

AI for Digital Marketing

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Abstract. The rapid development of artificial intelligence (AI) technology has revolutionized the digital marketing landscape, enabling marketers to improve efficiency, personalization and strategic decision making. This research aims to map research trends related to the application of AI in digital marketing through bibliographic analysis. Qualitative research methods with a historical approach are used to collect and analyze scientific articles from leading international journals. Bibliometric analysis was performed with VOSviewer software to visualize patterns and clusters of key terms. Results show a significant increase in the number of publications related to AI in digital marketing, with a focus on topics such as marketing strategy, customer experience, social media, e-commerce and industrial marketing. The visualization reveals the interrelationships and groupings of various terms, providing insight into the current research landscape. This study contributes to the understanding of trends, opportunities and challenges in integrating AI into digital marketing practices. These findings are useful for researchers and practitioners to identify future research directions and develop effective marketing strategies by leveraging AI. However, further research is needed to explore the ethical implications, data security and other aspects regarding the application of AI in the context of digital marketing.

Keywords: AI, Digital, Marketing, Visualization, VOSviewer.

1 Introduction

With the rapid development of technology and digitalization in recent years, artificial intelligence (AI) has penetrated wider society [1]. Artificial intelligence (AI) technology is increasingly being used in marketing to improve customer experiences, gain consumer insights, and increase the return on investment (ROI) of marketing campaigns [2]. Artificial intelligence (AI) in marketing is increasingly important today, due to increasing computing power, lower computing costs, availability of big data and advances in algorithms [3].

Various forms of digital marketing emerged from the debut of the Web, the increasing influence of search engines, and the development of social media [4]. AI systems and applications have become pervasive across industries and sectors [5]. Considering the importance of the environment and sustainable development attitude, artificial intelligence (AI) in marketing is a double-edged sword [6]. The application of AI in B2B marketing brings increased complexity for companies and their employees [7]. Specifically, AI refers to the ability of machines to perform human abilities such as reasoning, learning, planning, and creativity [8].

Customers are happy and satisfied with AI Deals offerings if they have the right experience [9]. Responsible AI is an attempt to reduce the above, while adapting to the needs of diverse and marginalized groups in society [10]. The potential implications of AI applications in marketing are enormous [11]. As digital technology emerges and develops, it is critical to strategic marketing effectiveness in terms of attracting customer attention, securing patronage, and ultimately loyalty [12]. To capture the potential value

of AI, organizations need to understand how to overcome these challenges as well as the potential added value of this technology [13].

Since AI assistants and devices (have) become increasingly pervasive in consumers' daily lives [14]. The exchange of value in the digital environment changes as technology changes from a tool used by actors to an actor in the exchange of value itself [15]. Contemporary marketing strategies integrate new technologies to create meaningful interactions with customers [16].

2 Literature review

Introduction Artificial Intelligence (AI) will change the way keyword research is done. Artificial Intelligence will become more widely used so that Search Engine Optimization (SEO) specialists understand the knowledge of automatic learning and automation [17]. One of the most relevant changes is the application of techniques and software that use Artificial Intelligence (AI) to increase the optimization and efficiency of processes carried out through intelligent agents or systems [18].

AI is changing the way brands and users interact with each other. The application of this technology depends greatly on the nature of the website and the type of business [19]. Companies are implementing AI-based solutions in digital marketing to optimize activities in this area. Beneficiaries of AI support include customers and businesses [20]. Artificial Intelligence (AI) based modeling is a key consideration for building efficient, automated and intelligent systems for our current needs [21]. AI integration has brought many benefits to various functional areas within organizations, with marketing experiencing a significant positive impact [22]. Marketing and AI reveals that AI is having an impact on marketing operations and will have a greater impact in the future [23].

In marketing, AI adoption is increasing year by year and in a variety of contexts, from providing service assistance during customer interactions to helping identify optimal promotions [24]. Digital marketing is leading the way in offering new features to reach, inform, engage, offer and sell products and services to customers, and is expected to continue to be at the forefront of the technological revolution [25]. Artificial intelligence (AI) has attracted great interest from various marketing experts in recent years [26]. Artificial Intelligence falls under the broader concept of digital marketing which includes all activities, institutions and processes facilitated by digital technology to create, communicate and deliver value to customers [27].

