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**THE IMPORTANCE OF ARTIFICIAL INTELLIGENCE IN
DIGITAL MARKETING**

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DEDICATION

I dedicate my thesis first of all in the name of Allah who is the most merciful and beneficent and I also dedicate my thesis to the source of strength my parents and siblings. I dedicate this thesis to my Teachers Professor Behiye Begendik and Supervisor Professor Behiye Begendik seniors and colleagues who went through the whole journey in order to fulfill my liability to create this thesis.

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ABSTRACT

THE IMPORTANCE OF ARTIFICIAL INTELLIGENCE IN DIGITAL MARKETING

Incorporating Artificial Intelligence (AI) into digital marketing represents a paradigm shift in understanding and catering to consumer behaviour. Through an exhaustive bibliometric analysis of documents from 2013 to 2023, this study examines the expanding influence of AI in the digital marketing realm. Analysis of 11,018 documents reveals that AI is not only enhancing efficiency and personalization in marketing strategies but is also driving a significant transformation in the sector's research focus and practices. The most cited authors in the dataset, including those with a high frequency of single-authored publications, have been pivotal in advancing the discourse around AI in digital marketing, contributing valuable insights into consumer behaviour, predictive analytics, and automated decision-making processes. The leading institutions, spanning diverse geographies from the United States to Asia, reflect a robust network of academic influence that has fueled the development of AI-centric marketing models and strategies. Keyword analysis underscores 'Artificial Intelligence,' 'User Experience,' and 'Social Media' as the most frequently cited terms, indicating these areas as the cornerstone of current research and application. These terms not only mirror the priorities in academic research but also resonate with the evolving needs and strategies of industry practices. The United States stands out as the most cited country, indicating its central role in producing and advancing academic and practical knowledge in AI applied to marketing. The high citation count signifies the global impact of research emanating from the region, shaping the direction of international marketing strategies and setting benchmarks for best practices. In this landscape, the study emphasizes the necessity for businesses to cultivate adaptive AI integration strategies, prioritize personalized customer experiences, and invest in the continuous development of professional competencies. Furthermore, the ethical deployment of AI remains a crucial consideration. As digital marketing marches towards a more AI-integrated future, the interplay between AI advancements and marketing innovation becomes increasingly significant, offering profound implications for academic research and practical applications.

Keywords: Artificial Intelligence, AI, Digital Marketing, Bibliometric Analysis, Trends, Literature Review, Citation Analysis

Date: 17/11/2023

ÖZET

DİJİTAL PAZARLAMADA YAPAY ZEKA'NIN ÖNEMİ

Yapay Zekanın (AI) dijital pazarlamaya dahil edilmesi, tüketici davranışını anlama ve karşılama konusunda bir paradigma değişikliğini temsil ediyor. 2013'ten 2023'e kadar olan belgelerin kapsamlı bir bibliyometrik analizi yoluyla bu çalışma, yapay zekanın dijital pazarlama alanında genişleyen etkisini inceliyor. 11.018 belgenin analizi, yapay zekanın yalnızca pazarlama stratejilerinde verimliliği ve kişiselleştirmeyi artırmakla kalmayıp aynı zamanda sektörün araştırma odağı ve uygulamalarında da önemli bir dönüşüme yol açtığını ortaya koyuyor. Tek yazarlı yayın sıklığı yüksek olanlar da dahil olmak üzere veri kümesindeki en çok alıntı yapılan yazarlar, dijital pazarlamada yapay zeka hakkındaki söylemi ilerletmede çok önemli rol oynamış, tüketici davranışı, tahmine dayalı analitik ve otomatik karar alma süreçlerine ilişkin değerli bilgiler katmıştır. Amerika Birleşik Devletleri'nden Asya'ya kadar çeşitli coğrafyalara yayılan önde gelen kurumlar, yapay zeka merkezli pazarlama modellerinin ve stratejilerinin geliştirilmesini teşvik eden güçlü bir akademik etki ağını yansıtıyor. Anahtar kelime analizi, 'Yapay Zeka', 'Kullanıcı Deneyimi' ve 'Sosyal Medya'nın en sık alıntı yapılan terimler olduğunu vurguluyor ve bu alanların mevcut araştırma ve uygulamanın temel taşı olduğunu gösteriyor. Bu terimler yalnızca akademik araştırmalardaki öncelikleri yansıtmakla kalmaz, aynı zamanda endüstri uygulamalarının gelişen ihtiyaçları ve stratejileriyle de örtüşür. Amerika Birleşik Devletleri, pazarlamaya uygulanan yapay zeka konusunda akademik ve pratik bilgilerin üretilmesi ve geliştirilmesindeki merkezi rolünü göstererek en çok alıntı yapılan ülke olarak öne çıkıyor. Yüksek alıntı sayısı, bölgeden çıkan araştırmaların küresel etkisine işaret etmekte, uluslararası pazarlama stratejilerinin yönünü şekillendirmekte ve en iyi uygulamalar için ölçütler belirlemektedir. Bu ortamda çalışma, işletmelerin uyarlanabilir yapay zeka entegrasyon stratejileri geliştirmesi, kişiselleştirilmiş müşteri deneyimlerine öncelik vermesi ve mesleki yeterliliklerin sürekli gelişimine yatırım yapmasının gerekliliğini vurguluyor. Dahası, yapay zekanın etik açıdan yaygınlaştırılması önemli bir husus olmaya devam ediyor. Dijital pazarlama, yapay zeka ile daha entegre bir geleceğe doğru ilerledikçe, yapay zeka ilerlemeleri ile pazarlama inovasyonu arasındaki etkileşim giderek daha önemli hale geliyor ve akademik araştırmalar ve pratik uygulamalar için derin sonuçlar sunuyor.

Anahtar Kelimeler: Yapay Zeka, Yapay Zeka, Dijital Pazarlama, Bibliyometrik Analiz, Trendler, Literatür Taraması, Atıf Analizi

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ABBREVIATIONS

AI: Artificial Intelligence

SEO: Search Engine Optimization AGI: Artificial General Intelligence DM: Data Mining

PM: Predictive Modeling ML: Machine Learning RoI: Return on Investment

RACE: Relevance, Action, Communication, and Evaluation B2B: Business to Business

WoS: Web of Science RTB: Real-time bidding



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1 INTRODUCTION

1.1 BACKGROUND OF THE STUDY

Digital advertising, public relations, and customer service have been in high demand since the early 20th century, when these tools first became practical (Van Esch & Stewart Black, 2021). Since “Digital Marketing” was first used in 1988, businesses of all sizes—from sole proprietorships to conglomerates—have experienced exponential growth. The development of artificial intelligence, data mining, and computational analysis ushered in a transitional period in which digital marketing shifted from a solely data-driven strategy to a new method that combines data and knowledge-based decision-making systems (Saura et al., 2021). Keeping and analyzing large amounts of data is necessary for quantitative studies of advertising, users, and statistics. Every successful advertising effort has a target audience in mind. Managers in marketing could benefit from this technology by better understanding the factors that influence their company's market share. These technologies may help people make better decisions more quickly. While there are many applications of AI in other fields of study, data from the marketing industry suggests that it is more challenging to deploy (Mogaji et al., 2020).

For company decision-makers, it is evident that more than a successful computational strategy is needed to deal with the wide variety of qualitative, quantitative, and strategic concerns that may occur in digital marketing. There is a perception that making decisions is challenging because of the situation's complexity, the need for insight and judgment, the rapid rate of change, and the high stakes. Due to the massive amounts of daily data, businesses can analyze, develop, and deploy applications combining scientific multifactor data to create intelligent knowledge-based decision-making processes (Nair & Gupta, 2021). The use of AI is creating a stir in the marketing sector. It represents the cutting edge of marketing. “Artificial intelligence” covers many technologies and is a bit nebulous. AI refers to the research of developing computer systems with intelligence similar to that of a human being. The term “artificial intelligence” (AI) describes various technologies. Innovative technologies are typically the subject of entrepreneurs' lofty rhetoric (Kotane et al., 2019). They boast loudly about how well AI can identify individuals by their voices and faces. The marketing data and the drones might both be more precisely targeted. The success of outbound or traditional marketing methods in acquiring and retaining clients is on the decline. Artificial

Intelligence (AI) is critical in today's always-on, real-time culture, as marketers supply customers with ongoing, customized, insight-driven engagements.

Successful companies have a significant edge over their rivals because they have recognized the importance of AI and are using the proper infrastructure to scale. Artificial intelligence emphasizes creating the ideal combination of content and environment more than developing cutting-edge hardware. Artificial intelligence has been used in many areas, from consumer electronics to significant business, thanks to products like Apple's Siri and Google's DeepMind. Services like Siri use natural language processing to understand and respond to voice instructions. However, deep learning is crucial to Google's DeepMind research. Instead of relying on predefined behavioral algorithms, it could infer and establish connections based on past knowledge and the raw data it gets as inputs. Google's data center efficiency was improved by forty percent, according to studies conducted by DeepMind. The accompanying graph clearly shows the steady but slow growth of the artificial intelligence market (Broadhurst, 2022).

Artificial intelligence (AI) has an excellent opportunity to disrupt the marketing industry. Despite the increasing prevalence of the term, no one, all-encompassing definition of “artificial intelligence” (AI) has developed. Computer systems that demonstrate intelligent behavior in response to their environment are the focus of artificial intelligence (AI) research and development. Many corporate processes, systems, and everyday activities incorporate AI, which uses cloud computing, network devices, robotics, computers, and digital material. Computers have long used AI, and this trend is only expected to increase (Mogaji et al., 2020). The exponential ascent of AI makes it critical to include it in ongoing and future advertising campaigns. More and more companies are using AI technologies to increase productivity, reduce costs, shorten response times, and better serve their customers. Teams who have already shifted to marketing AI software have a significant lead over their competitors in deploying the subsequent game-changing technology development (Hasan et al., 2021).

