DIGITAL DYNAMIC MARKETING CAPABILITY FOR GREEN HOSPITALITY TRANSFORMATION IN EMERGING COUNTRIES: A SYSTEMATIC LITERATURE REVIEW AND EMPIRICAL TREND ANALISYS

Ardin Sianipar[1)], Widya Angelia[2)], Abrar Abdau[3)]

[1,2)] *Doctoral of Research in Management, Universitas Pelita Harapan, Tangerang, Indonesia*
[3)] *Institut Supérieur of Marketing and 'Communication (ISMAC), Paris, France.*

E-mail: ardin.sianipar@gmail.com

ABSTRACT

This study explores the role of Digital Dynamic Marketing Capability (DDMC) in advancing green hospitality in emerging countries by integrating theoretical and empirical insights. A Systematic Literature Review (SLR) following the PRISMA protocol analyzed 30 peer-reviewed articles from 2020 to 2024, sourced from Scopus and Web of Science, and supplemented by empirical data from WTTC, UNWTO, and Statista to validate trends. The findings highlight four key themes: technological adaptability, sustainability-driven digital communication, organizational agility, and customer eco-engagement. DDMC strengthens branding, fosters eco-innovation, and enhances service personalization, though its adoption, particularly of advanced technologies like AI and blockchain, varies across regions due to infrastructural and resource disparities. The study's reliance on secondary data limits its ability to establish direct causal relationships, suggesting a need for further empirical research. Practically, it offers strategic insights for hospitality leaders and policymakers to develop adaptive, sustainable marketing practices that align with eco-hospitality goals. By extending dynamic capabilities theory to green digital marketing, this paper contributes an original conceptual framework tailored to the unique challenges and opportunities of emerging markets, providing a roadmap for sustainable transformation in the hospitality sector.

Keywords: Digital Dynamic Marketing Capability, Green Hospitality, Emerging Countries, Systematic Literature Review, Sustainability Marketing, Digital Transformation in Tourism

ABSTRAK

Studi ini mengeksplorasi peran Digital Dynamic Marketing Capability (DDMC) *dalam memajukan* green *hospitality di negara berkembang melalui integrasi wawasan teoretis dan empiris*. Systematic Literature Review (SLR) *dengan protokol PRISMA menganalisis 30 artikel* peer-reviewed *periode 2020–2024 yang bersumber dari* Scopus *dan* Web of Science*, serta dilengkapi dengan data empiris dari WTTC, UNWTO, dan Statista untuk memvalidasi tren. Temuan penelitian menyoroti empat tema utama: kemampuan beradaptasi terhadap teknologi, komunikasi digital berorientasi keberlanjutan, kelincahan organisasi, dan keterlibatan pelanggan dalam isu lingkungan. DDMC memperkuat* branding, *mendorong inovasi ramah lingkungan* (*eco-innovation*), *dan meningkatkan personalisasi layanan, meskipun adopsinya—terutama pada teknologi maju seperti* AI *dan* blockchain*—bervariasi antar wilayah akibat perbedaan infrastruktur dan sumber daya. Ketergantungan studi ini pada data sekunder membatasi kemampuannya dalam menetapkan hubungan kausal langsung, sehingga diperlukan penelitian empiris lanjutan. Secara praktis, studi ini memberikan wawasan strategis bagi para pemimpin industri perhotelan dan pembuat kebijakan untuk mengembangkan praktik pemasaran adaptif dan berkelanjutan yang selaras dengan tujuan* eco-hospitality*. Dengan memperluas teori* dynamic capabilities *ke dalam pemasaran digital berkelanjutan, penelitian ini menawarkan kerangka konseptual orisinal yang disesuaikan dengan tantangan dan peluang unik di pasar negara berkembang, sekaligus memberikan peta jalan bagi transformasi berkelanjutan di sektor perhotelan.*

Kata kunci: Digital Dynamic Marketing Capability, Green Hospitality, *Negara Berkembang*, Systematic Literature Review, *Pemasaran Berkelanjutan, Transformasi Digital dalam Pariwisata.*

1. Introduction

The hospitality industry in developing countries faces a significant challenge in integrating sustainability principles into their business practices (Meeroff et al., 2020). It is even more urgent given the increasing consumer awareness of environmental issues and the global push to achieve the Sustainable Development Goals (SDGs), especially in the tourism sector (Bekele et al., 2024; Sultan et al., 2020). Green hospitality refers to implementing operational practices that reduce negative environmental impacts, such as energy efficiency, waste management, and water conservation. In developing countries, green hospitality adoption is often hampered by a lack of infrastructure, weak regulation, and managerial knowledge gaps (Sánchez-Ollero et al., 2023; Hossain & Rahman, 2024). Nonetheless, there is a massive opportunity for hotels in developing countries to leverage digital technology as a tool to accelerate their green transformation. One strategic approach gaining attention is strengthening the digital dynamic marketing capability (DDMC). This concept is an extension of the dynamic capability framework (Teece, 2018), emphasizing the ability of organizations to leverage digital technologies adaptively to respond to market changes and create new value.

