)	Owner-manager routines to scan weak signals, interpret change, envision plausible futures, and translate insights into learning and action.	Scanning; sensemaking; scenario or visioning; action translation and learning.	[6], [4]
Digital transformation capability (DTC)	Capability to reconfigure marketing and service processes via digital engagement, process digitization, analytics, and change readiness.	Digital customer engagement; process digitization; data-driven decision making; change readiness.	[2], [5]
Green marketing orientation (GMO)	Marketing orientation integrating environmental concerns into value proposition, credible communication, and stakeholder responsiveness.	Green value proposition; green communication credibility; stakeholder responsiveness.	[8]
Innovation performance (IP)	Extent to which the MSME successfully implements and benefits	Marketing innovation (primary); service or process innovation	[11], [12]



2. RESEARCH METHODOLOGY

Research context and unit of analysis

The empirical setting of this study is tourism MSMEs in West Java, Indonesia. The unit of analysis is the MSME, with the owner-manager serving as the key informant, given their central role in strategic and marketing decision-making. This study focuses on MSMEs operating in tourism-related subsectors including culinary, accommodation, attractions/activities, and crafts located within destination clusters across West Java.

Research design

To enhance contextual validity and analytical robustness, this study adopts a sequential mixed-method design. Phase 1 consists of qualitative interviews aimed at contextualizing digital transformation capability (DTC) and marketing innovation practices, refining measurement items for strategic foresight capability (SFC) and DTC, and ensuring that the survey instrument is meaningful and comprehensible for MSME owners. Phase 2 employs a cross-sectional survey analyzed using partial least squares structural equation modelling (PLS-SEM) to test the hypothesized relationships, including the moderating effect of green marketing orientation (GMO) on the relationship between DTC and innovation performance [13].

Phase 1: Qualitative approach

The qualitative phase involves semi-structured interviews with approximately 15 - 20 tourism MSME owners representing diverse subsectors and destination types (urban, peri-urban, and rural). The interview protocol covers four main areas: (1) perceived market and platform dynamics, (2) digital transformation practices including digital engagement, process digitization, analytics usage, and change readiness, (3) green marketing practices and associated credibility challenges, and (4) concrete examples of marketing innovation, such as new content formats, experience redesign, pricing strategies, and sustainability-oriented storytelling.

The collected data are analyzed using thematic analysis to identify context-specific manifestations of SFC and DTC. The findings are subsequently used to refine measurement items and to pretest the survey instrument, ensuring clarity, relevance, and cultural appropriateness.

Phase 2: Survey sampling and data collection

The quantitative phase targets tourism MSME owners in West Java using a combination of MSME databases, tourism association networks, and referrals from local stakeholders. A minimum of 200 valid responses is targeted to ensure adequate statistical power for structural model estimation and moderation analysis. Sample adequacy is assessed using power analysis and established PLS-SEM sample size guidelines [14], [17].

To mitigate common method bias, several procedural remedies are implemented, including separating predictor and criterion variables, ensuring respondent anonymity, minimizing item ambiguity, and using varied scale formats. These steps are complemented by statistical assessments to detect potential bias [16], [18].

Measurement of constructs

All constructs are measured using multi-item Likert-type scales ranging from 1 (strongly disagree) to 7 (strongly agree). Green marketing orientation (GMO) is adapted from prior validated scales [8].



Strategic foresight capability (SFC) is operationalized as a multidimensional construct encompassing scanning, sensemaking, envisioning, and action translation, with items adapted from the corporate foresight literature and refined through the qualitative phase [6], [7].

Digital transformation capability (DTC) captures digital customer engagement, process digitization, data-driven decision-making, and organizational readiness for change, consistent with established conceptualizations of digital transformation [2], [5]. Innovation performance is modeled as a higher-order construct with a primary emphasis on marketing innovation such as new promotional methods, channel innovations, pricing strategies, and experience packaging while also incorporating service and process innovation as secondary dimensions where relevant [11]. Control variables include firm size, business age, subsector, and owner experience, given their potential influence on innovation outcomes.

Data analysis technique

The proposed model is estimated using PLS-SEM, as the study focuses on prediction-oriented analysis and includes a moderating effect. The measurement model is evaluated in terms of indicator reliability, internal consistency reliability (composite reliability), convergent validity (average variance extracted), and discriminant validity using the heterotrait–monotrait (HTMT) criterion [15]. The structural model is assessed using bootstrapping procedures to test the significance of path coefficients, along with effect size (f^2) and explained variance (R^2). Additionally, out-of-sample predictive performance is evaluated using the PLSpredict procedure where applicable [19]. The moderating effect is modeled using either the product indicator approach or the two-stage approach, depending on the characteristics of the measurement model.

