

Digital Marketing Evolution: A Bibliometric Method for Mapping the Web of Science Database

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Abstract: These days, a significant number of consumers make use of social media and other online platforms for a variety of reasons, beginning with the acquisition of information and culminating in the completion of a purchase. Marketers are devoting a significant portion of their advertising budget to digital marketing as a response to this virtual shift reaction. This study aims to synthesis the publications on digital marketing to focus on the significant topics, assess the present level of research in the field, and demonstrate the ways in which foundational works have had an impact on the field. From 2009 to 2024, a total of one thousand publications that were published on the Web of Science were subjected to bibliometric analysis for the purpose of this study. These findings indicate that the cooperation index is 2.82, and that, on average, 168 writers are interested in all articles that are relevant to digital marketing. Portugal, the United States of America, and India are the top three countries that are contributing to the field of digital marketing. Additionally, the study addresses significant research subjects as they pertain to digital marketing.

Keywords: Digital Marketing (DM); Bibliometrics Analysis; Web of Science (WoS); Developing Strategies for Product; IT Technologies and Methods; Advertising Budget; Virtual Platforms; Businesses Market.

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1. Introduction

On top of that, the Industry 4.0 revolution began with the creation of Web 4.0. These industrial developments had a significant influence on the lifestyles of consumers and the technique market players involved with their target markets. A number of other social networking sites joined Facebook when it first launched on the market in 2004. The individuals network and connect with their peers and likeminded people has changed as a result of the exponential rise in social media adoption. There were reportedly just 20 million internet users in December 1992. However, as of June 2024, that Figure 1 had risen to 5248 million, or 69.8% of the 8.40 billion people on the planet. The average time spent online by individuals is predicted to be more than 6 hours by 2024; 82% of electronic commerce transactions will come from mobile devices.

Since the advent of the internet, individuals have become accustomed to living in virtual reality. When customers began to shop online or in virtual marketplaces, market players engrossed their efforts in this marketplace. Consumers are using social media with increasing frequency for a range of reasons, from brand research to final product purchases. Since digital media are

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gradually replacing traditional media in consumers' lives, marketers can more effectively and efficiently reach, inform, engage, sell to, educate, and serve their target audience [4]. Marketers are constantly looking to capitalize on the fundamental shift in customer behaviour from traditional to digital media by developing strategies for product, pricing, place, and promotion that are especially suited to this market. Consequently, scholars have investigated several aspects of digital marketing [5].

The literature evaluation reveals bibliometric analysis has been used in very few research papers to identify and analyse the evolution of themes and clusters in this discipline. One thousand research publications from the Web of Science database were used in a bibliometric method to recognize significant patterns and trends in the field of diabetes mellitus. But the importance of DM, this industry needs extra in-depth reviews of the literature. A Biblio measure analysis that engrossed mostly on communication through digital marketing (DMC) and eliminated any literature that wasn't relevant. A web of science database related to the DM; however, the terms they selected were more specialized, such as "Facebook", "EWOM," "YouTube," "Instagram." and "influencer".

The digital marketing evolution-related information and additions to the content of literature on digital marketing throughout time by academic works on the philosophy and practice of digital marketing is limited. Additionally, it was still relatively new to analyse which publications, authors and boundaries are more interested in the field of digital marketing. A deliberate attempt has been made by the writers to address these issues. Because it will assess all notable scholarly publications found in the Web of Science database, this study will overlay the way for upcoming scholars who have an interest in exploring digital or virtual marketing.

The study was conducted with several goals in mind, taking into account the shortcomings of previous DM research. These goals include: a) Using bibliometric analysis to determine how the DM literature has changed over time; b) Evaluating and synthesising 1000 web of science articles and suggesting future directions for DM research. One of this study's major contributions is determining which publications and writers have made the most contributions to the development of DM [1]. It also helps by defining the most referenced journals in this field and outlining the emerging issues in DM. Furthermore, a great deal of study has been done on the co-citation networks that connect the majority of cited studies as well as the schools of thought that are present in these networks.

There are several sections to this work. A review of the literature is presented in the next part, which continues with the research methodology. The discoveries and analysis from the bibliometric study of the papers published in WoS between 2009 to 2024 are shown in the next section. The conclusion, theoretical and practical consequences, limits, and future research objectives are covered in the concluding section of the work.