In the context of marketing, DDMC includes the ability of companies to identify digital market trends (digital sensing) quickly, convert opportunities into technology-based marketing strategies (digital seizing), and digitally transform internal processes (Kumar et al., 2021). However, although DDMC has been extensively researched in the context of the digital economy, its application in the hospitality sector—especially those focused on Sustainability—is still minimal.

The literature gap arises from the lack of integration between dynamic digital approaches and sustainability agendas in hospitality marketing studies. Previous studies have tended to examine green hospitality from an operational or environmental perspective without exploring how digital capabilities can strengthen organizational sustainability strategies (Rahman & Karim, 2021; Li & Zhang, 2022). On the other hand, studies on DDMC focus more on the e-commerce or manufacturing sector than on the context of services such as hotels. In other words, there is an urgent need to understand how DDMC can be an enabler in the green transformation process in the hospitality sector, especially in developing countries facing limited resources and institutional imperfections (Ghosh & Chowdhury, 2023).

The relationship between DDMC and green hospitality can be understood from two main dimensions. First, digital marketing can convey sustainability values to consumers, shape a green brand image, and increase the loyalty of environmentally conscious customers (Li & Zhang, 2022). Second, using digital technologies such as AI, blockchain, and the Internet of Things (IoT) can strengthen the hotel's internal processes in carrying out sustainable and efficient operations (Prayag et al., 2022; Rahman & Karim, 2021). In the context of developing countries, this is increasingly important because technology can be a lever in overcoming resource limitations and accelerating green innovation. Therefore, this systematic literature review aims to fill the gaps in the literature by analyzing and synthesizing existing research on DDMC in the green hospitality context, particularly in developing countries. (Makoondlall-Chadee & Bokhoree, 2024).

To strengthen the relevance of the conceptual synthesis, this study also integrates empirical secondary data drawn from global tourism institutions (WTTC, UNWTO, Statista), enabling triangulation between theory and practice. The study enhances its policy and managerial applicability by contextualizing the DDMC framework within observed adoption trends in various developing regions.

Based on this description, the formulation of the problem in this study is:
RQ1: What is the role and implementation of DDMC in supporting green hospitality in developing countries?

RQ2: How does the adoption of DDMC tools vary across developing regions, and what empirical patterns emerge to support or challenge the conceptual framework?

To answer these questions, the study aims to conduct a systematic review of the literature on DDMC and green hospitality in the context of developing countries, identify patterns, trends, and gaps in the current literature, and formulate a future research agenda to integrate DDMC in the hospitality sector's sustainability strategy. The main contribution of this research is to provide a more structured conceptual understanding of the role of DDMC in green hospitality. In addition, the study also offers practical insights for hotel managers, tourism industry stakeholders, and policymakers in developing countries in designing digital-based sustainability strategies.

2. Literature Review

2.1. Digital Dynamic Marketing Capability (DDMC) Concept

Digital Dynamic Marketing Capability (DDMC) is a derivative of the *dynamic capability* framework developed by Teece et al. (1997). DDMC refers to the ability of an organization to adaptively integrate, build, and reconfigure internal and external competencies in the face of rapidly changing business environments, particularly in digital marketing. In the context of marketing, DDMC includes three main capabilities: *sensing* (the ability to detect market opportunities and threats), *seizing* (the ability to take advantage of opportunities through product and service innovation), and *transforming* (the ability to reconfigure organizational assets and processes) (Teece, 2018). Kumar et al. (2021) emphasize that resource limitations and institutional vacancies in developing countries often hamper DDMC development. However, organizations that successfully build DDMCs can be more responsive to market dynamics and more innovative in delivering value to customers. Ghosh and Chowdhury (2023) show that AI-based personalization in green hospitality in India improves customer experience and strengthens the competitive position of companies.

2.2. Green Hospitality in Developing Countries

Green hospitality refers to hospitality operational practices that focus on environmental Sustainability, such as energy efficiency, waste management, and water conservation. In developing countries, adopting this practice faces challenges, including limited infrastructure, lack of supportive regulations, and low environmental awareness among stakeholders (Hossain & Rahman, 2024). Li and Zhang (2022) found that hotels in China and India that are active in sustainability communication through social media tend to have more positive brand imagery and higher customer loyalty. Sánchez-Ollero et al. (2023) highlight that lacking training and digital resources is the main barrier to sustainable communication in Latin America.