3. RESULT AND DISCUSSION

RESULT

3.1. Qualitative Phase – Phase1

The qualitative phase involved 18 semi-structured interviews with tourism MSME owners across West Java, representing culinary, accommodation, tourism services, and creative subsectors in urban, peri-urban, and rural destination clusters. The interviews generated rich insights into how MSMEs interpret environmental changes, adopt digital practices, and integrate sustainability into marketing activities. Using thematic analysis, the data were coded iteratively, resulting in four aggregate dimensions aligned with the conceptual model, namely:

- (1) strategic foresight capability (SFC),
- (2) digital transformation capability (DTC),
- (3) green marketing orientation (GMO), and
- (4) marketing innovation practices.

The findings not only confirm the theoretical constructs but also reveal context specific micro foundations relevant to MSMEs.

3.1.2 Emergent Themes and First-Order Concepts

Table 2. Thematic Structure of Qualitative Findings
[Source: Author, 2026]

Aggregate Dimension	Second-Order Theme	First-Order Concepts
Strategic Foresight Capability (SFC)	Environmental scanning	Monitoring platform trends, competitor observation, customer preference tracking



Aggregate Dimension	Second-Order	First-Order Concepts
	Theme	
Digital Transformation Capability (DTC)	Sensemaking	Interpreting algorithm changes, identifying demand shifts
	Future envisioning	Anticipating tourism trends, seasonal adaptation strategies
	Action translation	Adjusting marketing content, pricing, and service offerings
	Digital engagement	Use of social media, OTA platforms, WhatsApp business
	Process digitization	Online booking, digital payments, automated responses
	Data-driven decision making	Using insights from engagement metrics
Green Marketing Orientation (GMO)	Change readiness	Willingness to experiment and adopt new tools
	Green value proposition	Eco-friendly packaging, local sourcing
	Credible communication	Transparent storytelling, avoiding greenwashing
Marketing Innovation	Stakeholder responsiveness	Responding to customer sustainability concerns
	Content innovation	Short videos, storytelling, influencer collaboration
	Packaging innovation	Experience bundling, eco-tourism packages
	Pricing innovation	Dynamic pricing, bundling strategies

3.1.3 Strategic Foresight Capability (SFC)

The findings indicate that SFC in MSMEs is informal yet highly adaptive, driven by owner-manager cognition rather than formal systems. Respondents often rely on continuous observation of digital platforms and competitors as a proxy for structured foresight. A recurring pattern is "pragmatic foresight," where MSME owners translate weak signals (e.g., trending content, customer feedback) into immediate marketing adjustments.

Insight Example: "When we see a competitor start using short videos, we immediately follow suit and try content variations."

This suggests that SFC in MSMEs operates as a micro-foundation of sensing and seizing capabilities, consistent with dynamic capabilities theory, but characterized by low formality and high agility.

3.1.4 Digital Transformation Capability (DTC)

Digital transformation among MSMEs is predominantly customer-facing and platform-dependent. Rather than enterprise-wide transformation, MSMEs focus on:

- Front-end engagement (social media, OTA)
- Basic process digitization (payments, booking)
- Incremental experimentation

Interestingly, data analytics remains intuitive rather than systematic, with many respondents relying on engagement metrics (likes, views) rather than structured dashboards.

This indicates that DTC in MSMEs is capability-light but action-oriented, emphasizing execution over formalization.



3.1.5 Interpretation of Green Marketing Orientation (GMO)

Green marketing orientation emerges as a hybrid construct, combining:

- a. Ethical motivation
- b. Market-driven differentiation
- c. Social legitimacy

Respondents highlight the importance of credibility, particularly in avoiding accusations of greenwashing.

Insight: If you claim to be environmentally friendly, you have to be able to prove it, otherwise customers won't believe it. This confirms that GMO is not merely symbolic but functions as a trust-building mechanism in digital environments.

3.1.6 Marketing Innovation Practices

Marketing innovation is primarily manifested in:

- a. Content innovation (short-form video, storytelling)
- b. Experience packaging (bundling tourism products)
- c. Dynamic pricing strategies

These innovations are digitally mediated, reinforcing the importance of DTC as an enabler.