Artificial intelligence (AI) agents driven by machine learning algorithms are rapidly changing the business world, thereby increasing the interest of researchers [28]. Of all these disruptive technologies, artificial intelligence (AI) is the newest technological disruptor and has enormous marketing transformation potential [29]. Business-to-business (B2B) customer interactions and customer journeys increasingly occur in the digital space, often aided by a variety of digital tools and artificial intelligence (AI) [30]. The use of the internet and social media has changed consumer behavior and the ways in which companies conduct their business [31].

The widespread adoption of digital technology and online social networks has revolutionized the way marketers interact with consumers [32]. Artificial intelligence (AI) is disrupting marketing and global economic markets and has become a source of value for a wide range of businesses [33]. Artificial intelligence (AI) has gained widespread recognition as a disruptive force that can revolutionize entire industries and [34] bring significant changes in business practices [35]. Artificial Intelligence (AI) is revolutionizing many aspects of B2B marketing activities [36]. More and more businesses and organizations are using influencers to promote their products and services on social media [37]. Digital marketing communication, namely communication via digital or electronic media between business people and consumers, is growing rapidly, especially during the COVID-19 era [38]. The internet brought disruptive changes to the business landscape through the creation of a wide variety of digital marketing tactics [39].

The increasing use of Artificial Intelligence (AI) in Social Media Marketing (SMM) triggers the need for this research to identify and further analyze the expectations of potential users of AI-based software for Social Media Marketing; a software that will be developed in the next two years, based on its future capabilities [40]. With the growing popularity of artificial intelligence (AI) transforming business-to-business (B2B) marketing, there is a growing demand to comprehensively understand the adoption and

application of AI to advance B2B marketing [41]. Artificial Intelligence (AI) has had a significant impact on organizations, society and individuals [42].

Artificial Intelligence (AI) offers the same transformative potential to augment and replace human tasks and activities in a wide range of industrial, intellectual, and social applications [43]. The application of Artificial Intelligence (AI) has increased rapidly in several fields over the past few years, with much focus on its potential in Business-to-Business (B2B) marketing [44]. The emergence of digital B2B marketing presents fertile research opportunities for theoretical development and applied research on the issues and challenges faced by practitioners seeking guidance for strategy development and tactical execution [45]. Social media has changed individual communication and interactions globally by influencing many aspects of human communication [46].

Today's marketers rely heavily on technology to conduct marketing activities, and technology impacts most, if not all, areas of marketing practice [47]. Using an SDL perspective where platforms are viewed as multi-layered modular structures, our research adopts a case study approach to investigate how small and medium enterprises (SMEs) can leverage AI platforms to integrate AI technologies [48]. AI, in particular, has become an important tool for increasing the efficiency and effectiveness of marketing activities [49]. Artificial intelligence (AI) is part of a new generation of technology that can facilitate competitive advantage, but there is currently limited evidence regarding the application of AI in relation to B2B SMEs in Middle Eastern countries [50].

AI refers to the shared perception of policies, procedures and practices to support AI initiatives, cognitive services analytical capabilities refer to analytical insights driven by the AI climate and augmented by machines and humans to make marketing decisions [51]. AI is seen primarily as supporting key business decisions rather than as a decision maker, but this is due to the fact that the AI that exists today is relatively weak, compared to the strong AI of the future [52]. In more general terms, intelligence is defined as the ability to understand and process data, transform data into information and ultimately into knowledge, and use this knowledge to achieve goals [53].

Use of digital platforms that combine data-driven marketing results in digital advertising, relationship marketing, games/apps, campaigns, integrated marketing communications (IMC), and emerging new channels that enable broad and effective reach [54]. Digital marketing uses different methods and processes, in various forms, including applications, social media platforms, electronic games, search engines and web pages [55]. AI is important in marketing because customers expect companies to understand their needs, and AI can help marketers identify who their target audience is, thereby creating a personalized experience for customers [56].

3 Methodology

This study uses qualitative research using a historical approach. This method is used to determine the evolution or mapping of research on the metaverse as a digital marketing tool. This study was carried out in two stages. First, data is collected. The data collected comes from papers published in leading international journals. The next step is to carry out bibliographic analysis to analyze the collected papers. Bibliographic analysis is used to identify current trends and potential topics for further research. This analysis also helps understand recent advances and mapping metaverse research as a marketing tool. Therefore, research findings can also help future researchers choose research subjects and variables. Therefore, research content analysis was carried out to find sources of bibliographic data. Nine studies were conducted. Bibliographic data was collected.

