Emerging Technologies and Marketing Strategy: A Bibliometric Review of Digital Marketing and Innovation

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ABSTRACT

The landscape of marketing strategies is undergoing a profound transformation fueled by the rapid emergence of technologies. This study employs a comprehensive bibliometric analysis to explore the dynamic relationship between emerging technologies, marketing strategies, digital marketing, and innovation. Through co-citation analysis, bibliographic coupling, keyword co-occurrence analysis, and VOSviewer visualizations, the research objectives are achieved, unraveling trends, influential authors, institutions, and research themes within the multidimensional field. Findings underscore the multidisciplinary nature of the domain, highlighting clusters ranging from customer satisfaction and digital platforms to market orientation and social media marketing. Prominent keywords like "Social Medium," "Performance," and "Digital Transformation" reveal the industry’s focus on platforms, effectiveness assessment, and adaptability. Keywords with fewer occurrences, such as "Product Innovation" and "Artificial Intelligence," pinpoint specialized areas of exploration. The study contributes a holistic understanding of the evolving relationship between emerging technologies and marketing strategies, informing future research directions and guiding innovative practices in the digital era.

Keywords:
Digital Marketing
Digitalization Trends
Future Marketing Trends
Innovation in Marketing
Marketing Innovation
Research Review
Technological Advancements

1. INTRODUCTION

Traditional marketing strategies have indeed undergone a paradigm shift with the advent of technology. The rapid development of the cyber-economy, digitalization, and information technology has transformed the way businesses operate, promote their products and services, and communicate with their customers [1], [2]. In the era of cyber-economy, traditional marketing patterns have failed to meet the evolving consumer requirements. To stay competitive, businesses need to eliminate the traditional marketing model and constantly innovate their ideas [1]. The shift from product-oriented marketing to people-oriented marketing has led to changes in the way people react to advertisements and the development of new marketing strategies [3].

Digitalization has revolutionized marketing strategies and practices, impacting the way companies perform their business activities, communicate and exchange information, and manage resources [2]. The rise of the internet has led to a shift from traditional marketing channels, such as newspapers, television, radio, and mail

advertising, to digital marketing channels, including social media, search engine optimization, and email marketing [4]. This shift has also resulted in a more customer-centric approach, focusing on understanding and meeting the diverse needs of customers [1].

The advent of artificial intelligence (AI) has further impacted the development of marketing strategies, particularly in the organized retail sector. AI plays a crucial role in gathering and analyzing data, which can be used to design effective and efficient marketing strategies [5]. Moreover, the COVID-19 pandemic has brought significant changes to the marketing sector, with an increase in expenditure towards online marketing due to changes in consumer behavior [6]. As a result, businesses have had to adapt their marketing strategies to cater to the evolving needs and preferences of their customers.

In summary, the advent of technology has led to a paradigm shift in traditional marketing strategies, with businesses adopting digital marketing channels, customer-centric approaches, and leveraging artificial intelligence to stay competitive in the market. This transformation has also been accelerated by the COVID-19 pandemic, which has further emphasized the importance of online marketing and understanding consumer behavior.

The advent of technology has indeed led to a paradigm shift in traditional marketing strategies. The rapid development of the cyber-economy, digitalization, and information technology has transformed the way businesses operate, promote their products and services, and communicate with their customers [7], [8].

The rise of the internet has led to a shift from traditional marketing channels, such as newspapers, television, radio, and mail advertising, to digital marketing channels, including social media, search engine optimization, and email marketing [9]. This shift has also resulted in a more customer-centric approach, focusing on understanding and meeting the diverse needs of customers [7]. Moreover, the advent of artificial intelligence (AI) has further impacted the development of marketing strategies, particularly in the organized retail sector. AI plays a crucial role in gathering and analyzing data, which can be used to design effective and efficient marketing strategies [10].

As a result, businesses are forced to adapt and evolve their marketing strategies to stay relevant and competitive in an increasingly digitalized world. This transformation has also been accelerated by the COVID-19 pandemic, which has further emphasized the importance of online marketing and understanding consumer behavior [11].

Innovation, the driving force behind progress, has become an integral part of the marketing sphere. The ability to harness the potential of new technologies not only increases marketing effectiveness, but also paves the way for innovative approaches that redefine the boundaries of traditional marketing practices. Understanding the interplay between new technologies, marketing strategies, and innovation is critical for businesses to capitalize on opportunities and navigate challenges in this rapidly evolving landscape.

Bibliometric analysis can provide insight into research trends and directions in various fields, including emerging technologies and marketing strategies. Here are some studies that have conducted bibliometric analysis in these areas:

Entrepreneurial Marketing: A study by Amjad et al. [12] conducted a bibliometric analysis and text mining of the entrepreneurial marketing domain using articles published between 1976 and 2020. The study identified trends in previous research and suggested avenues for future research, such as exploring subtopics like entrepreneurial networks, social media/digital marketing, and legitimacy in the entrepreneurial marketing domain.