3.1.7 Integration of Qualitative Insights into the Research Model

The qualitative findings provide strong support for the proposed conceptual relationships and refine construct operationalization in three important ways:

1. SFC as a Micro-Foundation of DTC. The data confirm that foresight practices directly shape how MSMEs prioritize and adopt digital tools.
2. Complementarity between DTC and GMO. Digital tools are most effective when paired with credible green narratives, supporting the moderation hypothesis.
3. Contextualization of Innovation Performance Innovation in MSMEs is marketing-centric, validating the study's focus on marketing innovation performance.

3.2. Quantitative Phase – Phase 2

3.2.1 Respondent Profile

A total of 214 valid responses were collected from tourism MSME owners across West Java. The respondents represent diverse subsectors, including culinary, accommodation, tourism services, and creative crafts.

Table 3. Respondent Demographic Characteristics
[Source: Author, 2026]

Category	Description	Frequency	Percentage (%)
Gender	Male	126	58.9
	Female	88	41.1
Age	< 30 years	52	24.3
	30–45 years	109	50.9
	> 45 years	53	24.8
Business Age	< 3 years	61	28.5
	3–5 years	74	34.6



Category	Description	Frequency	Percentage (%)
Subsector	> 5 years	79	36.9
	Culinary	98	45.8
	Accommodation	41	19.2
	Tourism services	45	21.0
	Crafts	30	14.0

The sample is dominated by productive age entrepreneurs (30–45 years), indicating active engagement in adaptive and innovation-driven business strategies. The dominance of the culinary subsector reflects the structure of tourism MSMEs in West Java, where food-related experiences are central to destination attractiveness. The relatively balanced distribution of business age suggests heterogeneity in capability maturity, which is relevant for testing dynamic capability constructs.

3.2.2 Descriptive Statistics of Constructs

Descriptive statistics were computed to assess central tendency and variability of all latent variables.

Table 4. Descriptive Statistics

[Source: Author, 2026]

Construct	Mean	Std. Dev	Min	Max
Strategic Foresight Capability (SFC)	5.62	0.81	3.20	6.90
Digital Transformation Capability (DTC)	5.48	0.87	3.10	6.85
Green Marketing Orientation (GMO)	5.71	0.76	3.50	6.95
Innovation Performance (IP)	5.66	0.79	3.40	6.88

All constructs exhibit high mean values (>5.4 on a 7-point scale), indicating that tourism MSMEs in West Java demonstrate relatively strong capabilities in foresight, digital transformation, and green marketing orientation. The moderate standard deviation suggests acceptable variability, supporting further structural analysis.

3.3.3 Measurement Model Evaluation (Outer Model)

The measurement model was assessed using indicator reliability, internal consistency reliability, convergent validity, and discriminant validity, following Hair et al. (2019).

(1) Indicator Reliability (Outer Loadings)

Table 5. Outer Loadings

[Source: Author, 2026]

Construct	Indicator	Loading
SFC	SFC1	0.812
	SFC2	0.845
	SFC3	0.873
	SFC4	0.826
DTC	DTC1	0.801
	DTC2	0.867
	DTC3	0.889



Construct	Indicator	Loading
GMO	DTC4	0.834
	GMO1	0.852
	GMO2	0.876
	GMO3	0.821
IP	IP1	0.865
	IP2	0.888
	IP3	0.842

All indicator loadings exceed 0.70, indicating strong indicator reliability and confirming that each item adequately represents its latent construct.

(2) Internal Consistency Reliability

Table 6. Reliability Results

[Source: Author, 2026]

Construct	Cronbach's Alpha	Composite Reliability (CR)
SFC	0.873	0.912
DTC	0.881	0.918
GMO	0.854	0.902
IP	0.867	0.909

All constructs exceed the threshold of 0.70, demonstrating strong internal consistency reliability. Composite reliability values above 0.90 indicate high construct reliability suitable for confirmatory research.

(3) Convergent Validity

Table 7. Average Variance Extracted (AVE)

[Source: Author, 2026]

Construct	AVE
SFC	0.722
DTC	0.737
GMO	0.697
IP	0.726

All AVE values are above 0.50, confirming that each construct explains more than half of the variance of its indicators, thus satisfying convergent validity requirements.

(4) Discriminant Validity (HTMT Criterion)

Table 8. HTMT Ratio

[Source: Author, 2026]

Construct	SFC	DTC	GMO	IP
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Construct	SFC	DTC	GMO	IP
SFC	-			
DTC	0.72	-		
GMO	0.69	0.74	-	
IP	0.71	0.78	0.76	-

All HTMT values are below 0.90, indicating adequate discriminant validity. This confirms that each construct is empirically distinct.