3.1 Method of Collecting Data

Data collection consists of research papers from six well-known journal publishing groups: 1) Elsevier, 2) Emerald, 3) Springer, 4) Taylor and Francis, 5) IEE. Articles were collected from accessible databases from the six journal publishing groups. This search software helps you find papers relevant to your research topic. The data collection process with Publish or Perish is as follows:

- a. Open the Publish or Perish software.
- b. Enter keywords or phrases that match the headings "AI" and "Digital Marketing".

- c. The combination of words used consists of five combinations, namely [AI for Digital Marketing: ai application, b2b marketing, chatgpt, digital marketing tool, and e-commerce].
- d. Next, articles are collected based on the keywords used, and converted into limited publications in 2020–2023.
- e. Articles that will be used as research material are analyzed for completeness of content due to the presence of "keywords" and "titles".
- f. The selection of articles to be processed must pay attention to; publisher journal, DOI, GS Ranking, AuthorCount, CitesPerYear, and Cites PerAuthor.

There are 1023 articles obtained via Publish or Perish. With the combination of keywords and titles shown in the table.

3.2 Bibliometric Data Analysis Methods

This bibliometric analysis uses the Vosviewers application to display results in the form of mapping data. Similarity Visualization (Vosviewers) uses text mining capabilities to identify relevant combinations of component concepts/phrases in an integrated mapping and clustering approach to cite and analyze data to explore networks. It is an analysis application that brings together various events. The results of the analysis are used to map the field and create a bibliography. Vosviewer can provide up-to-date information and the scope of research conducted in this area.

4 Results and Discussion

4.1 Number of Years of Publication

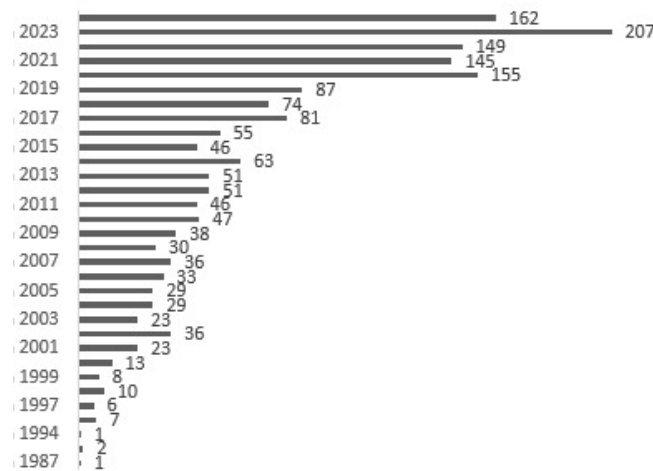


Figure 1. Number of Years of Publication

This visualization displays the density or number of an item in the form of a horizontal bar based on year, starting from 1987 to the projection for 2023. The lowest value is in the period 1987 to 2001 with a short bar, while the highest value is shown by the longest bar in 2023 with the number 162 and 207, followed by 2021 with also high values. In general, the density trend or number of visualized items increases from year to year, with significant increases in 2023 and 2021. Some years such as 2023, 2021, 2017, 2007, and 2001 have double values shown by separate bars in different years. The same.

4.2 Author's Analysis

The authors used Google Scholar (GS) rankings for analysis. Basically GS has the same function as Thomson ISI Web of Knowledge, namely creating a Journal Impact Factor (JIF). JIF is used to evaluate

the impact factor of a work. GS has an advantage in ranking because articles can be accessed for free. Free access to articles provides researchers with the opportunity to use them as reference material.