The growing applications of AI in the media industry call for ongoing training of media professionals if an organization wants to double its media output. This is because professionals in this industry need to stay up with this progress from the beginning if they're going to recognize the names of officials using picture recognition techniques and means. The future of automated marketing is still being determined. It's important to remember four

recent cases in which AI marketing systems were implemented (Pangkey et al., 2019). The first case involves instant access to interactive videos for paying consumers. The goal is to build an extensive, straightforward database. In the alternative scenario, the (Facebook) company fires the supply team members in charge of implementing the top priorities. In its announcement, the third case study offered by the company (Trunk) describes how it uses AI systems to produce 2,000 movies daily (Stone et al., 2020). The study set out to identify the most critical AI tools for the digital marketing industry by analyzing how AI is currently used.

Thirty thousand “bots” can be found on Facebook Messenger, all ready to be programmed to respond to messages from group members or page subscribers. Twitter is no different (Arun Kumar, 2021). In recent years, the popular press and academic circles have been rife with discussion about the prospect that machines could one day replace humans. As more and more organizations use them, their incorporation into news production will likely continue to increase (Sachdev, 2020). Some think these machines and innovations will improve productivity and customer satisfaction without displacing humans. The first marketing robot was created in 2010 at the University of Tokyo's Institute for Intelligent Systems Informatics. This robot can independently scout its immediate surroundings, record observations, and watch for anything unusual (Dumitriu & Popescu, 2020). He takes pictures using the camera already on his device. He may learn more about his surroundings by talking to people and doing online research.

Artificial intelligence (AI) will play an increasingly important role in the future of marketing because it can be used to generate large volumes of news stories by translating numbers and data into text, solving the text into videos that summarize the event, and developing multiple templates that address the same news from various angles (Biswas et al., 2023). They improve human productivity by investing in technology that enhances market prediction, process automation, and choice-making. The key objectives of this study are (1) to get a deeper comprehension of the dynamics at play between AI and digital marketing firms and (2) to compile a comprehensive inventory of the most essential AI-based digital marketing tools now available. Both neural networks and expert systems studies contribute to this field. Artificial intelligence (AI) techniques based on social computing are adequate for studying online social networks. Data mining techniques allow us to look at social networks in all their manifestations (Rosario & Cruz, 2019). The advertiser may zero down on the most

critical hubs using this data. With this information in hand, marketers may create campaigns that are successful and sensitive to cultural standards (Mogaji, 2019).

1.2 RESEARCH AIM

The impact of artificial intelligence (AI) on digital marketing is examined in detail in this thesis. In a time of unmatched technological advancement and changing consumer behavior, this study aims to shed light on how the use of artificial intelligence (AI) technology could alter traditional marketing strategies. By investigating the intricate connections between AI and digital marketing strategies, customer engagement, and business performance, this research seeks to provide insightful information that will be beneficial to scholars, organizations, and marketers. The research findings would be significant for the academics and practice as it would:

1. **Analyze How AI Could Enhance Customer Experiences** This study aims to clarify the ways in which dynamic content production, AI-driven personalization, and recommendation engines collaborate to produce unique and engrossing customer experiences. The thesis looks into how AI impacts user engagement, retention, and happiness in order to determine the intrinsic value of personalized interactions.
2. **To Analyze the Development of Marketing Approaches:** The impact of AI technology on audience segmentation, content creation, and campaign planning will be investigated in this thesis. It will look at how decision-making is aided by data-driven insights and predictive analytics, leading to more targeted and effective marketing strategies.
3. **To Assess the Impact of Privacy and Ethical concerns:** Because AI in marketing raises ethical questions, this project will look at privacy and ethical concerns related to algorithmic biases, data collection, and client privacy. The thesis examines industry practices and ethical frameworks to propose guidance for the proper implementation of AI.
4. **To Evaluate the Effect on Business Results:** The purpose of this thesis is to assess the real impacts of AI adoption on critical performance metrics, including revenue generation, conversion rates, and return on investment. It accomplishes this by quantitatively examining empirical data and case studies. This study aims to provide organizations with hard evidence of the benefits that AI-powered marketing strategies may bring.
5. **To Offer Reasonable Suggestions:** The results of the analysis will inform this research, which will offer helpful recommendations for businesses looking to incorporate AI into

their digital marketing strategies. These will cover the difficulties of ethics, strategic concepts, and skill development for marketing professionals.

By achieving these objectives, this thesis seeks to contribute to the expanding discourse on the ground-breaking potential of artificial intelligence in digital marketing. The findings are intended to inform future scholarly investigations, assist business professionals, and broaden our understanding of the complex relationship between technology and marketing.

Considering the above, the main purpose of the research is to elucidate and explore the significant role of Artificial Intelligence (AI) in the optimization and revolutionize the digital strategies for enhanced efficiency, customer engagement and precision. To achieve this purpose, this study uses bibliometric methods to collect and analyze the literature on the use of AI in digital marketing. A bibliometric analysis was conducted to offer a numerical summary of the relevant literature (Merigo et al., 2015). This thesis will elaborate on the following approaches and justifications. The theoretical basis of this study explains why using AI in the branding sector is a good idea. The essay concludes by discussing AI's positive effects on the bottom line. Methodologies for doing research and analyzing citations are also discussed at length. Finally, bibliometrics such as co-occurrence, source, and co-citation analyses are provided. Finally, the study concludes with a discussion of its implications and directions for further research.

2 LITERATURE REVIEW

2.1 THE CONCEPT OF DIGITAL MARKETING

E-marketing, often known as “digital marketing,” promotes a product or service online. In other words, firms use the internet to spread the word about their wares. The Internet has established various online marketing channels to compete with print and broadcast media to promote product awareness and sales (Davenport et al., 2020). This was made possible by the expanding significance of this network as a data source. The idea became practical with the advent of instruments to facilitate the building process. New ways and tools to aid in advertising and rapidly spreading content online (Hassan, 2021), as well as creating novel advertising solutions to promote specific products and services. The only real difference between digital and more conventional forms of advertising is in the channel via which messages are delivered to consumers. Traditional marketing's core action categories can be adapted to the digital realm by capitalizing on the Internet's speed, accessibility, and low cost (Saura, Ribeiro-Soriano, and Palacios-Marqués, 2021).

2.2.1 Advantages of Digital Marketing

Several advantages of digital marketing have emerged due to its increasing popularity and the general inclination of investors.

The Least-Cost

Since traditional marketing typically involves promoting the product through paid media like television, radio, newspapers, magazines, etc. (Zhang and Wang, 2015), the low cost of digital marketing was a significant factor in its rapid adoption. The Internet and social media sites are essential components of electronic marketing because of their widespread use and low cost (Sinha, Healey, and Sengupta, 2020)

Time and Content of the Advertisement

When comparing the costs of digital and traditional marketing, it's essential to remember that the former provides more flexibility for both the length and content of adverts. Advertisements on television are more effective the longer they run (Van Esch and Stewart Black, 2021).

2.2.2 Characteristics of Digital Marketing

Among the many distinguishing features that define digital marketing are the following:

- **To wit:** “The Internet aids businesses and organizations that carry out the marketing process by providing information related to customers' characteristics” (Chintalapati and Pandey, 2022). This is one of the many reasons digital marketing has become so widespread.
- The interactive nature of digital ads: Electronic marketing stands out because it can be modified for each unique customer (Theodoridis and Gkikas, 2019).
- The unique feature of digital marketing is the most comprehensive database ever created. “Digital marketing is distinguished by its capacity for long-term memory thanks to sophisticated databases containing information about customers' demographics, interests, product preferences, and past purchases and interactions,” as stated by Kingstone et al. (2018). Businesses can utilize this information to better their marketing strategies.
- Finally, digital marketing is distinguished by its emphasis on analysis, follow-up, and control. Digital marketing tracking can reveal helpful information about how people use a product.

In today's business world, the only constant is change. Adaptability to change, and the need to use it to one's advantage, is a highly prized trait in a manager. Established knowledge becomes obsolete rapidly in today's global and competitive business world, making new perspectives and innovations essential (Khatri, 2021). Learning new skills is critical to the survival of any business. Business as usual is changing, and with it comes a new reality: shorter product and service cycles. Companies are getting creative with their product lines to differentiate themselves. The marketing industry is experiencing a period of rapid change. Data reporting and strategic and operational control have significantly benefited from the technological advancements made possible by scientific marketing. Most businesses today use marketing technology to improve their advertising efforts. This can be anything from electronic data processing analysis and internet communications to information retrieval (Thilagavathy and Kumar, 2021).

Developing a campaign in the wake of unexpected news is an example of real-time marketing. Marketers monitor consumer preferences and feedback to create products that meet real needs. The rise of social media has supported the development of real-time marketing by giving companies access to up-to-the-moment data about their target audiences.

This allows marketers to translate that information into messages and items they believe customers want. Today's businesses have access to a wealth of consumer data that can be used to understand better their customers' actions in real time (Khatri, 2021). With real-time personalization, Organisations can make it seem like their website was built with the user in mind by displaying relevant content at any given time. Treating customers as people rather than numbers increases the likelihood that they will buy from the organization again. Access to essential data and analytical tools is now instantaneous and omnipresent (Wang et al., 2016). Because of this, Organisations can now take a data-first strategy, which has accelerated the development of AI and ML. Limited data sets, representative samples rather than real-time, real-world data, and the inability to evaluate large volumes of data in seconds have all slowed the development of AI in the past.