2. Review of Literature

Mobile applications have made the world a small boundary. Since digital media is where modern customers spend a large portion of their time, marketers have created strategies and tactics to reach them online [9]. Consequently, a substantial quantity of academic study has been carried out on many topics such as search engine optimization, social media marketing, affiliate marketing, content marketing, and video marketing [8]; [14].

This report offers a thorough examination of academic research on this cutting-edge area of marketing that was conducted and published between 2009 and 2024 by researchers from several nations. DM has novel prospects for connecting with, educating, and engrossing customers in addition to offering and commercialising products and services [3]. In the years coming up, digital marketing is anticipated to continue leading the technological revolution. DM has altered the daily lives of millions of individuals via social and mobile media. Common social media activities have been affected by it, and it frequently leads to the growth of relationships with customers [15]; [16].

More academics and marketing professionals have concentrated on digital technology, which has quickened the rate of development. The digital marketing approach was designed to sell unique goods and services. Nowadays, digital resources are used, and campaigns are delivered on digital platforms [12]. Blogging, videos, mobile photography, and photo sharing are just a few of the uses for social media that have grown over the last 10 years. As virtual technologies like augmented reality (AR), virtual reality (VR), and artificial intelligence (AI) seem to be replacing traditional marketing strategies, researchers studying marketing are finding new areas of inquiry to explore.

The networking advantages of Facebook, Instagram, Snapchat, Pinterest, LinkedIn, YouTube, and Twitter were rapidly realized by advertisers, who in 2017 paid more than \$50 billion globally on social network ads—a more than 55% increase from 2016. It is expected that the amount spent on digital advertisements would increase to 18% in 2018, making up over \$270 billion (44%) of the \$629 billion in global advertising expenditures. With a 39% spike in 2017 and a projected 27% increase in 2018, mobile ad spending will account for more than 50% of all digital ad spending. The way that digital marketing is achieving

growth goals like improved lead generation, revenue growth, brand awareness, customer loyalty, and lower costs for customer acquisition and maintenance is demonstrated by the growing concentration of ad spending [2].

Social media is changing the way companies market themselves, which brings with it new opportunities as well as obstacles. When digital marketing is used incorrectly or by someone without experience, businesses could suffer [10]; [11]. Companies must, therefore, master social media. Businesses should concentrate on matching their entire business objectives with their digital marketing tactics. Customer happiness, co-creation, brand loyalty, perceived value, and positive attitude may all rise as a result of social media marketing [17].

Furthermore, social media has provided marketers with new avenues for exploring the content and social exchanges, and online communities to gain deeper insights into their target audience. [7]. A significant part of social media is user reviews, which raise concerns about the content's validity, usefulness, truth, and integrity. Online reviews have the potential to impact consumer preferences and purchase behaviours, thus impacting a business's overall performance.

Numerous factors might have an impact on digital marketing strategies and operations. For example, a number of studies carry out the impact of new laws on online marketing. Social media marketing is less common in emerging economies than in established ones; research on the topic shows that the way businesses market themselves is evolving due to social media, which presents both new opportunities and challenges [6]. Businesses may suffer if digital marketing is handled improperly or by someone inexperienced. Businesses must thus become adept in social media.

Businesses should concentrate on matching their entire business objectives with their digital marketing tactics and begin to pay more attention to these areas. Many businesses in these developing countries still utilize conventional media to advertise their goods and services since it is more dependable than social media platforms. This paper's goal is to assess multiple paradigms of published DM papers and ascertain how these studies evolved. Another objective of this effort is to identify the dominant themes in this field of study.

3. Methodology

In any academic subject, bibliometric analysis, when combined with citation and co-citation analyses, offers a potent method for examining the trends and features of previously published articles. Using a quantitative research approach to written materials, bibliometric analysis applies the objective philosophy to written documents (i.e., journals, books, websites). The main goals of citation and co-citation analysis are to identify emerging themes in certain fields of research, as well as the influence of various publications and schools of thought. Previous research has gone beyond just counting citations to explore the development and impact of a field, identifying influential journals and authors whose work has contributed significantly to the advancement of knowledge in their discipline

It is simpler to examine, organise, and communicate work done in a given area when one uses bibliometric studies, such as citation and co-author analysis, to delve into the trends and features of what has been published. Bibliometric analysis may be used to discover potential schools of thought within a topic, characterise institutional scholarly increase the weightage and citation/co-citation tendencies, and direct the creation of collections.