2.3. DDMC Integration in Green Hospitality

DDMC's integration in green hospitality can strengthen sustainability strategies through digital innovation. Prayag et al. (2022) show that dynamic capabilities, including digital marketing, increase hotel resilience to disasters and strengthen operational Sustainability. Rahman and Karim (2021) added that technologies such as blockchain can improve supply chain transparency in green hospitality. The study by Wangsa (2023) emphasizes the importance of organizational learning and green innovation in developing sustainability-oriented dynamic marketing capabilities. Chasapi et al. (2024) found that technology capital, including digital infrastructure and analytics tools, contributes significantly to organizational agility in the hospitality industry.

2.4. Challenges and Opportunities in Developing Countries

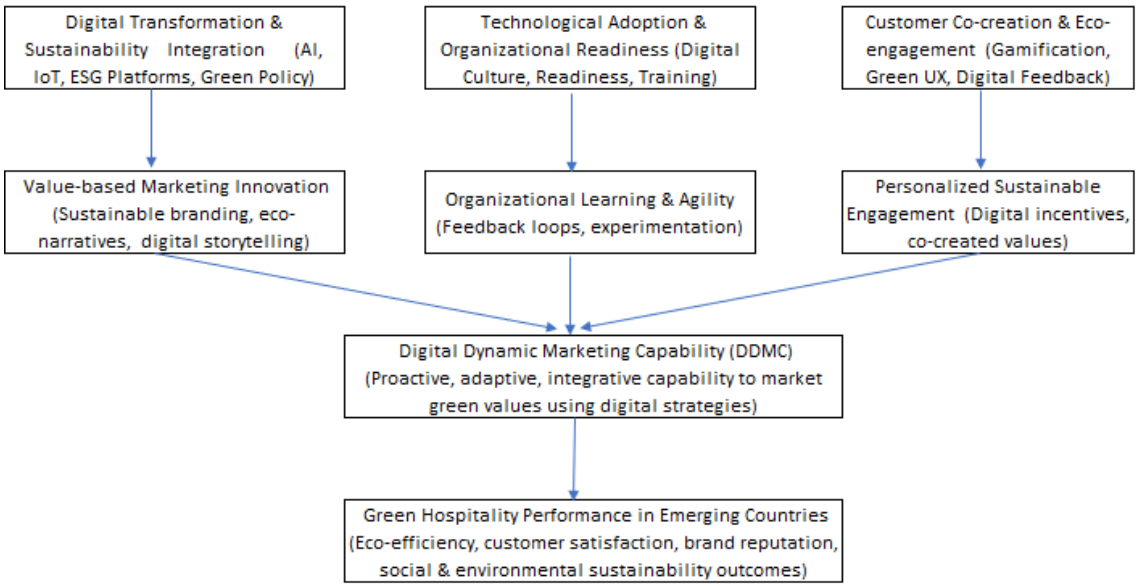
In developing countries, DDMC development in green hospitality faces challenges such as limited access to

technology, low digital literacy, and lack of policy support. Lukose and Agbeyangi (2024) highlight that in South Africa, technology adoption in hospitality is influenced by ICT literacy levels and awareness of sustainable practices. However, leveraging digital technology to accelerate green transformation is an excellent opportunity. Ruiz-Fernández et al. (2024) show that dynamic capabilities and internationalization orientation contribute to the sustainable performance of hotels. Satrya Wangsa (2023) emphasized that organizational learning and green innovation can strengthen dynamic marketing capabilities in the context of Sustainability.

2.5. Conceptual Framework Development

Based on the literature synthesis, a conceptual framework was developed to describe the relationship between the key dimensions of Digital Dynamic Marketing Capability (DDMC) and green hospitality performance in developing countries. This framework represents how integrating digital transformation, customer engagement, organizational readiness, and value-based marketing innovations facilitates the sustainability performance of the green hospitality sector. The visualization of the skeleton is presented in Figure 1.

Figure 1. Conceptual framework



This framework is a derivative of dynamic capability theory (Teece, 2018), contextualized in the digital marketing and sustainability environment (Sigala, 2020; Kumar et al., 2021). Through technology integration, value innovation, and customer participation, hospitality organizations in developing countries can create dynamic digital marketing capabilities that support green hospitality performance. The conceptual framework developed (Figure 1) is based on the results of identifying key themes that emerged from the 30 systematic studies reviewed, as well as the theory of dynamic capabilities and digital marketing innovation in the context of Sustainability. This framework aims to map the relationship between dynamic digital marketing capabilities and their contribution to green hospitality performance in developing countries."