2.3 TYPES OF DIGITAL MARKETING

With so many options for how Organisations approach digital marketing, everyone involved must have access to the data they need to make informed decisions. First, there's promotional email, which facilitates a constant two-way connection with customers and the instant delivery of services (Tiautrakul and Jindakul, 2019). Emails sent to customers include promotional material and how-to guides designed explicitly for their purchased product.

2.3.1 Digital Marketing through Search Engines

Clients interested in learning more about digital marketing should be aware that product and business description is one of the essential sorts of digital marketing used to attract clients. Search engine optimization (SEO) is a tried and true method of boosting website traffic and determining which keywords will provide the best results in an advertising campaign.

2.3.2 Digital Marketing through Social Media

Social media have become a powerful tool for advertising in recent years. Due to their large user populations and other advantageous features, social networking sites like Facebook, Twitter, and others are increasingly relied upon primarily by many large Organisations (Van Esch & Stewart Black, 2021).

2.3.3 Digital Marketing and Advertising

One of the most exciting advances in advertising is electronic marketing, and more specifically, the two forms of electronic marketing that make use of websites. The second strategy is "pay- per-click" promotion. Marketers negotiate a CTR with a specific audience

segment, and those members are compensated based on the actual number of clicks their ads get (Karjaluoto & Alatalo, 2007).

2.3.4 Digital Marketing through Interactive Visual Advertising

Adding visual effects to organizations marketing videos on YouTube can help them reach more People and increase the likelihood that they will interact with and share their material (Tchelidze, 2019).

2.4 ARTIFICIAL INTELLIGENCE

AI research and development aims to give machines capabilities formerly reserved for humans. Carvalho et al. (2017) note that several academic disciplines treat all electronic apps as intelligent. Artificial intelligence enables various functional computing operations, including voice recognition, deep learning, planning, and problem-solving. Social media, search engines, the scientific community, cutting-edge processes, weather forecasting, businesses, and even the labor market use AI today (Gkikas & Theodoridis, 2019).

2.4.1 Stages of Development

An AI's development can be broken down into five distinct phases, beginning with the stage where it learns to recognize objects and establishes associations between them, moving on to the location where it fully comprehends its environment and can make autonomous decisions, and culminating in the stage where it outperforms human intelligence.

The first stage—At this point in artificial intelligence's evolution, algorithms are trained to predict a user's preferences based on data collected about that user's online and social media activities and offline habits (Ullal et al., 2021). This tidal surge is an integral part of human history... Suggestions and recommendations from online social networks since 2012, when the initial wave of AI internet became popular; it has been used in many areas of people's lives. These areas include social media, video site recommendations (from movies and books to favorite foods), and SEO.

The second stage— Stage two of AI is “Artificial General Intelligence” (AGI) or “Strong AI,” which occurs when machines are as intelligent as humans and can learn any cognitively demanding task. In addition to its specialized intelligence in several disciplines, an AGI will have broad knowledge, the ability to reason, innovative ideas, and practical sense (Cavallo et al., 2015). Instead of developing narrow AI systems designed for specific tasks like image recognition or natural language processing, as is the case with current AI, the goal

of AGI is to create machines that can adapt and apply their intelligence across multiple domains without being explicitly programmed or instructed. Due to the complexity of human intelligence and the breadth of its innate abilities and knowledge, the construction of AGI remains an ongoing area of research and is regarded as a significant problem (Ghosh et al., 2009). The development of artificial general intelligence (AGI) may have far-reaching effects in many areas.

The third stage— having the ability to perceive its environment fully, it can tell the difference between different types of images, sounds, and objects; for example, it can help students with their homework by analyzing a picture they take of their assignment to figure out what they need to know (Ren et al., 2017). Biometric authentication methods, such as facial recognition and fingerprint scanning, have become commonplace on modern smartphones in large part due to the malleability of AI. Improvements in machine speech recognition and imitation technology have led to the popularity of voice-activated personal assistants such as Amazon's Alexa, Microsoft's Cortana, Google's Assistant, Facebook's Jarvis, and many more (Johnsen, 2017). Augmented reality technology has emerged to differentiate locations further; this allows users to snap photos of a tourist attraction or a busy street and has the app overlay relevant information while the shot is being taken. Artificial intelligence may be used to quickly identify inappropriate details and take them down from the web and social media platforms (Murgai, 2018). The understanding of AI's ability to differentiate between people, things, and noises has advanced because Amazon implemented this technology at their (Amazon Go) shop. Since 2016 (Pitt, BAL and Plangger, 2020), when augmented reality apps and face/voice fingerprint phones first became popular, the hallmarks of this wave have been seen.

Stage Four—the development of self-aware artificial intelligence: Fourth-generation AI is characterized by its detachment from human control and increasing autonomy. It takes several phases for an AI to fully understand and interact with its surroundings, starting with understanding and moving on to the formation of correlations between different factors that enhance awareness and perception (Kumaret al., 2019). Robots with human-like hearing, vision, perception, discrimination, analysis, and decision-making capabilities may be used in potentially lethal situations like surgery or battle (Khanagha et al., 2017).

The fifth stage— Intelligent and constantly adapting Artificial intelligence (AI) already exists thanks to its astonishing ability to rapidly collect, assess, and draw connections

among data from various sources (including books, Social Media, websites, and movies). Artificial intelligence surpasses its creator in areas such as reproducing himself, solving problems that humans find intractable, knowing that controlling his energy or strength is essential to his survival, and so on. Human extinction is predicted in science fiction and hard science (Liao, 2015).

Therefore, preparing for a future ruled by artificial intelligence was critical. While allowing this effort to advance humanity and better the lives of all people, human rights must be safeguarded at all times. But it has to be cautious about making robots out of humans. The primary influence on these processes continues to come from human activities, as Maxwell et al., (2011) agrees. While it's true that working in social media does need some degree of creativity, many of the duties performed by Media Professionals nowadays have nothing to do with creativity, such as writing, grading texts, and even reading news bulletins. Few have taken note of the move to artificial intelligence (AI) media that has resulted from the Fourth Industrial Revolution (Ren et al., 2017). Media AI plans to maximize its potential with the help of AI and other technologies of the Fourth Industrial Revolution. By doing away with expensive camera crews, broadcasters, and informants, the media business will benefit and see cost reductions (Maxwell et al., 2011).

2.5 DIGITAL MARKETING AND AI

The field of research known as artificial intelligence (AI) aims to discover how machines may mimic human cognition. Intelligent people are excellent communicators and quick learners. Ability to synthesize, analyses, decide, judge, organize, reason, test hypotheses, interpret. is required in both directions (Misra et al., 2019). Knowledge representation, search, observation, and inference are all crucial to the success of artificial intelligence (AI). Artificial intelligence (AI) can only produce results by taking in and making sense of information in various representations and processing forms. Investigate and infer until the organization gets the answers they want. To find solutions, complex search tactics are required. After then, reasonable conclusions are reached based on the available evidence. A chain of operations must be completed before data can be used in AI-assisted decision-making, starting with data selection and concluding with data transformation and mining (Netzer et al., 2019).

Artificial intelligence (AI) is all the rage in today's corporate environment. This is cutting-edge advertising, the wave of the future. The term “artificial intelligence” (AI) has

been used for several kinds of computers and computer programs. Artificial intelligence (AI) is the study of how to give computers human-level intelligence (Russell & Norvig, 2016). Voice and picture recognition, machine learning, and semantic searching are just a few of AI's many skill sets. Entrepreneurs often speak grandiosely about their groundbreaking inventions. They rave about how well AI can recognize people from their voices and appearances. It ensures the safety of sensitive marketing information and paves the way for drone delivery in hard-to-reach areas (Li et al., 2011). Traditional or outbound marketing strategies are less effective than they once were for bringing in and keeping customers. Marketers are under increasing pressure to maintain consistent, individualized, insight-driven connections with consumers, making artificial intelligence (AI) indispensable in today's always-on, real-time environment (Poria et al., 2015).

Brands that see the value of AI and invest in the proper infrastructure will have a leg up on the competition. Providing the optimal combination of content and environment takes precedence over focusing on the underlying technology in AI. Products like Apple's Siri and Google's DeepMind have helped to expand the usage of artificial intelligence beyond consumer electronics and into large enterprises. For instance, Natural Language Processing enables Siri's comprehension and execution of voice orders. However, Google's DeepMind uses deep learning. It may depend more on its experience and the raw facts it receives as inputs than on programmed behavioral algorithms when generating conclusions and discoveries. Google cut the energy it spent cooling its data centers by 40 percent because of the research conducted by DeepMind (Bharadwaj et al., 2012).

Artificial intelligence (AI) is becoming necessary in today's cutting-edge corporate environment. Businesses of all sizes are adopting this technology to increase productivity and better meet the demands of their customers. Until recently, companies were cautious about including AI in their advertising campaigns. Nonetheless, advertisers have shown a lot of faith in its potential in the last year. As more areas get the advantages, less can be assumed about the end consequence (Seranmadevi & Kumar, 2019). The availability of more information tends to slow down procedures that need human intervention. Because of this, they end up relying on their gut instincts rather than the data. Artificial intelligence is becoming a powerful resource since it may be utilized instead of intuition to reach fruitful conclusions (Bharadwaj et al., 2012).