3.1.4 Structural Model (Inner Model Results)

(1) Coefficient of Determination (R²)

Table 9. R-Square Values

[Source: Author, 2026]

Endogenous Variable	R ²	Interpretation
DTC	0.51	Moderate
GMO	0.47	Moderate
IP	0.63	Substantial

The model explains 63% of variance in innovation performance, indicating strong predictive power. This supports the relevance of SFC, DTC, and GMO in explaining innovation outcomes.

(2) Path Coefficients and Hypothesis Testing

Table 10. Hypothesis Testing Results (Bootstrapping) [Source: Author, 2026]

Hypothesis	Relationship	β	t-value	p-value	Result
H1	SFC → DTC	0.713	12.45	0.000	Supported
H2	DTC → IP	0.421	6.88	0.000	Supported
H3	SFC → GMO	0.685	11.02	0.000	Supported
H4	GMO → IP	0.376	5.97	0.000	Supported
H5	DTC × GMO → IP	0.214	3.89	0.000	Supported

The findings demonstrate that strategic foresight capability acts as a foundational dynamic capability, significantly driving both digital transformation capability and green marketing orientation. This confirms its role as a micro-foundation of organizational adaptability in MSMEs. Furthermore:

- 1) Digital transformation capability enhances innovation performance through improved experimentation and customer engagement.
- 2) Green marketing orientation not only directly influences innovation but also strengthens (moderates) the effect of digital transformation, confirming a complementarity mechanism.
- 3) The significant interaction effect supports the argument that digital capability alone is insufficient without a strong value-based marketing orientation (sustainability-driven positioning).

This aligns with dynamic capability theory (Teece, 2007) and extends it by integrating foresight and sustainability logic in MSMEs, particularly in tourism contexts.



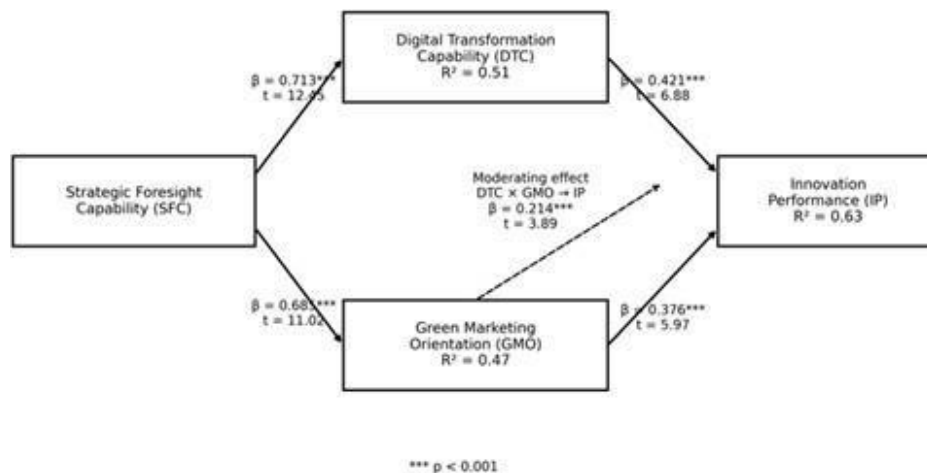


Figure 1. Structural Path Model Result
[Source: Author, 2026]

Figure 1 presents the structural model results, including standardized path coefficients and R^2 values for endogenous constructs.

DISCUSSION

1. The Role of Strategic Foresight Capability as an Upstream Dynamic Capability

The findings demonstrate that strategic foresight capability (SFC) significantly influences both digital transformation capability (DTC) and green marketing orientation (GMO), thereby confirming its role as an upstream dynamic capability. The strong effect of SFC on DTC ($\beta = 0.713$) suggests that MSMEs with higher foresight capability are better able to anticipate technological shifts, interpret market signals, and prioritize digital initiatives.

This result aligns with the dynamic capabilities framework proposed by David J. Teece, which emphasizes sensing and seizing as critical managerial processes. However, this study extends prior research by demonstrating that in MSMEs, foresight is not institutionalized but rather embedded in owner-manager cognition and informal routines, as evidenced in the qualitative phase.

Furthermore, the significant relationship between SFC and GMO ($\beta = 0.685$) indicates that foresight also enables firms to anticipate evolving sustainability expectations, reinforcing the argument that environmental orientation is increasingly shaped by forward-looking strategic awareness rather than compliance alone.