Digital Tourism: A bibliometric analysis of 827 papers on digital tourism by [13] revealed emerging research directions such as smart destination management, the internet as a communication and marketing
channel, technology and sustainability, and consumer behavior.

Green Human Resource Management: Bahuguna et al. [14] conducted a bibliometric analysis of green human resource management research from 2005 to June 2021. The study provides insights into current scholarship and practices in the field.

Halal Food and Certification: Tripathi and Agrawal [15] conducted a bibliometric analysis of 205 scholarly research articles published on halal food and certification from 2013 to 2020. The study identified research gaps and potential areas for further research.

Marketing Strategies for Waste Recycling: A bibliometric analysis of 120 documents related to waste recycling marketing strategies was conducted by [5]. The study aimed to understand the current state of affairs in this field from 1977 to 2021.

Marketing Innovation and New Technologies: A bibliographic study by [16] analyzed the evolutionary process of marketing in the context of the digital revolution and new technologies. The research highlights the potential of new technologies to understand consumer needs, gain insights, and optimize the decision-making process.

Social Media Marketing: Liu and Liao [17] conducted a bibliometric review of 740 articles on social media marketing from the Web of Science database. The study identified research gaps and opportunities to advance the understanding of the role of social media marketing in shaping customer engagement and social impact.

The study provides valuable insights into research trends and directions in various fields related to emerging technologies and marketing strategies. By analyzing the existing literature, this study seeks to be able to identify gaps and opportunities for further exploration and contribute to the development of new knowledge in this area.

2. LITERATURE REVIEW

2.1 New Technologies and Marketing Strategies

Emerging technologies have permeated various aspects of modern society, affecting the way businesses communicate, interact and transact with their customers. Artificial intelligence (AI) and machine learning have enabled data-driven insights and predictive analytics, empowering marketers to tailor their strategies based on consumer behavior and preferences [18]–[20]. Augmented reality (AR) and virtual reality (VR) have introduced immersive experiences that enhance brand engagement and customer interaction. The Internet of Things (IoT) has connected devices, providing opportunities for real-time personalized marketing and data collection.

Numerous studies have highlighted the transformative influence of these technologies on marketing strategies. For example, [21] explored the role of AI in personalized marketing, while [19], [20] examined the impact of AR in enhancing consumer engagement. These studies collectively underscore the potential of emerging technologies to shape innovative marketing approaches.

2.2 Digital Marketing and Innovation

Digital marketing, as a subset of marketing, has witnessed rapid evolution due to the proliferation of digital channels and platforms. The integration of new technologies into digital marketing practices has resulted in innovations that transcend traditional boundaries. Personalized recommendations, chatbots, and interactive ads are examples of how innovations in digital marketing are reshaping the consumer experience [22]–[24].

Innovation in digital marketing not only includes the integration of technology, but also includes new approaches to content creation, distribution and engagement. For example, influencer marketing leverages the power of
social media personalities to drive brand awareness and consumer trust. Gamification techniques engage users through interactive experiences, foster loyalty, and improve the relationship between brands and consumers [25]–[29].

However, a comprehensive review of the literature revealed a dearth of studies specifically focusing on the interactions between new technologies, marketing strategies, digital marketing and innovation. This research aims to address this gap by conducting an extensive bibliometric analysis that provides insight into the evolving research landscape in this multidimensional domain.

3. METHODS

This study uses bibliometric analysis, a widely used quantitative research method to analyze patterns, trends, and relationships in the literature. The research design was guided by the aim to systematically explore the research landscape at the intersection of emerging technologies, marketing strategy, digital marketing, and innovation.

3.1 Data Collection

The primary data source for this study was academic literature available in reputable scholarly databases. The databases selected for data collection included PubMed, IEEE Xplore, Scopus, and Web of Science. These databases cover a wide range of disciplines and provide comprehensive coverage of academic research articles, making them suitable for capturing the multidimensional nature of the research domain with the help of Publish or Perish (PoP) software.

Search queries were formulated using a combination of keywords and controlled vocabulary terms related to emerging technologies, marketing strategies, digital marketing, and innovation.

Variations of these terms were used to ensure inclusivity while maintaining relevance. The search was limited to articles published between 2000 and the present to capture the latest developments in the field.

3.2 Data Analysis

The collected data will be analyzed using advanced bibliometric techniques to uncover relationships, trends, and key elements in the literature. VOSviewer, a popular bibliometric analysis tool, will be used to visualize and interpret the results of the data analysis. VOSviewer provides a visual representation of the relationships between authors, keywords, institutions, and research themes. This visualization will enhance understanding of the research landscape and assist in identifying clusters of related research.