2.6 ARTIFICIAL INTELLIGENCE AND DIGITAL MARKETING IN THE CONTEXT OF BUSINESS

According to Domo.com, everyday online activity generates 2.5 quintillion bytes of data. Conversion rates and profits may be improved by tailoring data and audience segments to better appeal to consumers in an age of information overload (Aswani et al., 2018). Successful businesses have found that improvements to their digital marketing strategies, channels, audiences, and markets, as well as the creation of personalized content, have led to significant increases in income. Marketers have just begun to see the benefits of using AI, DM, PM, and ML in their strategies for reaching their target audiences and improving internal processes (Carvalho, 2018). ROI, customer happiness, and expansion are all boosted when demands are categorized based on data (Dimitrieska et al., 2018). To correctly draw conclusions and make predictions, artificial intelligence (AI) uses a wide range of data, including website content, sales figures, analytics reports, and social media insights (Antons and Breidbach, 2018).

2.6.1 Artificial intelligence ‘runs’ the RACE

The acronym “RACE” means “Relevance, Action, Communication, and Evaluation.” Public relations and marketing experts typically use the RACE framework (Research, Action, and Evaluation) for project planning and assessment. This method is rational for reaching out to a specific group of people.

- Researching the prospective customers' likes, dislikes, habits, and expectations is essential to finding the target audience. The objective is to determine the most effective method of reaching a target audience.
- The purpose of this step is to define the actions or reactions which want the audience to have as a result of the communications. Motivating an intended audience to take action requires well-planned campaigns and persuasive calls to do so (Wang et al., 2016).
- The plan is developed and implemented throughout the communication phase, which encompasses content creation, channel and platform selection, and the dissemination of messages. Its purpose is to ensure that messages are received and understood by their target audiences.
- The last step is an evaluation of how well the communication strategy was implemented and whether or not the goals were attained. Assessment seeks to improve future

communication strategies by examining data, collecting input, and making educated decisions.

There are a number of ways in which artificial intelligence could be useful in the RACE context. Artificial intelligence allows sifting through masses of data in search of elusive patterns, trends, and insights into the target demographic. By learning more about the preferences, habits, and interests of the intended audience, this analysis enhances the relevance phase. Algorithms developed using AI make it possible to tailor communications to each individual's preferences, resulting in more interesting exchanges (Ren et al., 2016). By examining data on user engagement and channel efficacy, artificial intelligence may help choose the best communication channels and platforms. Content creation, scheduling, and campaign management are just some of the tasks that could be automated by AI-powered tools and platforms, increasing efficiency and providing more time for planning and review (Järvinen & Karjaluo, 2015). AI's capacity to deliver real-time data on the success of campaigns, audience engagement, and conversion rates aids advanced analytics and measurement. This allows for the assessment and refinement of communication tactics throughout time. Artificial intelligence has the potential to help businesses improve the RACE method in a number of ways, including making better data-driven decisions, having more meaningful connections with customers, and running more effective campaigns (Levy & Gvili, 2015).

2.6.2 Artificial Intelligence (AI) and Digital Marketing Methods

It's essential to introduce the many AI specializations before diving into the potential effects of AI on digital marketing. There are many different types of AI presented here. Among other things, such as time series forecasting, classification, etc., a neural network may be used to model the brain (Cai et al., 2017). Evolutionary computing includes examples like genetic algorithms and genetic programming. Seeing entails more than just seeing things; it also involves being able to interpret what organizations see. Technologies like remote control and autonomous exploration are examples of what may be found in robotics. Many tools for making decisions, learning materials, etc., use expert systems (Levy & Gvili, 2015). Examples of what may be called “speech processing” include voice synthesis and voice recognition. Natural language processing has been used in machine translation. Planned actions include things like creating a timetable or a strategy. Data mining, decision tree analysis, and similar processes are all examples of machine learning (Peter et al., 2014).

- Search engine optimization (SEO) is the focus of several academic studies. Most SEO studies (Nysveen et al., 2005) aim to improve a website's rankings by combining many factors into a single machine-learning model. Evolutionary computation, fuzzy intelligence systems, machine learning techniques, and web crawlers are common subjects in online data mining research publications.
- The field of social media marketing has made only modest strides in recent years despite a plethora of studies on such hot-button issues as consumer behavior, consumer intent, image comprehension techniques, and the analysis of social media data via machine learning models and data mining approaches (Park & Kim, 2022).
- Research into content marketing, content creation, and predictive marketing makes use of data mining, image understanding procedures, text mining, and machine learning instruments such as keyword extraction, expert systems, customers' decision support systems, text analysis, and predictive analysis (Barnes and Scornavacca, 2004).
- Academic research significantly utilizes machine learning for bidding and ad targeting using enhanced ad models in Google AdWords and remarketing. It looks at prospective metrics for weighing the importance of various aspects in foreseeing clicks and purchases. Machine learning may be used to construct models for regressing data, and these models may reveal novel insights and unnoticed patterns (Nelwan et al., 2021).
- When compared to other forms of digital advertising, research into chatbots has evolved considerably. Significant research is being conducted in various branches of artificial intelligence, such as decision support systems, neural networks, autonomous exploration processes, etc., to develop human-robot interaction simulators (Taiminen et al., 2015).
- The study of the building blocks of marketing throughout several phases is a well-established subject known as “semantic search.” There is a lot of academic literature on topics like search engines, information retrieval, the Internet, websites, social networking, data mining, machine learning, learning algorithms, information analysis, natural language processing systems, information management, user interfaces, decision support systems, web searches, and so on. While studies on voice-activated search have advanced, digital marketing still needs further investigation. However, progress is being made in other scientific disciplines. Most marketing studies have

focused on enhancing speech recognition systems for use in personal voice assistants, as this allows for more natural interaction between the user and the system, which in turn provides more transparent and more precise responses to users' online questions (Oklander et al., 2018).

- Most current studies focus on some facet of website development. In-depth descriptions of prominent web technologies and their enhanced variations may be found in the roughly 2,000 articles provided. AI is being used in several stages of the web development lifecycle, including but not limited to online design and development, web applications, web services, mobile-friendly websites, and data representation (Kotane et al., 2019).

A/B testing, affiliate marketing, native advertising, marketing automation, lead scoring, email marketing, and e-mail marketing are all on the rise. Still, they have yet to be subjected to a comprehensive scientific study.

2.6.3 Lack of Research on Artificial Intelligence (AI) in Digital Marketing

Due to the rising need for skilled staff among companies in recent years, academic academics have decided to be engaged by firms rather than remain in universities or research organizations. The widespread use of artificial intelligence (AI) outside of research labs and into consumer products may be directly attributed to the more advanced state of AI research in the commercial sector. The need for appropriate data is another critical obstacle (Kapoor & Kapoor, 2021) in the development of AI. Corporations collect and retain many gigabytes of data daily, more than enough to perform their studies (Zhang et al., 2014). According to eMarketer, even marketing professionals need help to provide a clear definition of artificial intelligence (AI). Data analysis, intelligent systems, user profiling, and keyword searches are often referred to as “artificial intelligence” instead of more technical terminology like “machine learning,” “data mining,” or “predictive modeling.” However, marketing knowledge is generally lacking among IT professionals and Undergraduates (Kingsnorth, 2022).

2.7 THE ADVANTAGES OF ARTIFICIAL INTELLIGENCE IN DIGITAL MARKETING

There is a good chance that the following AI-driven developments will significantly benefit those working in digital marketing and other forms of communication:

Professionals in the fields of advertising and management constitute the bulk of the organization's clientele. Because of time constraints, marketing teams today often lack the resources to build personalized lists of influencers and craft unique messages for each one. Artificial intelligence (AI) has the potential to assess influencers' messaging, competitors' responses to influencers during product launch campaigns, and influencers' categorizations based on response and impact rates (Wirth, 2018) to determine the efficacy of influencer marketing.

Creating high-quality results Information gleaned from consumer searches, purchases, and interests has the most potential to be used by artificial intelligence (AI) to alter the content industry (Ghosh et al., 2009). Another way that AI is improving the user experience is via chatbots, which may be programmed to simulate human dialogue with consumers in response to their input. Another kind of AI, augmented reality, might help consumers make more informed purchasing decisions. Customers have a deeper insight into the decision-making process as a consequence. The product before they buy it boosts customer responsiveness and, in turn, the company's bottom line (Granata & Palumbo, 2022).

Behaviors might be interpreted as indicators of how people feel about a business. Listen carefully to what the consumers are saying. Sentiment analysis is integral to social media monitoring systems because it helps companies learn how consumers feel about their products and services (Boddu et al., 2022).

Results Analysis of the Campaign Using optimal algorithms, artificial intelligence may boost investment returns and make online purchases more secure. With the help of machine learning, an AI tool may collect a wealth of information about the choices and behaviors of its users.

Organizations may save time and resources using artificial intelligence (Huang & Rust, 2018) to foresee market movements and adjust digital marketing tactics appropriately (Wirtz et al., 2018). This is especially useful when firms are forced to make frequent changes during market volatility.

Better advertising Branding can only be accomplished with advertising. Advertiser-produced ads sometimes have little relation to the products or services being marketed. Commercials may now be tailored to the people most inclined to click on them, as AI learns from its users and can predict their future movements. User preferences will be used to choose which advertisements to display (Huang & Rust, 2020).

Reduced time. The majority of an average day in marketing field is spent in meetings, writing press releases, analyzing data, and keeping track of vital customer information (Dekimpe, 2020). Errors caused by humans can't be avoided in a task of this magnitude. More than half of a marketer's time is spent on data auditing, which can be automated with artificial intelligence (AI) to free up more time for creative problem-solving and developing novel client strategies.

Strive for a satisfied medium between scientific accuracy and artistic license. Marketers will need expert data analysis skills to understand their target demographics' consumption and lifestyle habits properly. A company's marketing activities are only practical with data (Bauer & Jannach, 2018). For a long time, marketers have benefited by fusing facts with imagination (Misra et al., 2019). As a result, they can better foresee trends, find new customers, create fun and engaging content, and avoid accidentally handling sensitive information.