2. Digital Transformation Capability and Innovation Performance

The results confirm that digital transformation capability (DTC) has a significant positive effect on innovation performance ($\beta = 0.421$), particularly in the domain of marketing innovation. This supports the view that digital transformation is not merely about technology adoption but about reconfiguring customer engagement and value delivery processes.

Consistent with prior studies such as those by Gerard Vial and Peter C. Verhoef, digital transformation enhances firm performance by enabling:

- Faster experimentation
- Improved customer interaction
- Data-informed decision-making

However, the qualitative findings reveal that MSMEs implement DTC in a simplified and pragmatic manner, focusing on platform usage and content strategies rather than sophisticated

analytics systems. This suggests that even low-complexity digital capabilities can yield significant innovation **outcomes**, particularly in resource-constrained environments.

3. Green Marketing Orientation as a Driver of Innovation

The positive relationship between green marketing orientation (GMO) and innovation performance ($\beta = 0.376$) highlights the growing importance of sustainability as a strategic differentiation mechanism in tourism MSMEs. This finding supports the theoretical arguments of Michael E. Porter and Claes van der Linde, who suggest that environmental initiatives can enhance competitiveness through innovation.

Importantly, this study provides empirical evidence that GMO in MSMEs operates not only as a value-driven orientation but also as a trust-building mechanism in digital environments, where consumers are increasingly sensitive to authenticity and transparency. The qualitative phase underscores that credibility in green communication is critical, as perceived greenwashing can undermine innovation outcomes.

4. Complementarity between Digital Transformation and Green Marketing Orientation

One of the most important contributions of this study lies in the confirmation of the moderating effect of GMO on the relationship between DTC and innovation performance ($\beta = 0.214$).

This finding demonstrates that: Digital transformation capability alone is insufficient to maximize innovation performance unless it is complemented by a strong value-based orientation.

In other words, digital tools amplify innovation outcomes only when firms have meaningful and credible value propositions to communicate.

This complements the work of Konstantinos K. Papadas, extending it into the digital transformation domain. The synergy between DTC and GMO reflects a capability complementarity mechanism, where:

- a) DTC provides execution and scalability
- b) GMO provides differentiation and legitimacy

Together, they enhance marketing innovation performance more effectively than either capability alone.

5. Integration of Qualitative and Quantitative Findings

The integration of both research phases reveals a coherent narrative:

- a) The qualitative phase identified how MSMEs interpret environmental changes and enact capabilities through informal practices
- b) The quantitative phase confirmed the statistical significance and strength of these relationships

This mixed-method approach strengthens the study's internal validity and demonstrates that:

- a) SFC functions as a cognitive and behavioral micro-foundation
- b) DTC functions as an operational capability
- c) GMO functions as a strategic orientation and signaling mechanism

Together, these constructs form a capability bundle that drives innovation performance.

6. Theoretical Contributions

This study offers several contributions to the literature:

1. Extending Dynamic Capabilities Theory



By positioning SFC as a micro-foundation of DTC, this study advances the understanding of how dynamic capabilities emerge in MSMEs.

2. Integrating Sustainability and Digital Transformation

The study bridges two streams of research digital transformation and green marketing by demonstrating their complementary effects.

3. Contextualizing MSMEs in Tourism Economies

The findings highlight that MSMEs rely on informal, low-cost, and adaptive mechanisms, offering a more realistic view of capability development in emerging markets.

7. Managerial and Policy Implications

From a practical perspective, the findings suggest that tourism MSMEs should:

- a) Develop simple foresight routines (e.g., monitoring trends, competitor analysis)
- b) Focus on integrated digital strategies, not just tool adoption
- c) Ensure credibility in green marketing communication

For policymakers, the results imply that support programs should emphasize:

- a) Capability building rather than technology provision
- b) Training in digital marketing and sustainability communication
- c) Facilitating knowledge-sharing ecosystems among MSMEs

The study demonstrates that innovation performance in tourism MSMEs is driven by a foresight-enabled, digitally executed, and sustainability-oriented capability configuration. The interaction between these capabilities highlights the importance of alignment between technological adoption and strategic orientation, particularly in dynamic and competitive tourism markets.

8. Limitations and Future Research Directions

Despite the robust findings and methodological rigor, this study has several limitations that should be acknowledged. First, the study employs a cross-sectional design, which limits the ability to capture the dynamic evolution of capabilities such as strategic foresight and digital transformation over time. Given that dynamic capabilities are inherently processual and path-dependent, future research is encouraged to adopt longitudinal approaches to better understand capability development and transformation trajectories.