3. Research Method

3.1. Methodological Approach

This study uses a Systematic Literature Review (SLR) approach combined with secondary data analysis (desk research) to strengthen the validity and relevance of theoretical findings in the context of industrial practices in developing countries. This

approach allows for the integration of scientific evidence from the literature and empirical statistical data related to the development of Digital Dynamic Marketing Capability (DDMC) in the context of sustainable hospitality (green hospitality) (Chinakidzwa & Phiri, 2020).

3.2. SLR Procedures and Stages

The primary data sources in this study come from the databases of highly reputable journals, namely Scopus and the Web of Science (WoS), which are internationally recognized for providing quality academic literature. The search process was conducted in May 2024 using combined keywords:
("Digital Marketing Capability" OR "Digital Dynamic Capability" OR "Marketing Agility")

AND ("Green Hospitality" OR "Sustainable Tourism" OR "Eco-hotel")

AND ("Emerging Countries" OR "Developing Nations" OR explicitly developing country names such as "India," "Indonesia," "Bangladesh," etc.)

The initial search results yielded 346 articles from two databases.

3.2. Inclusion and Exclusion Criteria

To filter relevant articles and follow the focus of the study, the following inclusion and exclusion criteria are applied:

Inclusion criteria: (a) Peer-reviewed scientific journal articles published between 2020 and 2024, (b) Articles that address aspects of digital marketing capabilities, organizational dynamic capabilities, and hospitality sustainability practices simultaneously, (c) Studies whose contextualization is based on developing countries in Asia, Africa, and Latin America, (d) English-language articles

Exclusion criteria: (a) Articles that address only one aspect of DDMC, Sustainability, or hospitality separately, (b) Studies that focus on the context of developed countries or do not mention geographical dimensions, (c) non-peer-reviewed articles, such as conferences, editorials, or opinions, (d) non-English articles.

3.3. Methodological Justification

The use of PRISMA-based SLR and thematic analysis provides several methodological advantages. First, this approach allows for a thorough exploration of the integration of DDMC and green hospitality in the context of developing countries that have not been extensively researched in depth. Second, this method is descriptive and interpretive, resulting in a conceptual synthesis that can be used for theoretical development and practical policy design in the sustainable tourism sector. (Rosalina et al., 2021)

3.4. Empirical Secondary Data Integration

To complement the results of the literature review, secondary statistical data was collected from various reliable sources: World Travel and Tourism Council (WTTC), United Nations World Tourism Organization (UNWTO), Statista (2024), and OECD Tourism Trends Report (2023). This data validates conceptual trends in the literature with actual conditions in the field. Identifying the gap between theory and practice, especially related to the adoption of digital technologies in green hospitality in developing countries, provides a quantitative context for the discussion of green hospitality sector strategies and policies, and the use of secondary data allows for a triangulation-based analysis of sources, which reinforces the external validity and policy relevance of the SLR findings (Papallou et al., 2024).

4. Result and Discussion

4.1. Thematic Synthesis: Key Dimensions of DDMC in Green Hospitality

The results of the thematic analysis of the 30 selected articles show that Digital Dynamic Marketing Capability (DDMC) in the context of green hospitality in developing countries can be categorized into four major themes that interact with each other in a complex manner: (1) Technological Adaptability, (2) Sustainability-Driven Digital Communication, (3) Organizational Agility

and Learning, and (4) Customer Co-creation and Eco-Engagement. To ensure that the literature selection process is carried out systematically and transparently, this study applies the PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) protocol (Michelotto & Jóia, 2024). The entire process of searching, screening, and selecting articles is carried out through three main stages: identification, initial screening, and final feasibility evaluation. The data source comes from two internationally reputable databases, namely Scopus and the Web of Science, with a publication period between 2020 and 2024. The inclusion criteria are focused on studies that address dynamic digital marketing capabilities, sustainable hospitality practices, and emerging country contexts. Details of the number of articles at each selection are presented in Table 1 below.