2.8 SUMMARY

One of technology's most significant advantages has always been the development of new communication channels between businesses and their clients. One of the most intriguing recent advancements in computing is the development of artificial intelligence (AI). It's time for artificial intelligence (AI) to transform B2B sales, marketing, and how consumers engage with brands, products, and services. Artificial intelligence (AI) developments will alter the future of business-to-business (B2B) marketing. Understanding customers' intricacies will no longer be handled manually or by human power alone, which is a problem for specific significant organizations, even though the impact of AI-enabled robots in many service sectors has yet to be completely recognized. This year was a turning point for artificial intelligence because of the effect of related technologies, including big data, the Internet of Things, and machine learning. However, they serve as the framework for realizing AI's full potential in the future (Yin et al., 2019). Artificial intelligence (AI) will influence the future, particularly in 2018. As Organisations work to establish their brand as a household

name, artificial intelligence is constantly creating new ways to help organizations gather data from individuals and groups. Investing in artificial intelligence is a secure, long-term financial move (Taiminen et al., 2015).

The use of AI in online advertising is becoming more feasible as processing power rises. Today, AI is being employed in operational markets for tasks including risk analysis, consumer research, and the identification of business operations to coordinate with target customers (Kumar et al., 2019). Consequences on marketing approaches, business models, marketing procedures, and customer service choices due to shifts in consumer behavior brought on by AI's incorporation into digital marketing are far-reaching (Abedini et al., 2017). Creating a more robust and dynamic digital marketing environment is the primary goal of AI in digital marketing, not to replace human dynamics in making crucial decisions. Businesses can swiftly assess customers' preferences and adapt methods to enhance sales using AI in digital marketing (Guo et al., 2018). Artificial intelligence (AI) is widely predicted to become increasingly important in the marketing and promoting of digital products shortly. Smith (2018) estimates that spending on AI by shops will reach \$7.3 billion by 2022 from the \$2 billion invested in 2018.

Online merchants are gaining insight into how to affect client behavior with AI-operated chatbots, big data, and individual customer information. According to past studies, AI will be the most effective digital marketing tool. In general, shops put a less monetary value on each consumer than the international market does. This is why companies will stress the importance of personalized content, dedication, and superior digital marketing tools (Dzyabura & Hauser, 2019). Kiron and Schrage (2019) point out that consumers and businesses can co-innovate through technology if they share a digital platform to collaborate. Researchers examining the use of AI in commercial and promotional content creation are concentrating on how the technology is used to create novel action plans. "Virtual consumer engagement" is described by Garbuio and Lin (2019) as "consumer behavior symptoms occurring while the business or brand is the primary focus of the consumer's attention." Automation of formerly manual tasks and creating data products that can be used to train AI is two examples of how artificial intelligence (AI) has impacted digital marketing. Therefore, it is essential to integrate AI with other digital marketing technologies, maintain a reliable data infrastructure, and communicate the organization's findings and suggestions to the appropriate departments (Antons & Breidbach, 2018).

To overcome consumers' skepticism and give them actionable insights, digital marketers must master the art of data analysis and quantification (Dekimpe, 2020). Businesses that want to affect consumer behavior should seriously consider how they may leverage big data and AI to earn the trust of those customers. The good news is that artificial intelligence tools now enable service providers to handle client data in real-time, automate interactions with customers, and deliver individualized experiences (Simester et al., 2020). Amid a crisis, artificial intelligence (AI) is quickly becoming an indispensable marketing tool (Huang & Rust, 2017). Data collected by customer relationship managers regarding consumer behavior and preferences have influenced the strategy and planning of artificial intelligence (AI) (Sha & Rajeswari, 2019). The digitization of information, as noted in a review by Merendino et al. (2018), affects board decisions. According to Kim et al. (2019), even moderate AI implementation can be hampered by AI's reliance on data quality and quantity and a lack of AI competencies. Increased productivity may be possible when AI is used to augment human transcribers in business and marketing (Taiminen et al., 2015).

Chatbots are AI-powered software programs that replicate human dialogue with customers to simplify interactions and improve the user experience on digital marketing platforms (Sujata et al., 2019). Although they cannot actively seek help building connections, they may be able to provide an accurate and meticulous assessment of changes in the region (Seranmadevi and Kumar, 2019). Values and openness to learning new things are two of the most influential variables in shaping one's actions (Chatterjee et al., 2019). Chatbot developers are increasingly preoccupied with human factors, social intelligence, the presence of society, trust, knowledge, and usability as they work to achieve societal goals (Nguyen and Sidorova, 2018). Haenlein and Kaplan's (2019) study finds that chatbots can learn users' preferences and adjust their responses based on their personality types. More and more businesses are adopting AI-powered solutions to better assist digital marketing purchasers in narrowing down their options to those most likely to meet their unique requirements (Gacanin and Wagner, 2019). There is a lot of undiscovered territory regarding using AI to influence customer choices. This study addresses this knowledge gap by completing a comprehensive literature review (Jayawardhena et al., 2009).

3 METHODOLOGY

3.1 INTRODUCTION

Some research methods have advantages that make them more suited to particular study objectives, data collection, and other conditions. The research adopted a hybrid approach, where primary and secondary data were analyzed.

The components of the study's methodological framework are as follows:

- Purpose of the study
- Research design
- Method of data collection
- Sampling technique and population
- Method of data analysis

3.2 PURPOSE OF THE RESEARCH

This thesis aims to determine if artificial intelligence (AI) can help boost user engagement and lead generation in digital marketing. This study aims to fill in some gaps in the knowledge of AI approaches and algorithms used in digital marketing by evaluating the relevant literature, case studies, and industry reports. This study aimed to help modern marketers optimize their plans and improve their overall marketing efficacy in the digital age by examining the benefits, downsides, and repercussions of introducing AI into marketing activities. This dissertation delves into uncharted terrain, focusing on the relationship between AI and digital marketing. The primary goal of this study is to identify viable uses of AI that may increase engagement and income in virtual communities. Numerous surveys of the market, as well as extensive case studies and literature reviews, were performed. This study aims to get an in-depth familiarity with the various AI technologies and algorithms now used in digital advertising campaigns.

This thesis aims to provide marketers with a framework for using AI in their digital marketing efforts. This research intends to help marketers embrace and use AI in their strategies by combining findings from a literature review, case studies, and industry reports. This thesis aims to elucidate how AI-driven digital marketing strategies might be applied in the contemporary corporate world, adding to the existing body of knowledge and aiding in

creating such systems. This research aims to conduct a bibliometric analysis of existing literature on the issue of AI in digital marketing. The results of the studies guided the rest of the thesis, including the literature review, discussion, and recommendations, enriching the reader's comprehension of the topic and presenting novel ideas for making efficient use of AI in digital advertising.

3.3 RESEARCH DESIGN

This study used bibliometric analysis to analyze how artificial intelligence has altered internet advertising. Bibliometric is a quantitative research strategy that looks for trends and relationships in the bibliographic data of a specific field. The research assessed the subject's state and identified critical researchers, publications, and discoveries by applying this methodology to the literature on artificial intelligence in digital marketing. Scopus and Web of Science were two of the respected databases used. Articles from academic journals across several fields are collected in these databases. The terms “artificial intelligence,” “machine learning,” “digital marketing,” “online advertising,” and others are used. Predetermined phrases were used to conduct a systematic search of the databases. To get up-to-date and relevant results, the search was limited to scholarly articles and conference papers published within a specific time frame (for example, within the last 25 years).

The titles and abstracts of the compiled articles were used for the first round of screening. Relevant articles were considered, while irrelevant ones were ignored. Data, including authors, publication dates, journals, and citations, were collected from the selected papers. The research analysis was built on co-authorship networks to help locate influential people in the AI and digital marketing communities. To better understand the range of publication venues in terms of research output and impact, the research looked at journals that regularly publish high-quality research in this area. By examining citation trends, the investigation determined which papers and authors were most frequently referenced. The study discovered patterns and trends in writing by counting the number of times particular combinations of words appeared together.

3.4 STAGES OF DATA COLLECTION

Literature review procedures were based on the work of Rowley and Slack (2004). The following are the five stages of the literature review process. Using systematic review

techniques, recurrent questions and potential study avenues were uncovered. The following methods for information gathering have been developed:

3.4.1 Bibliometric Databases Selection

Scopus and Google Scholar, two bibliometric databases, are the most trustworthy (WoS). Fahimnia et al. (2015) searched for relevant articles in Scopus and Google Scholar. Yong-Hak (2013) states that Scopus covers more than 20,000 scholarly journals. Scopus was the primary research tool due to its breadth of coverage. Scopus supplied advanced data management tools like search filters and grids for examining the information it gathered.

3.4.2 Keywords Defining

Keywords like “marketing” and “artificial intelligence” quickly surfaced. Researchers use Boolean operators to get all the articles in a database. Combinations of “OR” with other artificial intelligence-related concepts like machine learning, deep learning, natural language processing, etc. The Boolean “AND” operator is used to discover articles discussing marketing and AI (Fahimnia et al., 2015).

3.4.3 Enhancing the Preliminary Findings

Several filters may be used to fine-tune the search results. During the delimitation phase, we defined inclusion and exclusion criteria that narrowed the pool of accessible literature to just those studies that met our research objectives. Because of their reputation as authoritative resources, journal articles are accorded greater weight than other types of literature (Ramos- Rodriguez & Ruiz-Navarro, 2004). The searches should have included research presented at conferences, book chapters, comments, errata, and the like.