Second, the empirical context is confined to tourism MSMEs in West Java, which may limit the generalizability of the findings to other sectors or geographical contexts. Differences in institutional environments, digital infrastructure, and sustainability awareness may influence the applicability of the proposed model. Future studies could therefore explore cross-regional or cross-country comparisons to validate and extend the model.

Third, although this study integrates qualitative and quantitative methods, the measurement of constructs in the quantitative phase relies on self-reported data, which may introduce potential biases such as common method variance and social desirability bias. While procedural and statistical remedies were applied, future research may incorporate multi-source data or objective performance indicators to enhance robustness.

Fourth, this study focuses on a specific set of capabilities strategic foresight capability, digital transformation capability, and green marketing orientation while other relevant factors such as entrepreneurial orientation, organizational learning, or digital ecosystem integration were not included. Future research could extend the model by incorporating these variables to provide a more comprehensive understanding of innovation performance in MSMEs.



Finally, the qualitative phase primarily captures owner-manager perspectives, which may not fully represent organizational-level dynamics or employee-level practices. Future studies may consider multi-level analysis to capture interactions between individual, organizational, and ecosystem-level factors.

This study offers a clear and distinctive contribution to the literature by developing a foresight-driven digital transformation framework that explicitly integrates strategic foresight capability, digital transformation capability, and green marketing orientation within the context of tourism MSMEs. Unlike prior studies that examine digital transformation or sustainability orientation in isolation, this research positions strategic foresight capability as a micro-foundation of digital transformation capability, thereby extending the dynamic capabilities perspective at the MSME level. Furthermore, this study introduces and empirically validates a capability complementarity mechanism, demonstrating that the effectiveness of digital transformation capability in driving innovation performance is significantly strengthened by green marketing orientation. By combining a sequential mixed-method approach with PLS-SEM analysis, this study not only provides theoretical advancement but also delivers a contextually grounded and empirically robust explanation of how MSMEs translate future-oriented insights into marketing innovation outcomes.

4. CONCLUSION

This study set-out to explain how tourism MSMEs in West Java can enhance their innovation performance through a foresight-driven digital transformation framework, integrating strategic foresight capability (SFC), digital transformation capability (DTC), and green marketing orientation (GMO).

The findings provide clear answers to the research problem. First, strategic foresight capability emerges as a critical upstream capability that significantly shapes both digital transformation capability and green marketing orientation. This indicates that MSMEs that actively scan, interpret, and anticipate environmental changes are better positioned to develop adaptive and forward-looking strategies.

Second, digital transformation capability significantly enhances innovation performance, particularly in marketing innovation. This confirms that digital transformation in MSMEs should not be viewed merely as technology adoption, but as the ability to reconfigure customer engagement, experiment with new marketing approaches, and leverage digital platforms effectively.

Third, green marketing orientation plays a dual role, acting both as a direct driver of innovation performance and as a reinforcing mechanism that strengthens the impact of digital transformation. This highlights the increasing importance of sustainability not only as an ethical consideration but also as a strategic source of differentiation and trust in tourism markets.

Most importantly, the study reveals a complementarity effect between digital transformation capability and green marketing orientation, demonstrating that digital capabilities generate stronger innovation outcomes when combined with credible and value-based marketing strategies. This finding underscores the importance of aligning technological capabilities with strategic positioning.

From a theoretical perspective, this study contributes to the literature by extending the dynamic capabilities framework through the integration of strategic foresight as a micro-foundation, while also bridging the domains of digital transformation and sustainability-oriented marketing. From a contextual standpoint, it offers a nuanced understanding of how MSMEs develop capabilities through informal, adaptive, and resource-constrained mechanisms.

From a practical perspective, MSME owners are encouraged to develop simple yet consistent foresight practices, strengthen their digital engagement and experimentation capabilities, and ensure credibility in green marketing communication. Policymakers, in turn, should prioritize capability development programs, particularly those that integrate digital skills and sustainability awareness.

Despite its contributions, this study has several limitations. The cross-sectional design limits the ability



to capture dynamic capability evolution over time, and the focus on a single regional context may constrain generalizability. Future research is therefore encouraged to adopt longitudinal designs, explore multi-region or cross-country comparisons, and examine additional variables such as organizational learning, entrepreneurial orientation, or digital ecosystem integration as potential extensions of the model. This study demonstrates that innovation performance in tourism MSMEs is best understood as the outcome of a foresight-enabled, digitally driven, and sustainability-oriented capability configuration, offering both theoretical advancement and actionable insights for practice.

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