Table 1. Author Analysis Google Scholar

Author	TITLE	Rating GS
L Hu	The PPE industry in Italy during COVID-19: supply chain disruption and the adoption of digital and social media in B2B firms.	979
R Law, R Leung, D Buhalis	Information technology applications in hospitality and tourism: a review of publications from 2005 to 2007	978
MK Peter, M Dalla Vecchia	Das Digital Marketing Toolkit: Eine Literaturübersicht zur Identifizierung von digitalen Marketingkanälen und-plattformen	978
ED Parrish, NL Cassill, W Oxenham	Niche market strategy for a mature marketplace	978
IM De Andrade, C Tumelero	Increasing customer service efficiency through artificial intelligence chatbot	976
HT Tsou, JS Chen, WH Liao	Market and technology orientations for service delivery innovation: the link of innovative competence	976
TL Ainscough	The Internet for the rest of us: marketing on the World Wide Web	975
IF Wilkinson, LC Young	The past and the future of business marketing theory	975
R Ishii, M Kikumori	Word-of-mouth in business-to-business marketing: a systematic review and future research directions	974
HJ Wen, HG Chen, HG Hwang	E-commerce Web site design: strategies and models	973
M Blessley, SM Mudambi	A trade war and a pandemic: Disruption and resilience in the food bank supply chain	972
TSH Teo	Usage and effectiveness of online marketing tools among Business-to-Consumer (B2C) firms in Singapore	971
D Leverenz, G Hafner, S Moussawel, M Kranert	Reducing food waste in hotel kitchens based on self-reported data	971
TKP Leung, RYK Chan, K Lai, EWT Ngai	An examination of the influence of guanxi and xinyong (utilization of personal trust) on negotiation outcome in China: An old friend approach	969
NM Puccinelli, RC Goodstein, D Grewal, R Price	Customer experience management in retailing: understanding the buying process	968
AM Jalkala, J Keränen	Brand positioning strategies for industrial firms providing customer solutions	968
P Papadopoulou, A Andreou, P Kanellis, JL Ferguson, M Mohan	Trust and relationship building in electronic commerce	967
JL Ferguson, M Mohan	Use of celebrity and non-celebrity persons in B2B advertisements: Effects on attention, recall, and hedonic and utilitarian attitudes	967
S Laari-Salmela, T Mainela, V Puhakka	Resolving the start-up identity crisis: Strategizing in a network context	965

L Ha, EL James	Interactivity reexamined: A baseline analysis of early business web sites	964
SF Slater, VK Reddy, TJ Zwirlein	Evaluating strategic investments: complementing discounted cash flow analysis with options analysis	964
E Leite, A Bengtson	A business network view on value creation and capture in public-private cooperation	962
NN Hartmann, BN Rutherford	Psychological contract breach's antecedents and outcomes in salespeople: The roles of psychological climate, job attitudes, and turnover intention	961
C Shaw, J Ivens	Building great customer experiences	960
GD Deitz, M Tokman, RG Richey, RM Morgan	Joint venture stability and cooperation: Direct, indirect and contingent effects of resource complementarity and trust	960

Through the GS ranking, you can see the author's contribution in producing articles each year. Based on the data collected, there are around 25 active writers. The following table discusses the authors who contributed articles each year by looking at the GS ranking.

4.3 Author Analysis

This citation analysis will help you determine how many papers are cited and whether they are useful to other researchers. The number of researchers studying the world of digital marketing in the metaverse continues to increase, especially in 2023, and will likely continue to increase in the future.

Table 2. Author Analysis in 2023

Author	TITLE	Cited frekuensi
C Grönroos	Keynote paper From marketing mix to relationship marketing-towards a paradigm shift in marketing	5917
DM Lambert, MC Cooper	Issues in supply chain management	5691
PC Verhoef, KN Lemon, A Parasuraman	Customer experience creation: Determinants, dynamics and management strategies	4944
VTC Middleton, JR Clarke	Marketing in travel and tourism	4634
GTM Hult, RF Hurley, GA Knight	Innovativeness: Its antecedents and impact on business performance	3881
M Christopher	The agile supply chain: competing in volatile markets	3442
F Buttle, S Maklan	Customer relationship management: concepts and technologies	3416
F Buttle, S Maklan	Customer relationship management: concepts and technologies	3415
PC Verhoef, T Broekhuizen, Y Bart, ...	Digital transformation: A multidisciplinary reflection and research agenda	3409
SL Jarvenpaa, PA Todd	Consumer reactions to electronic shopping on the World Wide Web	3260

D Grewal, M Levy, V Kumar	Customer experience management in retailing: An organizing framework	3042
G Easton	Critical realism in case study research	2679
WH DeLone, ER McLean	Measuring e-commerce success: Applying the DeLone &McLean information systems success model	2505
E Constantinides, SJ Fountain	Web 2.0: Conceptual foundations and marketing issues	2333
E Gummesson	The new marketing—developing long-term interactive relationships	2199
A Armstrong, J Hagel	The real value of online communities	2198
KSR Warner, M Wäger	Building dynamic capabilities for digital transformation: An ongoing process of strategic renewal	2177
F Buttle, S Maklan	Customer relationship management: concepts and technologies	2169

4.4 Bibliometric Analysis

4.4.1 Co-authoring Analysis

The results of the analysis show that there is Dwivedi, Yk collaboration between authors in the study of AI for digital marketing as a new marketing world.