3.5 PLAN OF DATA ANALYSIS

With the help of R-software, we ranked the topic's most prominent authors and publications based on an analysis of bibliometric data. Individual researchers' content and performance investigations provided the theoretical basis for this research. Antons and Breidbach (2018) used Scopus data to perform their inter-rater validity tests. Two basic categories may be used to categorize bibliometric techniques: performance analysis and scientific mapping. In contrast to performance analysis, which emphasizes the specific responsibilities of research components, scientific mapping illustrates the linkages between those components.

3.5.1 Performance Analysis

Analyzing the outcomes of an effort is what “performance analysis” refers to, according to Ramos-Rodrgue and Ruz-Navarro (2004). According to Donthu et al. (2020), descriptive analysis is a common component in bibliometric research. It is common practice to use performance analysis to highlight the influence of different research components (such as authors, institutions, nations, and journals) in the field. Thus, even assessments that don't participate in scientific mapping occasionally use it. This is similar to how researchers in empirical studies characterize their individual's backgrounds and personalities. Performance is evaluated using a variety of indicators. The former measures productivity, whereas the latter measures influence and importance via citation counts. Other metrics that consider articles and references include the h-index and the average number of citations per article.

3.5.2 Science Mapping

Relationships between topics are what scientists want to unearth by mapping (Baker et al., 2021). The parts of the research are broken down into their mental linkages and interactions. Citation analysis, co-citation analysis, bibliographic coupling, co-word analysis, and co-authorship analysis are all examples of scientific mapping methods used in the present study (Tunger & Eulerich, 2018).

3.5.3 Citation Analysis

In their article “Citation Analysis: An Essential Tool for Scientific Mapping,” Appio, Cesaroni, and Di Minin (2014) argue that citation analysis is crucial for scientific mapping because citations reveal the conceptual connections between publications by mentioning one another. According to the present study, a publication's prominence in this system is measured by how often it is cited. Using this method, we may identify the foundational texts of a particular discipline. Despite the usefulness of other measures (such as network metrics), the citation count of a publication is the most transparent and objective indicator of its effect in a research area (Stremersch et al., 2007). The study might get a feel for the thought processes at work in digital marketing by analyzing the most frequently cited articles across many studies.

3.5.4 Co-Citation Analysis

Scientific mapping using co-citation analysis is based on the assumption that highly cited publications have similar topics (Hjrland, 2013). As Liu et al. (2015) stated, the study reveals the topic's underlying ideas and intellectual structure. When three or more

publications share the same citation information, it can be observed that they are co-cited. Academics in the business world benefit from co-citation analysis since it reveals the most influential and related works. Here, the books cited as sources are used to build thematic clusters. Co-citation analysis, on the other hand, only considers highly cited works. Hence, it does not view recent or niche results when forming its thematic collections. This is why co-citation analysis has been applied in the research to gain the foundations of AI in digital marketing.

3.5.5 Bibliographic Coupling

Bibliographic coupling is a technique for scientific mapping proposed by Weinberg (1974), who states that it is based on the assumption that two articles that exchange references are also substantively connected. The research is most useful when applied to a specific time frame and focuses on grouping related articles by shared citations. In this case, bibliographic coupling (as opposed to co-citation analysis) is used to construct subject clusters based on cited publications, allowing for the discovery of novel, niche works. Therefore, with an aim to up with developments in a wide variety of fields, this research has applied bibliographic coupling as this research has the potential to provide a glimpse of the current situation of the sector.

3.5.6 Co-Word Analysis

While the previous three scientific mapping methodologies focused on publications, co-word research uses words as its basic unit of study. The co-word study looks at the magazine's content rather than its references or citations, as do citation analysis, co-citation analysis, and bibliographic coupling. However, titles, abstracts, and complete texts may also be mined for applicable phrases (Baker et al., 2020) and are not limited to the authors' specified keywords for co-word research. Like co-citation analysis, co-word analysis presupposes that frequently occurring words are connected somehow. But there are problems with utilizing words as the primary analytical unit. To completely understand the meaning of the relationships between phrases, it is necessary to (re-)read publications since some words are used in various contexts. Some words, however, are difficult to categorize because of how general they are (such as subject area names like “advertising”).

Business scholars should use co-word analysis strategically to mitigate its potential drawbacks. Two recommendations are provided below. In the first place, the co-word analysis may help business academics make sense of the topic clusters revealed by co-citation analysis

and bibliographic coupling. For one thing, themes that emerge from similarities in published works are often rather broad in scope (Chang et al., 2015). Second, a co-word analysis might aid in predicting future research in the field by providing an interpretation of the publication's implications and potential future lines of study as “words.” The co-citation research and bibliographic coupling results have been understood and predicted by applying co-word analysis in this inquiry. Therefore, the study of co-words may help predict future developments in the field of education. Furthermore, a co-word analysis may help forecast future research by assessing the publication's implications and prospective future fields of study as “words.” Co-word analysis was used to interpret and predict findings from studies on co-citations and bibliographic coupling. Therefore, the study of co-words may aid in forecasting changes in the educational system.

3.5.7 Co-Authorship Analysis

This study employs a co-authorship analysis to understand the dynamic between authors further. Co-authorship is a recognized type of scholarly cooperation (Cisneros et al., 2018). Thus, it's essential to identify the characteristics shared by authors (such as their affiliations with other academic institutions and nations). As research strategies and theoretical frameworks get more intricate, scholarly collaborations are becoming more common (Acedo et al., 2006). When two or more academics work together, the resulting body of knowledge is likely more substantial than the sum of its parts (Tahamtan et al., 2016). Here, academics work together to create a system nicknamed “invisible collages,” the study of which might further research efforts. Researchers from underrepresented groups might use the study's findings, such as the discovery of regional research clusters, to justify and inform their research projects in the future. Future researchers will be able to find and work with leading academics in their field thanks to the analysis's ability to map collaborations over time.

3.6 METHODS FOR IDENTIFYING RESEARCH NEEDS AND POTENTIAL NEW RESEARCH DIRECTIONS

This literature review aims to better understand the evolution of AI marketing theory, the changes in research methodology, and the emerging study topics. Thematic coding is used to analyze data qualitatively. Qualitative research uses thematic coding to capture or identify sections of text or pictures related to a theme. Thus, the data may be classified to build the theme structure (Gibbs, 2007). We could pinpoint areas of weakness and suggest new lines of

inquiry by analyzing all of the published research on each topic. This allows the voids in knowledge to be translated into researchable questions.

3.7 DATA INTERPRETATION

Network diagrams, charts, and other visual representations of the collected data helped make the interconnections and patterns in the literature more evident. The bibliometric study's findings were analyzed, summarized, and discussed in the context of the study's overarching goals and questions. This study helped shed light on the existing landscape, expected development, and research gaps in applying AI to digital marketing.

3.8 LIMITATIONS AND ETHICAL CONSIDERATIONS

3.8.1 Research Limitations

- Limitations in data availability and the potential for biased data selection are just two of the challenges of conducting a bibliometric analysis. This could introduce a selection bias and produce fewer total results.
- If the data collection period is limited, researchers can avoid missing more current papers that could provide valuable new insights. The period should be extensive enough to cover all relevant ground yet short enough to seem up-to-date.
- Research-based on literature from just one language (in this case, English) may not apply to other contexts. This may lead to neglecting studies that are equally valid but published in languages other than English.
- Bibliographic studies need to evaluate the quality or rigor of the included papers. The number of times a body of work has been referenced is one measure of its significance, but it in no way ensures the thoroughness of the investigation or the integrity of the conclusions drawn from that work.
- The difficulty is inadequate metadata, which might make it harder to gather and understand bibliographical data. Problems in analyzing and comprehending the study setting may result from missing information, such as author affiliations or keywords.

3.8.2 Ethical Considerations

- Bibliographic information is protected by law, including the research data and scholarly articles it relies on. There can be no plagiarism or plagiarizing, and the original authors must be credited.

- Author anonymity and privacy should be considered when studying authorship networks and ranking the most prolific authors. Data anonymization methods can shield authors' names without sacrificing data quality.
- When doing a bibliographic study, it is essential to credit all the sources that were consulted appropriately. To avoid allegations of plagiarism, researchers should be careful while citing their sources.
- It is essential to be aware of the possibilities of biases in the data and research while pondering concerns of representation and prejudice. The underrepresentation of some populations in the study literature may bias the results. Scientists must work toward a non-exclusive technique and consider the possibility of bias in their data and methods.
- Maintaining confidence in the scientific community requires open documentation of study design, data collection, and analysis. This opens the door for researchers to share their findings openly and facilitates the replication of their work.

The bibliometric study's attention to these caveats and ethical considerations enhanced the scholarly output on AI in digital marketing. Researchers need to be alert to these limitations and ethical issues so that their investigations are both thorough and morally sound.

4 DATA ANALYSIS

4.1 INTRODUCTION

In the comprehensive bibliometric analysis undertaken by the author, an extensive array of keywords about “Digital Marketing” was meticulously selected from scholarly articles and authoritative sources. The research encompassed a title search for “Digital Marketing,” incorporating a broad spectrum of terms such as “Digital Marketing,” “Electronic Commerce Marketing,” “e-commerce Marketing,” “Search Engine Marketing,” “Influencer Marketing,” “Content Marketing,” “Content Automation,” “Data-Driven Marketing,” “Campaign Marketing,” “E-Mail Direct Marketing,” “Social Media Optimization,” “Display Ads,” and “Mobile Marketing.” This strategic selection and arrangement of terms, inspired by the methodology of Aghaei Chadegani et al. (2013), ensured a comprehensive coverage of the digital marketing domain. The author delved into SCOPUS and Web of Science (WoS) databases, extracting 1,118 documents published from 2013 to 2023. This decade-long period provided a rich dataset for analysis, reflecting the evolution, trends, and shifts in digital marketing research. A thorough bibliometric analysis of the documents was done using tools like R-Tool and Bibliometric for quantitative analysis and VoSviewer for data visualization and thematic exploration. In their quest to unravel the collaborative networks and intellectual contributions in digital marketing, the author analyzed the works of 2,987 author. This analysis highlighted the interconnectedness of researchers in the field, showcasing the diverse range of expertise and perspectives brought to the digital marketing discourse.