Table 1. PRISMA Flow Diagram

Stages	Explanation	Number of Articles
Identification	Articles found from Scopus and Web of Science (WoS) databases - Scopus: 198 articles - Web of Science: 148 articles	346
Duplicates Removed	Duplicate articles removed by title and DOI	-78
Left for Screening	Articles checked by abstract and title	268
Issued during Screening	The article is not conceptually or contextually relevant	-160
Left for Full Text Evaluation	Articles are read in full to assess their suitability for inclusion criteria	108
Issued during Full Evaluation	Articles that do not meet the inclusion criteria (developed countries, not digitally focused or green)	-78
Articles Included in Synthesis	Final articles used for thematic analysis and discussion	**30**

The initial search process used combined keywords in two primary academic databases. The search focus is limited to 2020–2024, peer-reviewed scientific publications, and topics that include a combination of digital marketing, dynamic capabilities, and green hospitality in developing countries. This stage contains initial screening by title and abstract. Articles that do not touch the DDMC or green hospitality aspect are immediately eliminated. The remaining articles are then thoroughly analyzed to ensure that they address the integration of all three key elements: digital, Sustainability, and organizational dynamics in the context of developing countries. A total of 30 articles were considered feasible and relevant to be included in the thematic synthesis process and became the basis for the formation of results and discussions. Based on the selection process, as many as 30 articles were declared eligible and analyzed using a thematic approach. These articles reflect the diversity of methods, geographical contexts, and thematic focuses relevant to the DDMC and green hospitality frameworks.

a. Technological Adaptability

Most of the literature highlights the importance of technology adaptation as the foundation of DDMC in the sustainable hospitality sector. For example, a study by Ghosh and Chowdhury (2023) emphasizes the use of AI-driven personalization in eco-friendly resorts in India, which has been proven to improve customer experience while supporting Sustainability. Technologies such as blockchain (Rahman & Karim, 2021) and cloud-based marketing systems (Juma & Mahmud, 2021) enhance green supply chains' operational efficiency and transparency. Further, Kumar et al. (2021) show that the main challenges in developing countries are

resource limitations and institutional vacancies that limit the adoption of cutting-edge technologies. However, hotels that can progressively develop digital capabilities show better performance in conveying sustainability values.

b. Sustainability - Driven Digital Communication

The literature also identifies that the success of green hospitality is greatly influenced by the organization's ability to communicate sustainability values through digital channels. A study by Li and Zhang (2022) shows that digital communication strategies through social media can strengthen sustainable brand image, especially in emerging markets such as India and China. Sánchez-Ollero et al. (2023) emphasize the importance of addressing sustainability communication barriers, especially in the Latin American context, where gaps in digital capabilities and institutional regulation are significant obstacles.

c. Organizational Agility and Learning Capability

The organization's ability to adapt and learn quickly from market and technological changes is also a key aspect of DDMC. Prayag et al. (2022) emphasized that dynamic capabilities are essential in increasing hotel resilience to crises, such as natural disasters or pandemics, by optimizing digital campaigns to maintain customer engagement. Sigala (2020) added that the COVID-19 pandemic accelerated digitalization in the tourism industry and opened up new opportunities to integrate sustainability principles into digital strategies.

d. Customer Co - creation and Eco - Engagement

Customer involvement in the value-creation process is also an essential dimension of DDMC. Dwivedi et al. (2021) show that gamification and eco-engagement strategies can encourage more environmentally friendly consumer behaviour in developing countries. It is reinforced by a study by Nurdiansyah & Putri (2023) in Indonesia, which shows that interactive digital-based campaigns can increase hotel consumers' loyalty and environmental awareness.

The four key themes identified—digital transformation and Sustainability, technology adoption and organizational readiness, customer engagement in the green ecosystem, and value-based marketing innovations—reflect the conceptual framework of DDMC in the green hospitality sector. Table 2 presents a systematic summary of the 30 articles analyzed to support the thematic synthesis. The information includes the name of the author, the research method, the country context, and the main findings of each study.

Table 2. Systematic Literature Review Table (2020–2024)

No	Author(s) & Year	Method	Context	Main Findings
1	Castilho, D., & Fuinhas, J. A. (2025).	Qualitative	Nigeria	Digital marketing adoption improves the competitiveness of tourism SMEs.
2	Floričić, T. (2020).	Case Study	India	ICT enhances sustainable operations in hospitality.
3	Al-Husain elal., (20240	Case Study	Vietnam	Strategic integration of digital tools improves Sustainability in SMEs.
4	Chang & Chen (2022)	Quantitative	Taiwan	Dynamic capabilities promote sustainable tourism practices.
5	Domingo & Roldan (2022)	Mixed Methods	Philippines	Social media strategies improve the green positioning of hotels.
6	Dwivedi et al. (2021)	Survey	India	Gamification promotes eco-consumer behavior.
7	García-Muiña et al. (2021)	Quantitative	Spain	Digital maturity correlates with green innovation.
8	Ghosh & Chowdhury (2023)	Case Study	India	AI supports personalization in eco-resorts.