Citation and co-citation analyses are analytical techniques used in bibliometric research for a thorough examination of textual source materials (e.g., academic journal articles and books) with the purpose of evaluating a portion or the totality of an academic subject. Scholars have widely adopted a research approach that emphasizes objectivity and quantitative methods and bibliometrics, a statistical approach to evaluating published works has proven to be a valuable asset in this paradigm, enabling the systematic assessment of research output across various fields of study.

The search term used in Scopus database is "Digital Marketing". However, they also recognized that related topics, such as "Social Media Sales", "E-commerce", and "Data Mining", are often addressed in relevant publications, even if they don't explicitly mention "Digital Marketing" were also taken into consideration. The authors chose the Scopus database since they were authorised users of this particular database. Thus, analysis of other well-known databases, such Web of Science, may be taken into account in subsequent studies.

Upon importing the dataset, it is seen that a total of 1000 articles beginning in 2009 are present. Nonetheless, the data from 2009 to 2024 was retained by the authors due to their application of the "publication year" filtering approach. Since the internet started to spread widely in the 21st century, this time frame was picked. All document categories, including Research articles, books and their chapters, conference papers, research and conference reviews, and editorials, were taken into consideration when it came to the "document type" category. All document formats were taken into account because the author only used the term "digital marketing" to get data, and only 935 articles were found.

The writers aimed to explore the conceptual and actual advancements in digital marketing across all academic domains and comprehend the connection. A similar methodology was also used in other studies to reflect the entirety of the DM study. In terms of "total citation," the authors took into account the whole range of citations, from 0 to 321, since they intended to take into account both highly and poorly referenced works, which helps to distinguish between excellent and average research effort. Furthermore, every source was taken into consideration regarding the "source by Bradford Law Zones." The data were examined using the R programming bibliometrics package once they had been retrieved from the Scopus database.

4. Discussion

4.1. Summary of digital marketing key word synthesis

A comprehensive analysis of 1,000 research papers published between 2009 and 2024, shedding light on the evolution and current state of digital marketing. The analysis's summary results are shown in Table 1. An average of 4.707 citations were given to the papers that were published during this time frame in the WoS database. The increased average number of citations per document points to a rapid expansion of academic publications on the subject of DM. The findings also revealed that, with 2412 impressions in 2016, distinct writers contributed to the field of DM during this time.

Moreover, 168 article documents have just one author. Each author contributed to at least 0.314 papers, and an average of 2.82 writers worked on each document. There are 2.82 co-authors for every document, with an author count of 0.419 documents. This indicates that a considerable amount of research is carried out in the area of digital marketing in collaboration with other writers. This conclusion is further corroborated by the collaboration index of 2.41. However, there are also created a sizable number of publications authored by a single author.

Description	Results
Main Information About Data	
Timespan	2009:2024
Sources (Journals, Books, Etc)	625
Documents	1000
Annual Growth Rate%	11:33
Document Average Age	4.26
Average Citation Per Doc	4.707
References	1
Document Contents	
Keywords Plus(ID)	884
Author's Keywords(DE)	2619
Authors	
Authors	2520
Authors Of Single-Authored Docs	158
Authors Collaboration	
Single-Authored Docs	168
Co-Authors Per Doc	2.82
International Co-Authorships%	17

Table 1: Summary Statistics in Digital Marketing

4.2. Performance Analysis

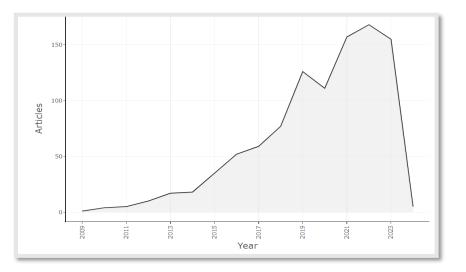
The main patterns in the DM field's yearly scientific output. The chronology may be roughly separated into two primary decades based on different yearly publishing tendencies. As a result, the real proliferation started in the second decade (2010–2020), which is after 2010, and research in this field has rapidly expanded over time. This growth may be responsible for the increase in internet and social media users that occurred during the 2000s (Table 2).