Through the integration of keyword analysis, the study explored 21,784 terms, revealing the multifaceted nature of digital marketing research. A total of 7,082 sources, including journals, books, and other publications, were examined, providing a panoramic view of the scholarly landscape in digital marketing. The co-cited author’ analysis further enriched the study, bringing to light the works of 69,835 author and their contributions to the field. The comprehensive dataset encompassed 30,043 references and 1,118 documents and spanned 183 countries, underscoring digital marketing research’s global impact and relevance. By synergizing quantitative bibliometric analysis with qualitative insights, the study offered a nuanced and in-depth understanding of digital marketing research themes, trends, and trajectories. This bibliometric study presented an intricate tapestry of digital

marketing research, weaving together a decade of scholarly work, a plethora of keywords, and a global community of author. The author have meticulously curated and analyzed a rich dataset, shedding light on digital marketing research's collaborative nature, thematic diversity, and global reach. The study contributes a comprehensive and insightful narrative to the digital marketing scholarly discourse through this balanced approach.

4.2 RESULTS AND DISCUSSION

In this comprehensive bibliometric analysis, the researchers delved into a decade's worth of data, scrutinizing 1118 documents related to Digital Marketing. These documents, published between 2013 and 2023, were meticulously analyzed using VoSviewer and the Bibliometrix package to provide a rich, qualitative and quantitative field examination.

Items	Results
Documents	11018
Sources (journals, books, etc.)	546
Keywords Index	2,652
Period	2013-2023
Author's Keywords	1,909
Average citations per document	9.925
Author of single-authored documents	208
Author Appearances	2,397
Single authored documents	249
Co-Authors per documents	2.59
Author of multi-authored documents	1,701
Collaboration Index	2.52
Authors	2,987

4.2.1 Annual Scientific Production

This bibliometric analysis, executed using Biblioshiny, offers a detailed examination of the scholarly output in Digital Marketing from 2013 to 2023. Throughout this decade, researchers have contributed 1,118 documents, revealing a consistent engagement with the topic, averaging about 102 publications per year. Such a steady publication rate underscores the growing importance and continued relevance of Digital Marketing as a field of academic inquiry. The research draws on a rich tapestry of sources, with 546 different journals, books, and other academic materials as the foundation for these publications. This indicates a wide-ranging interest that spans various disciplines and knowledge domains, which is crucial for the evolving nature of Digital Marketing. The use of Biblioshiny for this analysis has allowed for the indexing of 2,652 keywords, demonstrating the comprehensive and multifaceted approach researchers are taking in this area. The depth and breadth of topics, from “Search Engine Marketing” to “Social Media Analytics,” reflect the dynamic nature of Digital Marketing, capturing its complexities and rapid development.

The collaboration among authors is also noteworthy, with 2,987 authors contributing to the work. This high level of collaboration, as indicated by the co-authorship data, is emblematic of the field's collective effort to advance research in Digital Marketing. The collaboration index stands at 2.52, which suggests that authors frequently work together to produce multi-authored documents. Regarding impact, the average number of citations per document is 9.925, calculated from 11,100 citations across all documents. This metric illustrates the significant influence these publications have within the academic community, with each paper garnering considerable attention from peers. Biblioshiny has played an integral role in this bibliometric analysis, facilitating a user-friendly and robust examination of the data. The insights this analysis provides through Biblioshiny demonstrate the vitality and scholarly contribution of Digital Marketing research over the last decade.

4.2.2 Keyword Analysis

Enhancing Customer Experiences with AI

The keywords 'machine learning' (146 occurrences) and 'user' (134 occurrences) reveal a significant research interest in improving customer experiences within digital marketing through AI. The intersection of these terms underscores a focus on leveraging

technology to create personalized and engaging user interactions. The relevance of 'digital marketing' (94 occurrences) and 'content' (92 occurrences) as central themes points to the use of AI in crafting marketing strategies that resonate with individual preferences and behaviour patterns. This approach is paramount in enhancing customer engagement, as indicated by the relevance scores, particularly for 'machine learning' (0.5545), signifying its importance in developing personalized user experiences.

Development of Marketing Approaches

The occurrence of keywords such as 'change' (87) and 'big data' (86) suggests that AI technologies are pivotal in shaping new marketing strategies. These terms indicate a paradigm shift toward data-driven methodologies and predictive analytics in marketing. 'Experiment' (60 occurrences) and 'mechanism' (50 occurrences) indicate a burgeoning interest in empirical research on the application of AI in marketing. The relevance score for 'neural network' (1.646) is a testament to the growing curiosity about sophisticated AI technologies in developing marketing approaches that are both innovative and effective.

Addressing Privacy and Ethical Concerns

Keywords such as 'user' (134 occurrences) appear again, this time in the context of privacy and ethics, suggesting that these are crucial considerations in the research. The pairing of 'user' with terms like 'information' and 'brand' highlights a concern about how user data is handled in AI-driven marketing initiatives. 'Economy' (47 occurrences) may reflect discussions on the economic implications of privacy and data protection in digital marketing. The relevance of these terms demonstrates the academic community's acknowledgement of the need to balance innovation with ethical responsibilities.

Impact on Business Results

Terms like 'performance' (117) and 'brand' (57 occurrences) focus on the tangible outcomes of AI integration in marketing practices. Keywords like 'neural network' (60 occurrences) and 'deep learning' (43 occurrences) indicate the potential of advanced AI techniques in driving business performance metrics such as sales, customer retention, and ROI. This correlation is crucial for justifying AI investments in the marketing sector and for understanding the direct impact of AI on business success.

Providing Practical Recommendations

dynamic, incorporating 'consumer,' 'brand,' 'social medium,' and 'sentiment,' underscoring the scholarly interest in understanding and analyzing consumer behaviours, brand perceptions, and emotional responses within the digital sphere. The green cluster, on the other hand, zeroes in on the practical application and efficacy of AI tools, spotlighting terms such as 'digital marketing,' 'performance,' 'user,' and 'machine learning.' This indicates a concentration on empirical investigations into how AI and machine learning technologies are being leveraged to optimize marketing strategies and enhance user engagement. The intricate web of lines connecting these clusters emphasizes the interdisciplinary nature of modern digital marketing research, where the convergence of technology, consumer engagement, and performance assessment are integral to comprehending and harnessing the power of AI in this rapidly evolving field.

4.3 NAVIGATING THE ACADEMIC TERRAIN: A CO-CITED JOURNAL ANALYSIS IN AI AND DIGITAL MARKETING

In the intricate field of Artificial Intelligence (AI) in Digital Marketing, a refined bibliometric analysis using VOSviewer has revealed a complex web of academic contributions. Out of an extensive dataset of 7,064 sources, a focused subset of 272 sources emerged, each cited at least 20 times. These influential journals were then grouped into five distinct clusters, each signifying a different thematic focus within the broader interplay of AI and marketing.

Cluster 1, the most extensive cluster in red, encompasses 109 sources. It includes heavyweight journals like the “Journal of Business Research” with 1,020 citations and a total link strength of 65,665, underlining its central influence in shaping marketing scholarship. This cluster highlights the impact of business research on AI and digital marketing's theoretical and empirical foundations. Cluster 2, marked in green with 71 items, and Cluster 3 in blue with 64 items, include respected journals such as “Journal of Marketing” and “Journal of the Academy of Marketing Science,” each with citations of just over 1,000 and total link strengths surpassing 50,000. These clusters represent the convergence of marketing theory and practice and the role of AI in enhancing consumer understanding and engagement. The smaller clusters, Cluster 4 in light green and Cluster 5 in purple, with 18 and 10 sources, perhaps focus on more niche but rapidly developing areas of digital marketing research, such as computational approaches and innovative consumer behaviour analysis.

The analysis further identifies core journals that serve as central nodes in the research network. “Journal of Marketing Research” and “Industrial Marketing Management” command significant citations and link strength, indicating their critical role in bridging various research themes. Meanwhile, “Computers in Human Behavior” and “Journal of Consumer Research” reflect the multidisciplinary nature of the field, intersecting human elements with technological systems. Less cited journals like “Lecture Notes in Computer Science” and “Expert Systems with Applications” might have lower citation counts. However, their strong link strengths suggest they are essential in connecting diverse research streams, indicating the interdisciplinary dialogue between technical AI advancements and their applications in marketing. The present co-citation analysis, leveraged by the capabilities of VOSviewer, has provided a structured overview of the academic landscape, unravelling the critical contributions and thematic clusters that constitute AI in Digital Marketing. It is a beacon for researchers and industry professionals, guiding their navigation through the rich and diverse research terrain that shapes current and future marketing strategies.