Table 3. Co-authoring Analysis

Authors	Title
Dwivedi, Yk 2023	a). Responsible digital transformation for a sustainable society b). Social media adoption, usage and impact in business-to-business (B2B) context: A state-of-the-art literature review c). Generative artificial intelligence in marketing: Applications, opportunities, challenges, and research agenda d). “So what if ChatGPT wrote it?” Multidisciplinary perspectives on opportunities, challenges and implications of generative conversational AI for research ...
Wang, Y 2023	a). Mechanism and evolution trend of digital green fusion in China's regional advanced manufacturing industry
Slade, el 2023	a). “So what if ChatGPT wrote it?” Multidisciplinary perspectives on opportunities, challenges and implications of generative conversational AI for research ...

4.4.2 Bibliometric Network Visualization Analysis

Based on the results of the analysis using VOSViewer which carried out co-occurrence analysis, 24 keywords were found that were related to the metaverse as the New World of Marketing. To get more specific keywords, keyword frequency is limited to 5 occurrences. From these limitations, 52 keywords were obtained which were divided into 8 clusters.

Table 4. Bibliometric Network Visualization Analysis

Cluster	Keywords
Cluster 1	Ai application, ai driven recommendation engine, e mail marketing, economy
Cluster 2	Digital marketing capability, digital marketing innovation, industrial marketing, smes.
Cluster 3	Chatgpt, content marketing, digital

Cluster 4	Digital marketing tool, marketing management, marketing operation
Cluster 5	B2b marketing, consumer behavior, marketing strategy
Cluster 6	Customer experience, digital environment
Cluster 7	E commerce, sale
Cluster 8	Internet, management



Figure 2. VOSViewer

This VosViewer visualization displays the main keyword "marketing strategy" surrounded by related concepts such as "customer experience", "internet", "digital", "social media marketing" (social media marketing), "sale" (sales), and "industrial marketing" (industrial marketing). Color grouping of keywords indicates different concept clusters, while connecting lines and distances between keywords indicate the linkage and strength of the relationship between these concepts. Overall, this visualization depicts the landscape of modern marketing strategies centered on customer experience, digital marketing, social media, sales, and industrial sectors, with the internet playing an important role in them.

4.4.3 Overlay Visualization Analysis

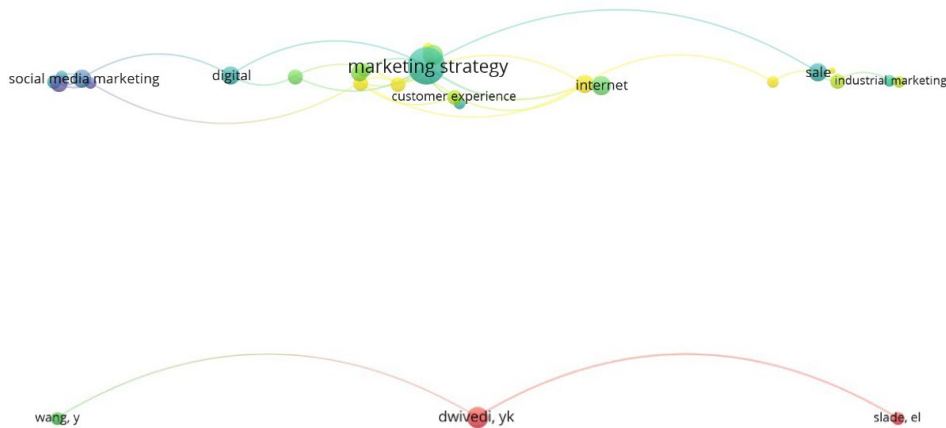


Figure 3. Overlay Visualization Analysis

Based on the VOSviewer visualization in this image, there are several terms that are connected to each other to form clusters. The largest cluster consists of the term "marketing strategy" which is at the center, surrounded by "customer experience", "digital", "internet", and several other terms. This shows that marketing strategy is a main concept that is closely related to customer experience, digital marketing, and the internet in today's modern marketing context. There are also other smaller clusters, such as "social media marketing" and "industrial marketing" which are separate from the main cluster. This indicates that marketing via social media and industrial marketing are more specific fields and separate from the general marketing concept. In addition, the term "sale" also appears in the visualization, showing the link between marketing and sales activities in a business context. Overall, this VOSviewer visualization provides an overview of the relationships and grouping patterns between various terms and concepts related to

marketing, including marketing strategy, customer experience, digital, internet, social media, industrial marketing, and sales.