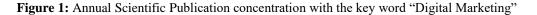
Table 2: Annual Scientific Production

Year	Articles
2009	1

2010	4
2011	5
2012	10
2013	17
2014	18
2015	35
2016	52
2017	59
2018	77
2019	126
2020	111
2021	157
2022	168
2023	155
2024	5

In just 4 years (2019–2024), 80% (745) of the research publications on digital marketing were published in Web of Science, considering Pareto's law for the research advancement. Studies conducted today tend to concentrate more on marketing science-related topics and use cutting-edge IT technologies and methods including deep learning, big data, artificial intelligence, and artificial intelligence.





4.3. Three-plot Connection (Authors-Keywords-Sources)

The three plot analyses, with the journal name in the right column, the authors' names in the left column, and keywords in the centre column, illustrate the link between authors, sources, and keywords. This attests to the fact that the majority of writers used DM as their keyword. Terms that are closely related to digital marketing, social media marketing, content marketing have also been used in other research studies. Social media is a new trend. A growing number of Fortune 500 companies are including corporate blogs, Facebook, Twitter, and YouTube into their marketing communication plans. The keywords, as mentioned earlier, were also discovered to be included by earlier studies that employed digital marketing as their keyword.

The data also makes it evident that the emphasis on digital marketing is greater than that on any other phrase. The widespread use of digital marketing justifies this assessment when contrasted with other semantic terminology. While almost every journal contributed equally, several are setting the standard for this field of research, such as the JDDDMP in springer publication. Despite being a highly influential field within digital marketing, mobile marketing has not yet received enough attention. As a result, researchers in the future can add to this field (Figure 2).

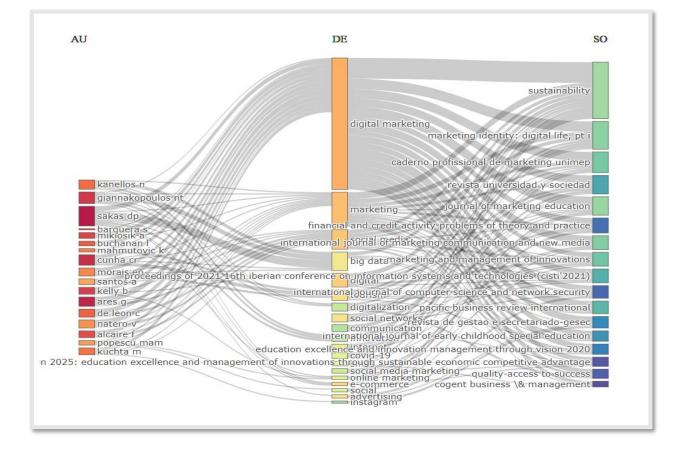


Figure 2: Three-Plot Analysis (Author-Keywords-Sources)

4.4. Academic Journals Performance

When it comes to the rankings of journals, the "Journal of Direct Data and Digital Marketing Practice" the publication had the most significant contribution to this field. Over the course of the specified time period, this journal published a total of only 46 research papers, which is equivalent to approximately 5 percent of the total number of publications.

On the other hand, the most recent issue from this Springer magazine was in June of 2016, and as of that point, it has ceased publication altogether. It may be deduced from this that the publication that had the highest contribution margin is no longer available on the market, so creating a gap that can be filled by other publications. There have been ten papers published in this topic by the "Journal of Digital and Social Media Marketing," and ten papers have been submitted by the "Journal of Marketing Education." Both of these journals have published ten papers.

In addition, it is essential to emphasise that the Journal of Research in Interactive Marketing does not consider itself to be among the most influential contributors in the area, despite the fact that it has a qualified editorial board. However, it does add a significant amount to the overall picture (Figure 3).

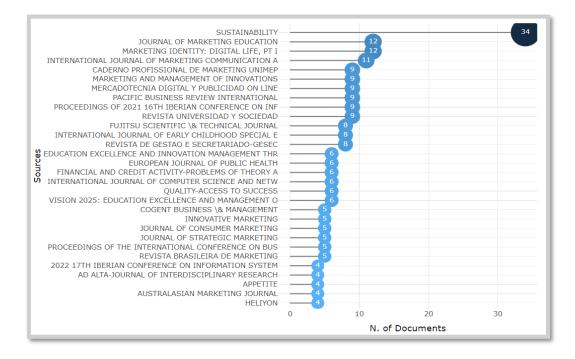


Figure 3: Most Contributing Journals in Digital Marketing

4.5. Digital marketing – Source Growth over the time

Universities like the University of Florida, Jaypee Business School, and Chaoyang University of Technology have made significant contributions in this field (Figure 4).