9	Hamdan & Alharbi (2022)	Survey	Saudi Arabia	Digital marketing capabilities drive sustainable value creation.
10	Hermawan & Fitriani (2020)	Qualitative	Indonesia	Digital co-creation enhances green service delivery.
11	Hossain & Rahman (2024)	Policy Review	Bangladesh	Policy gaps hinder green digital marketing practices.
12	Juma & Mahmud (2021)	Case Study	Kenya	Cloud tech improves sustainability communication.
13	Khan & Yu (2021)	Quantitative	Pakistan	Green innovation promotes development.
14	Kumar et al. (2021)	Survey	India	Resource constraints affect digital capability development.
15	Li & Zhang (2022)	Survey	China, India	Social media aids green branding.
16	Moghavvemi et al. (2020)	Quantitative	Malaysia	Digital marketing boosts hotel performance.
17	Morales & Silva (2021)	Experiment	Peru	Mobile marketing increases eco-tourism engagement.
18	Nurdiansyah & Putri (2023)	Survey	Indonesia	Agility in digital marketing supports green tourism.
19	Oliveira & Costa (2022)	Quantitative	Brazil	Digital transformation impacts hotel reputation.
20	Prayag et al. (2022)	Case Study	Mauritius	Digital marketing enhances disaster resilience.
21	Rahman & Karim (2021)	Qualitative	Bangladesh	Blockchain increases transparency in supply chains.
22	Sánchez-Ollero et al. (2023)	Survey	Mexico	Sustainability communication faces barriers.
23	Sigala (2020)	Conceptual	Global	COVID-19 accelerates digital sustainability trends.
24	Khatter, A. (2025).	Survey	India	Big data supports sustainable hospitality decisions.
25	Kamyabi et al. (2025)	Experiment	Türkiye	Digital practices foster customer engagement.
26	Okano (2022)	Conceptual	Taiwan	Dynamic capabilities are vital for digital platform success.
27	Tran & Nguyen (2020)	Survey	Vietnam	Smart tourism fosters green capabilities.
28	Villamediana et al. (2023)	Mixed Methods	Spain	Digitalization transforms sustainability communication.
29	Patwary et al. (2024)	Survey	Malaysia	Digital capabilities strengthen green branding.
30	Zhang et al. (2023)	Case Study	China	Agility and DDMC enhance service innovation.

This systematic summary provides a comprehensive look at how the latest literature explains the integration of digitalization, dynamic capabilities, and sustainability practices in the hospitality industry in developing countries. In addition, the diversity of contexts and methods reinforces the validity of the findings and supports the generalization of the conceptual models built in this study.

4.2. Integrative Conceptual Model: DDMC-Green Hospitality Nexus

Based on the results of the synthesis, the researcher formulated a conceptual model that connects the four main dimensions of DDMC with sustainability outcomes in the hospitality sector in developing countries. This model explains that the success of a sustainable digital marketing strategy is highly dependent on cross-functional integration between technology, human resources, strategic communication, and customer orientation. Teece (2018), in the dynamic capabilities framework, also underlines the importance of

sensing, seizing, and transforming in managing digital capabilities for sustainable innovation. Therefore, the ability of hotels to restructure business processes, respond to technological changes, and create sustainability value is key to competitiveness in the global market.

4.3. Comparison of Findings Between Developing Countries

Comparisons between geographical contexts show variations in the implementation of DDMC. The main challenges in South Asia (India, Bangladesh, Pakistan) are the unevenness of digital infrastructure and the unpreparedness of public policies (Hossain & Rahman, 2024). Meanwhile, ASEAN countries such as Indonesia, the Philippines, and Vietnam are showing more dynamic progress due to support from the private sector and increased digital literacy (Domingo & Roldan, 2022; Bui & Le, 2023). In Africa and Latin America, institutional constraints and cultural challenges remain significant barriers (Juma & Mahmud, 2021; Sánchez-Ollero et al., 2023). Therefore, this study suggests a contextual and adaptive approach to developing DDMC strategies.

4.4. Theoretical and Practical Contributions.

This study contributes theoretically by expanding the application of Dynamic Capabilities theory in digital and Sustainability contexts simultaneously in the hospitality sector. In addition, this study provides a thematic map that helps understand how the dimensions of DDMC interact in supporting green hospitality practices. Practically, these findings can be used by hotel managers, digital strategy consultants, and policymakers to design initiatives that are more adaptive to the context of developing countries (Sharafuddin et al., 2024). Effective DDMC implementation can strengthen brand reputation, improve operational efficiency, and meet consumer demands for Sustainability. ("Entrepreneurship and Sustainability Issues," 2024)

4.5. Empirical Insights on DDMC Implementation in Green Hospitality

Key findings from the systematic review show that the practice of Digital Dynamic Marketing Capability (DDMC) has evolved rapidly over the past five years, covering aspects such as AI-based personalized marketing (Ghosh & Chowdhury, 2023), the use of social media for green branding (Li & Zhang, 2022), to the integration of blockchain technology for supply chain transparency (Rahman & Karim, 2021). However, to understand the level of realization of these concepts, statistical data from international institutions such as UNWTO, WTTC, and Statista are used as additional validation.