<table>
<thead>
<tr>
<th>Table 1. Metric Data</th>
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<tr>
<td><strong>Metrics Data</strong></td>
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<tr>
<td>Publication years</td>
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<td>Citation years</td>
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<td>Papers</td>
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<td>Papers/author</td>
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<tr>
<td>h-index</td>
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<td>g-index</td>
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<tr>
<td>hI,norm</td>
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<td>hI,annual</td>
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<td>hA, index</td>
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4. RESULTS AND DISCUSSION

Figure 1. Mapping Results

VOSviewer visualizations provided a comprehensive overview of the research landscape, illustrating relationships between authors, institutions, and keywords. The visualization revealed clusters of related research, with larger nodes representing more influential authors and themes. These visualizations aid in understanding the intricate network of contributions within the field.

Figure 2. Trend Research
The VOSviewer visualizations provided a holistic view of the relationships between authors, institutions, and research themes. These visualizations illuminate the collaborative networks and knowledge dissemination within the field. The central clusters within the visualizations correlate with the findings from the bibliographic coupling analysis, affirming the presence of specialized research clusters.

Figure 3. Visualization Cluster

In this section, we delve into the details of each cluster identified through the bibliographic coupling analysis. The clusters represent distinct research themes within the intersection of emerging technologies, marketing strategies, digital marketing, and innovation. The most frequent keywords associated with each cluster provide insights into the primary focus and contributions of research within that theme.

Table 2. Detail Cluster

<table>
<thead>
<tr>
<th>Cluster</th>
<th>Total Items</th>
<th>Most frequent keywords (occurrences)</th>
<th>Keyword</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>(11)</td>
<td>Customer Satisfaction (25), digital platform (30)</td>
<td>Creation, cryptocurrency, customer satisfaction, digital platform, digital transformation, economy, implementation, social network, website</td>
</tr>
<tr>
<td>2</td>
<td>(7)</td>
<td>New technology (25)</td>
<td>Application, artificial intelligence, big data, blockchain technology, marketing innovation, security, new technology</td>
</tr>
<tr>
<td>3</td>
<td>(6)</td>
<td>Digital innovation (15)</td>
<td>Digital age, digital innovation, digital technology, perception, transformation</td>
</tr>
<tr>
<td>4</td>
<td>(6)</td>
<td>Market orientation (15)</td>
<td>Market orientation, marketing performance, performance, product innovation, SMEs</td>
</tr>
<tr>
<td>5</td>
<td>(5)</td>
<td>Social media marketing (20)</td>
<td>Covid, digital marketing strategy, instaram, social media marketing, social medium</td>
</tr>
</tbody>
</table>

In this section, we delve into the details of each cluster identified through bibliographic analysis. The clusters represent distinct research themes at the intersection of emerging technologies, marketing strategy, digital marketing and innovation. The
keywords most frequently associated with each cluster provide insight into the main focus and contribution of research within that theme. The detailed discussion of the clusters in Table 2 provides insight into the different research themes present in the literature at the intersection of emerging technologies, marketing strategy, digital marketing and innovation. These clusters highlight diverse research dimensions, ranging from customer satisfaction and digital platforms to new technology adoption, digital innovation, market orientation, performance assessment, social media marketing and digital strategy. By understanding these different research themes, academics and practitioners can gain a more comprehensive perspective on the dynamic and diverse relationship between new technologies and marketing practices.

Figure 4. Author Collaboration

A common thread in co-author collaborations is the recognition of important works that have laid the foundation for understanding the relationship between new technologies and marketing strategies. These works have paved the way for subsequent research and are cited as important references in the field.

Table 4. Keywords Results

<table>
<thead>
<tr>
<th>Occurrences</th>
<th>Term</th>
<th>Occurrences</th>
<th>Term</th>
</tr>
</thead>
<tbody>
<tr>
<td>59</td>
<td>Social Medium</td>
<td>20</td>
<td>Digital age</td>
</tr>
<tr>
<td>47</td>
<td>Performance</td>
<td>19</td>
<td>Big data</td>
</tr>
<tr>
<td>47</td>
<td>Application</td>
<td>19</td>
<td>Product innovation</td>
</tr>
<tr>
<td>47</td>
<td>Digital marketing strategy</td>
<td>18</td>
<td>Website</td>
</tr>
<tr>
<td>45</td>
<td>Digital transformation</td>
<td>18</td>
<td>Digital platform</td>
</tr>
<tr>
<td>43</td>
<td>Covid</td>
<td>16</td>
<td>Instagram</td>
</tr>
<tr>
<td>40</td>
<td>Marketing performance</td>
<td>16</td>
<td>Creation</td>
</tr>
<tr>
<td>39</td>
<td>Digital innovation</td>
<td>16</td>
<td>Artificial intelligence</td>
</tr>
<tr>
<td>38</td>
<td>Implementation</td>
<td>15</td>
<td>New technology</td>
</tr>
<tr>
<td>38</td>
<td>Perception</td>
<td>14</td>
<td>Social network</td>
</tr>
<tr>
<td>34</td>
<td>Marketing performance</td>
<td>14</td>
<td>Security</td>
</tr>
</tbody>
</table>
Table 4 presents an overview of the keywords extracted from the literature and their respective occurrences. The keywords are categorized into those with the most occurrences and those with fewer occurrences. This section discusses the implications of the prominent keywords as well as the insights offered by the keywords with fewer occurrences.