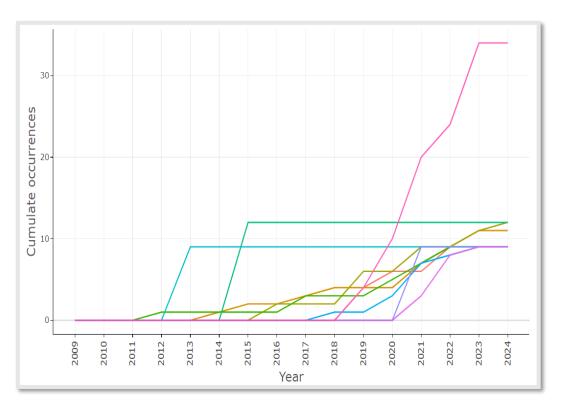


Figure 4: Digital Marketing The growth trend

4.6. Involvement by countries

According to a bibliometric study, the United States of America has contributed the greatest number of scholarly works on digital marketing (223 papers) out of all the nations that were considered. Remarkably, Indian scholars have managed to secure the second spot in this newly developing field of inquiry. It is noteworthy, nonetheless, that the USA placed first and the UK placed second in terms of MCP, or author cooperation with writers from other nations. In this category, Indian writers have not secured the second spot. In addition, the UK has kept a sizable amount of its payment, whereas other countries such as Indonesia, Spain, Korea, Portugal, Brazil, and France have only made average contributions. It is theoretically predicted that there will be the highest level of collaboration among researchers in the USA, UK, and India, given their relative contributions (Table 3).

Region	Frequency
USA	258
Portugal	227
India	214
Brazil	185
Spain	181
China	138
Indonesia	116
Ukraine	105
Mexico	99
UK	90

Australia is not a very contributing nation, yet its writers have made important contributions to the works of writers from other nations. From a continental analytical perspective, the greatest contributions came from North America and Europe, followed by Asia. Africa and South America, on the other hand, have made zero noteworthy contributions. This is explained by the nations' developing economies and populations. The majority of the nations in Africa and South America are less developed than other contributing nations. This research also highlights another noteworthy finding, which is the "North-South gap." It has been discovered that equatorial nations provide greater contributions than equatorial ones (Figure 5).

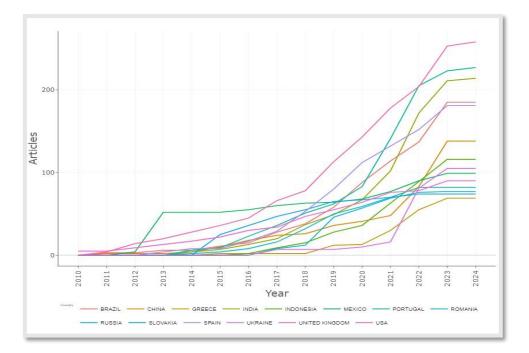


Figure 5: Most Contributed Countries in Digital Marketing

4.7. Academic journals -Bibliographic Links

In the subject of digital marketing, our bibliometric investigation unveiled three significant research clusters, as demonstrated in the previous sentence. It is essential to emphasise that each cluster differs in some manner from the others. The data indicates that the greatest cluster in the field of digital marketing is related to the domain of strategic planning for digital marketing.

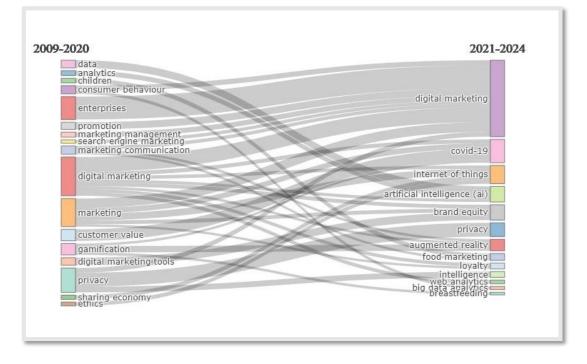


Figure 6: Thematic Evolution in Digital Marketing (Based on author's keyword)

One of the most important areas of research in the field of digital marketing is the development of applications specific to mobile marketing. As an additional point of interest, the third cluster that pertains to digital marketing is primarily focused on customer demographic profiles and website marketing analytics. In addition, the word-cloud analysis reveals which term received the greatest attention among the one thousand publications that were uploaded to the Web of Science between the years 2009 and 2024. The most significant component is "digital marketing," which is followed by other important keywords like "internet," "commerce," "marketing," "social networking online," and "social media sales."