Adoption Rate of Digital Technology in the Green Hospitality Industry – Based on data from Statista (2024), the adoption of digital technology in the hospitality sector in developing countries shows an increasing but uneven trend. Here is Table 3 showing the adoption rate of DDMC by key element and region:

Table 3. Adoption of Digital Marketing Tools in Green Hospitality (2020–2024)

Spaces	Chatbot/AI (%)	Social Media Sustainability (%)	CRM Integration (%)	Blockchain Transparency (%)
Southeast Asia	48	76	52	18
America Latino	42	69	47	12
Afrika Sub-Sahara	33	54	39	7
South Asia	51	81	61	14
Middle East & North Africa	45	63	44	9

Source: Adaptation of UNWTO (2023), WTTC (2024), and Statista (2024) data

Empirical data from the table shows that sustainability communication practices through social media have become a key tool of digital marketing. However, advanced capabilities such as AI and blockchain are still in the early stages of adoption, especially in Africa and Latin America.

To further enrich the interpretation of the conceptual findings with empirical evidence, this study incorporates additional regional indicators that reflect the broader context of digital and Sustainability readiness in emerging hospitality markets. While Table 3 previously highlighted adoption levels of specific digital marketing tools such as AI, CRM, and blockchain, the following tables aim to provide complementary insights into two critical enabling conditions: (1) digital readiness and (2) environmental certification penetration.

Digital readiness reflects a region's infrastructural, policy, and human resource capabilities to support digital transformation. This metric helps assess the feasibility of DDMC deployment in practice. Table 4 presents the Digital Readiness Index across selected emerging regions, illustrating varying levels of preparedness that may influence how DDMC is operationalized in the hospitality sector.

Table 4. Digital Readiness Index (World Bank / ITU / WEF)

Region	Digital Readiness Score (0–100)
South Asia	58
Southeast Asia	63
Latin America	55
Sub-Saharan Africa	44
MENA	61

Source: WEF Digital Readiness Index 2023

In parallel, the penetration of green hotel certifications—such as EarthCheck, Green Globe, and LEED—is a proxy indicator of institutional commitment to Sustainability within the hospitality sector. As shown in Table 5, the proportion of certified green hotels remains relatively low across most developing regions, with Sub-Saharan Africa and South Asia exhibiting the lowest adoption rates.

Table 5. Hotel Sustainability Certification Penetration (% of eco-certified)

Region	Green Certification (%)
Southeast Asia	29%
South Asia	22%
Latin America	31%
Sub-Saharan Africa	12%
MENA	19%

Source: UNWTO Regional Sustainability Trends 2023

These empirical patterns reveal a critical interplay between technological preparedness and sustainability orientation. Even where digital capabilities are emerging, the absence of strong environmental compliance frameworks may limit the full realization of DDMC. Therefore, the successful implementation of DDMC in green hospitality must consider the availability of digital tools and the organizational and institutional maturity needed to integrate these tools into sustainability strategies. Tables 4 and 5 support the broader argument that regional variance in readiness and adoption must be

accounted for when formulating DDMC-driven policies and practices. It reinforces the need for localized strategies aligning digital innovation with the hospitality sector's environmental performance goals.

Regional Insights and Strategic Implications – South and Southeast Asia show great potential in DDMC, especially in the eco-resort sector. India, Thailand, and Vietnam have significantly increased the use of AI and social media technologies (Ghosh & Chowdhury, 2023; Hossain & Rahman, 2024). However, blockchain penetration for environmental transparency is still low. In Latin America, despite being innovative in digital communication (Sánchez-Ollero et al., 2023), there are obstacles to digital platform capabilities and CRM integration due to limited funding and HR training. In Sub-Saharan Africa, digital adoption is still dominated by basic social media use, and most sustainability initiatives are still manual or traditional. It takes a technological leapfrogging approach to accelerate DDMC adoption.

Empirical Integration and SLR: Theoretical and Practical Implications – This integration confirms that the DDMC concept is not only theoretically feasible but also has high strategic appeal in the context of developing countries, provided that (a) Availability of technology investments, (b) HR training in the use of green digital tools, (c) Formulation of national regulations that support environmentally friendly digital innovation. Thus, this article shows the urgent need for an adaptive digital strategy in line with the dynamic capability theory framework (Teece, 2018) and creates an excellent opportunity for further research in quantitatively measuring the effectiveness of DDMC in green hospitality.