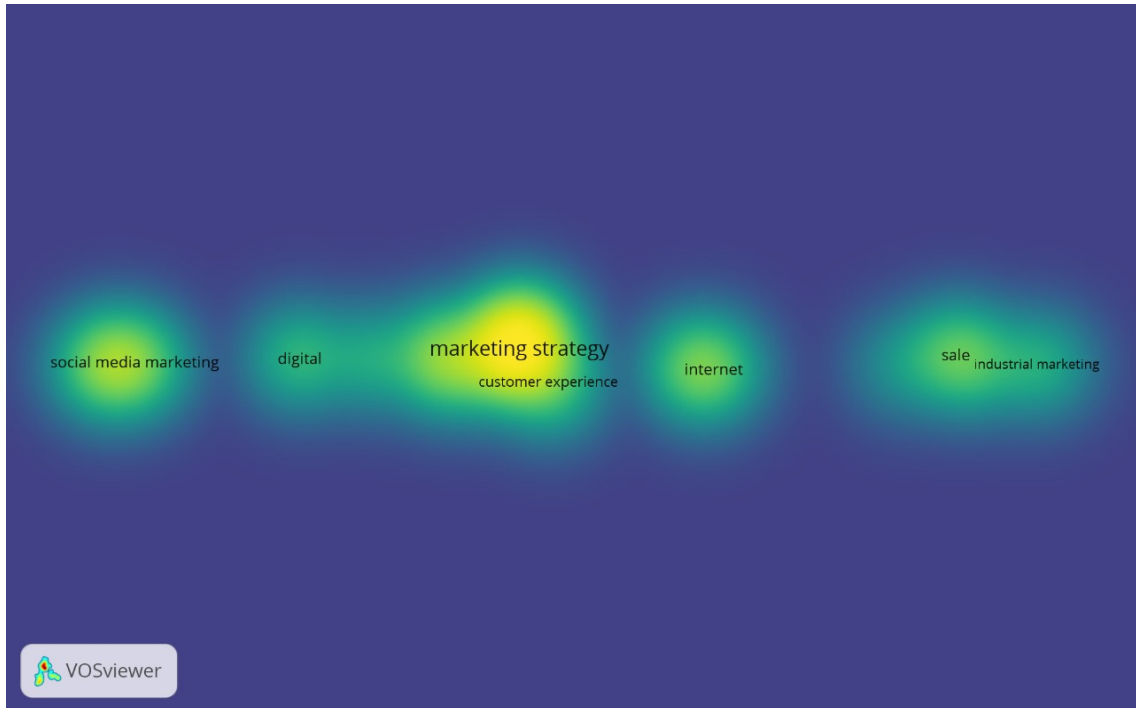


Figure 4. Density Visualization Analysis

The VOSviewer visualization shows several clusters of terms related to marketing and business strategy, with the main clusters that stand out being "marketing strategy" and "customer experience", indicating that marketing strategy and customer experience play an important role. There are also other clusters such as "social media marketing", "digital", "internet", "sale", and "industrial marketing" which indicate a connection with digital marketing, sales and industrial marketing. The size and color of the clusters illustrate the level of importance, while the distance between clusters shows how closely related the terms are, providing a general idea of the relationship between various aspects of marketing, business strategy, digital media and customer experience in a particular context.

5 Conclusion

This article presents a comprehensive bibliographic analysis of the application of artificial intelligence (AI) in digital marketing. The research results show a significant increase in the number of publications related to this topic, especially in recent years. The analysis reveals that marketing strategy and customer experience are the main focus in the application of AI in digital marketing, with other clusters such as social media, e-commerce and industrial marketing also playing an important role. VOSviewer visualizations show the interrelationships and groupings of key terms, providing an overview of the current research landscape. This study contributes to the understanding of trends, opportunities and challenges in integrating AI into digital marketing practices. These findings are useful for researchers and practitioners to identify future research directions and develop effective marketing strategies by utilizing AI technology. Nonetheless, further research is needed to explore the ethical implications, data security and other aspects related to the application of AI in the context of digital marketing.

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