Additionally, this cluster analysis uncovered an intriguing finding: there are three distinct clusters that correspond to different areas of marketing. It seems like there's a paradox here because big data analytics falls into the red cluster, even though it should theoretically belong in the blue cluster. The writers don't even know why. This is just one more problem with the work. That digital marketing is part of the red cluster doesn't change the fact that social media only became significant after the year 2000. Therefore, it is essential to consider digital marketing as the foundation of marketing and to give it the weight it deserves from an implicational standpoint, even while the theory and philosophy behind it are unchanged (Figure 6).

5. Conclusion and Implication

In order to provide fresh findings and an understanding of the literature, researchers might concentrate on particular topics by using bibliometric studies, which offer a thorough picture of particular research domains [13]. In conclusion, it is safe to say that 2016 marked the beginning of the field of DM research's expansion. Three main research subjects have been established: the creation of applications and mobile marketing, demographic analysis using web analytics, and a strategic framework. The nations that have contributed most to this progress are the USA, UK, and India. Over the past five years, digital marketing has become a popular term. Electronic commerce has revolutionised the company by replacing the traditional physical delivery method with a virtual one for marketing and sales. These days, digital marketing is a crucial component of every sale and marketing plan.

For the benefit of academicians and practitioners in many ways, bibliometric analysis will be used to study the DM literature. The main objective of this study is to inform academics and digital marketers on the development, patterns, and background of the field of digital marketing. Additionally, by providing information on the most studied DM subjects, this book can help researchers find research gaps that need to be filled. Based on the available data, "digital marketing" is the most often used keyword across the majority of the research. In addition to studying consumer behaviour, web 2.0, advertising, big data, machine learning, social networks, mobile marketing, and branding, research on DM is also necessary. Second, the study demonstrates that social media and the internet have gotten more popular.

As social media encourages customers to advocate for brands, multinational corporations are putting more of an emphasis on digital marketing as a potent instrument for brand communication. Digital marketers must make sure that digital media is employed in order to communicate brands effectively. Third, the data indicates that the countries with the largest concentrations of DM literature are India, the United States, and the United Kingdom. Subsequent scholars investigating the possibilities of digital marketing ought to focus on diverse global places, especially developing countries.

Following extensive research, three primary clusters have been identified. The largest cluster, which indicates a crucial area of study for academics and decision-makers alike, is digital marketing and strategic planning. Digital marketing has become more and more commonplace in the wake of the most recent technological revolution in companies. Digital marketing strategies completely replace conventional marketing methods. These days, marketers must use digital technologies to sell and promote their products and services online. Therefore, marketers need to precisely identify and assess the opportunities and challenges of digital marketing in order to establish the most successful marketing strategy and communication objectives.

The cluster analysis also revealed another domain: mobile marketing with app development. Because they are more accessible and affordable, smartphones and mobile applications are becoming more and more popular every day. In order to reach the intended client base, marketers need to use mobile marketing strategies like SMS marketing and banner advertisements on applications. Customer demographic profiles and website marketing data make up the final study cluster. Digital marketing analytics make it simple to gauge the results of marketing expenditures. Digital marketing may also be used to assess and audit the calibre and efficacy of online content.

5.1. Limitation and Future Direction

This study's main flaw is that the major works indexed in another significant database, like Scopus, are not included in it. Also, when searching for articles, the term "Digital Marketing" alone was utilized, ignoring other relevant keywords. The selection of a single keyword served to streamline the analysis and facilitate comprehension for the writers. Thus, additional research might be conducted considering other highly relevant terms such as "mobile marketing," "affiliate marketing," "online marketing," "social media marketing," and "email marketing" to gain a more comprehensive viewpoint. One could find it interesting to look at the future developments of marketing research in the field of digital marketing.

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Ethics and Consent Statement: This research adheres to ethical guidelines, obtaining informed consent from all participants. Confidentiality measures were implemented to safeguard participant privacy.

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