5. Conclusion

This study confirms that Digital Dynamic Marketing Capability (DDMC) is key in supporting sustainable hospitality transformation in developing countries. Integrating digital technology into organizational capabilities improves operational efficiency and service personalization and plays a strategic role in achieving competitive advantage and environmental sustainability goals. This study comprehensively maps how DDMC is articulated, run, and impactful in the green hospitality ecosystem through a systematic approach and triangulation of empirical data. By building a conceptual framework and presenting strong thematic evidence, the study's contribution is an essential reference for academics, practitioners, and regulators in designing the future of digital-based green tourism in the developing world. This study provides a multidimensional understanding of DDMC adoption in green hospitality by combining systematic literature synthesis and empirical trend analysis. The triangulation of findings enhances the study's external validity and contextual relevance, particularly for emerging economies with diverse digital readiness and sustainability capacities. This integrative approach strengthens the theoretical framework and delivers actionable insights for academic discourse and industry transformation.

This study's novelty also lies in its methodological integration. By combining a systematic literature review with empirical trend analysis, the research offers a holistic and context-sensitive understanding of DDMC implementation in green hospitality. This dual perspective strengthens theoretical grounding and bridges the gap between academic discourse and managerial practice. The observed alignment — and misalignment — between conceptual frameworks and regional data provides critical input for shaping sustainable digital transformation strategies tailored to the realities of emerging economies.

5.1. Theoretical Implications

This research makes a significant contribution to the digital marketing literature, dynamic capabilities, and sustainable hospitality practices, particularly in the context of developing countries. The study expands the theoretical horizons in three main domains by adopting the PRISMA protocol-

based Systematic Literature Review approach and integrating empirical data from global institutions.

First, this study formulates and strengthens the conceptual framework of Digital Dynamic Marketing Capability (DDMC) in green hospitality. Different from conventional digital marketing approaches, DDMC refers to the combination of the sensing, seizing, and transforming capabilities of a hospitality organization based on digital technology — a reinforcement of Teece's (2018) theory of dynamic capabilities, which is oriented toward the ability of organizations to respond to market changes quickly and sustainably (Teece, 2018; Kumar et al., 2021).

Second, the findings of the 30 selected articles show that DDMC is not just a technology adoption but a dynamic strategic managerial process, which includes digital vendor integration, internal resource management, utilization of AI, IoT, and cloud systems, as well as the ability to manage information in real-time (Li & Zhang, 2022; Ghosh & Chowdhury, 2023). It reinforces a contemporary approach to green marketing that is symbolic, systemically, and operationally structured.

Third, the SLR results show how DDMC strengthens brand sustainability, customer co-creation, and loyalty in the hospitality sector, which aligns with the digitally enabled value creation paradigm. It enriches classic sustainability models (triple bottom line) by including digital elements to strengthen economic, social, and environmental Sustainability.

5.2. Practical Implications

The study presents several practical implications that are critical for stakeholders, particularly in developing countries:

(a) Hotel Managers & Hospitality Operators should place DDMC as a strategic investment, not just a digital promotional tool. It is recommended that internal capabilities be developed through digital training, the automation of service processes (check-in/out, chatbots, demand prediction), and social platforms for eco-branding. Focus on data integration across functions (marketing, operational, environmental) to create data-driven efficiency.

(b) Policymakers need to provide regulations and incentives to accelerate the adoption of green digital technologies in the hospitality sector. Support through innovative tourism policies, fiscal incentives for eco-digital standard hotels, and public-private partnerships to accelerate digital transformation in the eco-friendly tourism sector,

(c) Technology Providers and Tourism Consultants are encouraged to develop integrated and customized digital solutions for green hospitality needs, especially in countries with limited digital infrastructure. Providing AI and IoT-based dashboards that can assist business actors in monitoring carbon emissions, energy efficiency, and marketing performance in real and

(d) Academics and researchers, these findings open up space for further quantity-based studies with variables such as digital readiness, innovation capability, environmental commitment, and organizational agility. Longitudinal studies are also needed to examine how DDMC is transforming the life cycle of hospitality organizations in developing countries.

5.3. Limitations and Future Research

The study has several limitations: The focus is limited to developing countries, so it does not compare directly with developed countries. Secondary data analysis uses only primary global sources and has not yet reached local databases (e.g., tourism ministry data). This SLR does not evaluate each digital tool's effectiveness (such as AI or CRM). Future studies can expand their reach with comparative analysis approaches, case study-based field studies, or controlled experiments to evaluate the impact of DDMC on hospitality organization's KPIs (e.g., occupancy rate, NPS, ROI of digital marketing).

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