**Keywords with Most Occurrences:**

Social Medium (59 occurrences): The high occurrence of "Social Medium" indicates a strong focus on the role of social media platforms in the research domain. This suggests an emphasis on exploring how different social media platforms impact marketing strategies, consumer engagement, and brand interactions. Performance (47 occurrences): The prominence of "Performance" suggests a significant interest in assessing the outcomes and effectiveness of various marketing strategies and practices. Researchers are likely investigating the impact of emerging technologies on marketing performance metrics. Application (47 occurrences): The prevalence of "Application" signifies a focus on practical implementation of emerging technologies within marketing strategies. Researchers are likely exploring how these technologies are applied in real-world scenarios to achieve marketing objectives.

Digital Marketing Strategy (47 occurrences): The frequent appearance of "Digital Marketing Strategy" underscores the dynamic nature of marketing in the digital age. This keyword suggests an exploration of innovative strategies that leverage emerging technologies to navigate the digital landscape effectively. Digital Transformation (45 occurrences): The high occurrence of "Digital Transformation" reflects the ongoing shift towards digitalization across industries. Researchers are likely investigating the broader impacts of digital transformation on marketing strategies and practices. Covid (43 occurrences): The prevalence of "Covid" indicates a responsiveness to the challenges posed by the pandemic. This keyword suggests that researchers are exploring how emerging technologies and digital strategies are used to adapt to the changing marketing landscape during and after the pandemic.

**Keywords with Fewer Occurrences:**

Product Innovation (19 occurrences): While this keyword has fewer occurrences, it indicates a focus on how emerging technologies contribute to innovative product development within marketing contexts. Website (18 occurrences): The keyword "Website" suggests an interest in understanding how emerging technologies impact the design, functionality, and user experience of websites for marketing purposes. Instagram (18 occurrences): The occurrence of "Instagram" signifies a specific interest in exploring the role of this particular social media platform in marketing strategies and consumer engagement. Creation (16 occurrences): The keyword "Creation" suggests a focus on the creative aspects of marketing content, likely related to innovative content creation methods and strategies. Artificial Intelligence (16 occurrences): While not the most frequent, the occurrence of "Artificial Intelligence" underscores its importance in shaping marketing practices. Researchers may be investigating AI's potential in enhancing customer experiences and marketing effectiveness.

Table 4's keyword analysis offers a snapshot of the key themes and trends within the literature at the intersection of emerging technologies and marketing strategies. The
prominence of keywords like "Social Medium," "Performance," and "Digital Transformation" underscores the field's focus on digital platforms, measuring success, and adapting to technological shifts. Keywords with fewer occurrences highlight specific areas of interest, such as product innovation, website design, and the role of platforms like Instagram. The varied occurrences of keywords collectively paint a comprehensive picture of the dynamic and multifaceted relationship between emerging technologies and marketing practices.

5. CONCLUSION
The convergence of emerging technologies and marketing strategies has ushered in a new era of innovation and transformation, reshaping the digital marketing landscape. This study's comprehensive bibliometric analysis unveiled the intricate relationship between these domains, revealing trends, influential authors, institutions, and research themes. The clusters identified in the analysis underscore the multifaceted nature of research, ranging from customer satisfaction and digital platforms to market orientation and social media marketing. The prominence of keywords like "Social Medium," "Performance," and "Digital Transformation" reflects the industry's focus on harnessing technology for effective strategies. Additionally, keywords with fewer occurrences offer insights into specialized areas of exploration, further enriching the understanding of the field's nuances. By offering a nuanced perspective, this study contributes to both academia and industry, guiding researchers, practitioners, and policymakers in navigating the ever-evolving landscape of emerging technologies and marketing strategies. As technology continues to shape the marketing landscape, the insights gleaned from this analysis will remain instrumental in driving innovation, enhancing consumer experiences, and redefining the boundaries of marketing practices in the digital age.

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