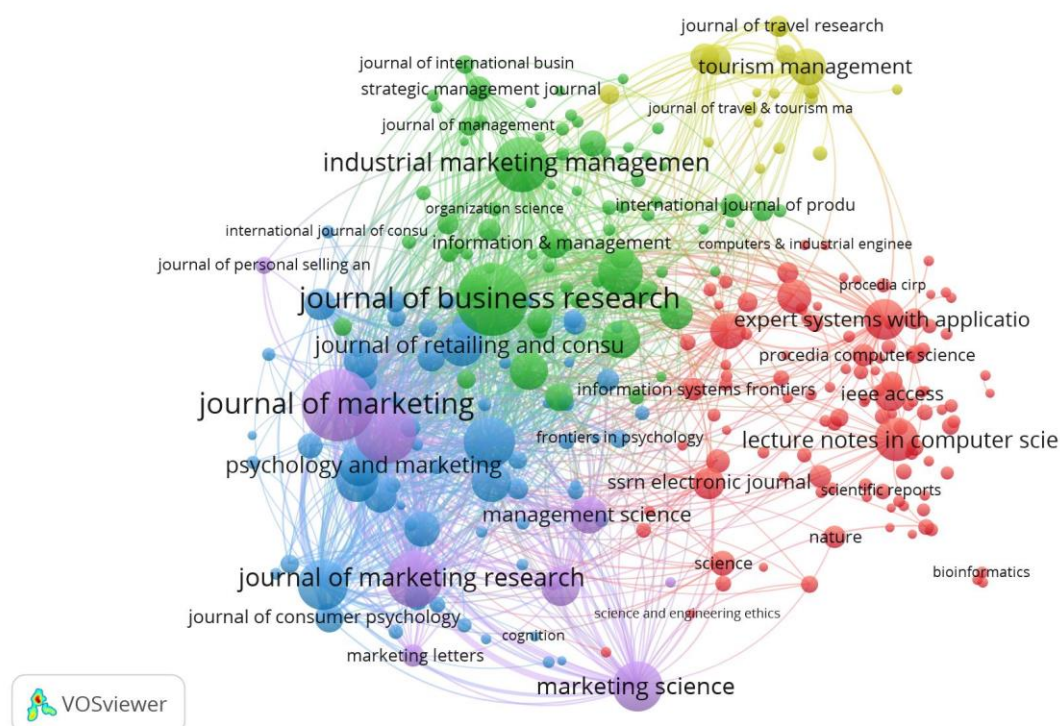


Figure 2: Co-Cited Journal Analysis

The VOSviewer network graph presents a visual interpretation of the bibliometric data, illustrating the co-citation relationships among various academic journals within the

field of AI and Digital Marketing. Each node represents a journal, with the size indicating the number of citations it has received, which correlates with the journal's influence in the field. The lines between the nodes signify co-citation links, with thicker lines suggesting stronger relationships. In this network, the node for “Journal of Business Research” appears to be the largest within the red cluster, indicative of its high citation count of 1,020, revealing its dominant position and its significance as a hub for research within this academic terrain. Adjacent to it, we observe another prominent node within the red cluster, which, due to the truncation of the graph, has an obscured name; however, this node's prominence suggests it also holds considerable weight in terms of citations and influence. The overall spread and clustering of the nodes highlight the interdisciplinary nature of the field, with journals focusing on various aspects such as consumer behaviour, strategic management, tourism, and information systems, all contributing to the multifaceted discourse of AI in Digital Marketing. The specific number of studies done in each journal is not displayed on the graph; however, one can infer that journals with larger nodes have more research associated with them. The clustering and connection patterns also indicate the existence of subdomains within the field, where specific journals frequently cited together form a distinct research area or thematic focus within the broader academic landscape.

4.4 INFLUENTIAL SCHOLARS IN AI AND DIGITAL MARKETING: A BIBLIOMETRIC ANALYSIS OF THE MOST CITED AUTHORS AND THEIR RESEARCH IMPACT

<i>Author</i>	<i>Documents</i>	<i>Citations</i>
Dwivedi Yogesh k.	6	763
Wang, Yichuan	3	689
Rust Roland t.	3	491
Weaven, Scott	4	354
Oghazi Pejvak	3	294
Popkova, Elena g.	3	293

Wirtz, Jochen	3	257
Kietzmann, Jan	5	234
Salminen, Joni	3	208
Ferraro, Carla	3	206

The analysis of the most influential authors within the intersection of AI and Digital Marketing research presents a landscape dominated by a select group of scholars whose works have garnered significant attention. Dwivedi, Yogesh K. emerges as the most prolific and impactful author, with six documents cited 763 times, illustrating his central role in advancing the discourse in the field. A total link strength of 26, indicating his work's breadth and considerable influence, indicates the high degree of interconnectedness between his research and other academic works.

Wang, Yichuan, while having authored fewer papers (3), has nonetheless achieved a high citation count of 689, reflecting the substantial impact of his research contributions. His work is notable, evidenced by a link strength of 19, signifying its importance and relevance in ongoing academic conversations. Rust, Roland T., with three publications, has an impressive citation count of 491 and a total link strength of 16, marking his research as both highly regarded and integral to the structure of the field. Scott Weaven's research output includes four documents, which have received 354 citations. Despite a lower total link strength of 6, his work is recognized within the academic community and contributes valuable insights to the field.

Oghazi, Pejvak and Popkova, Elena G., each with three publications, have citation counts of 294 and 293, respectively, demonstrating their engagement with and contribution to the academic discourse. However, Oghazi's work has a greater total link strength (6), implying a stronger connection with other research in the field than Popkova's, which shows no link strength, suggesting her influence may be emerging or niche. Wirtz, Jochen, with a citation count of 257 and a total link strength of 7, adds to the diversity of thought leadership in the domain, with his work forming bridges within the scholarly network. Kietzmann, Jan stands out not only for his five documents but also for a high total link strength of 24 despite having 234 citations, which indicates his work is highly referenced amongst other scholarly works, highlighting its integral role in the web of academic knowledge.

Salminen, Joni and Ferraro, Carla, both with three documents, have similar citation counts of 208 and 206, respectively. Their work is well-received, with total link strengths of 6 and 12, which reveals that their research is not only acknowledged but also serves as a connective tissue within the broader literature landscape. This bibliometric analysis reveals a dynamic network of scholarly communication, with the most cited authors playing pivotal roles in disseminating knowledge and connecting various research threads within the vibrant field of AI and Digital Marketing. Their contributions shape the academic terrain, driving innovation and fostering a robust discourse that advances understanding and practice in this rapidly evolving domain.

4.4.1 Mapping the Intellectual Landscape: A Co-cited Author Analysis in Digital Marketing

The Co-cited Author's Analysis conducted using VOSviewer provides an intricate mapping of the relationships and influences among author within the domain of Digital Marketing. This bibliometric analysis, adhering to predefined conditions, was instrumental in sifting through a substantial pool of 69,835 terms, eventually focusing on 217 selected author who met the specified threshold of being cited at least 30 times. The VOSviewer algorithm meticulously categorised these author into five distinct clusters, revealing collaboration patterns and thematic focus. The analysis yielded diverse author, with "Grewal, Dhruv" and "Dwivedi, Yogesh K." leading in citations, possessing 319 and 269 citations, respectively. Their substantial total link strengths of 15235 and 15777 underscore their central roles in the academic network, indicating extensive co-citations and suggesting their works are pivotal in the field. "Rust, Roland T." also emerges as a key influencer, with a significant citation count and a robust link strength, further emphasising the impact of his contributions.

In Digital Marketing, author such as "Huang, Ming-Hui" and "Kar, Arpan Kumar" play crucial roles, with their works being widely recognised and cited, as evidenced by their citation counts and link strengths. "Kumar, V." and "Kietzmann, Jan" are prominent figures, contributing extensively to the academic discourse and showcasing strong interconnectedness within the community. The analysis reveals exciting dynamics among author such as "Wirtz, Jochen", "Haenlein, Michael", and "Rana, Nripendra, each bringing unique perspectives and being integral parts of the academic fabric. Their influence is reflected in their citation counts and link strengths, highlighting their roles in shaping discussions and research in Digital Marketing. The author "Guha, Abhijit", "Kaplan, Andreas", and "Luo, Xueming" also stand

out with 110 co-citations, each contributing to the richness of the field and being extensively co-cited, as indicated by their positions in the network and their total link strengths. Emerging voices in the field, such as “Van Esch, Patrick” and “Paschen, Jeannette”, also find their place in the analysis, adding to the diversity of perspectives and ideas.

The Co-cited Author’ Analysis conducted through VOSviewer has meticulously charted the landscape of influential thinkers within Digital Marketing, bringing to light the 20 author at the forefront of this academic domain. This rigorous analysis, guided by well-defined conditions, has culminated in a tableau of author who have contributed significantly to the field and established extensive networks of influence and collaboration. The author who unequivocally stands out among this esteemed group is “Grewal, Dhruv,” who has amassed an impressive 319 citations, alongside a total link strength of 15,235. These metrics underscore his prolific contributions to Digital Marketing and highlight his work’s extensive reach and impact within the academic community. “Grewal, Dhruv’s” position at the apex of this list indicates his role as a central figure and thought leader in exploring and understanding Digital Marketing practices and principles. His works, characterised by depth and insight, align seamlessly with the research objectives at the outset of this study. In enhancing customer experiences through Artificial Intelligence (AI), “Grewal, Dhruv” has undoubtedly played a pivotal role in shedding light on how dynamic content production, personalised interactions, and recommendation engines can be leveraged to create more engaging and satisfying customer journeys. His contributions extend to developing marketing approaches, offering a nuanced understanding of how AI technologies can transform audience segmentation, content creation, and campaign planning.

In addressing the central themes of privacy and ethical concerns associated with AI in marketing, “Grewal, Dhruv’s” work resonates with the need for a balanced and thoughtful approach, emphasising the importance of ethical frameworks and responsible data usage. His influence is also felt in evaluating business results, as his contributions provide empirical grounding and insightful case studies that underscore the positive impacts of AI adoption on performance metrics such as revenue generation, conversion rates, and return on investment. Finally, in the spirit of providing practical recommendations for businesses navigating the complexities of AI integration, “Grewal, Dhruv’s” work stands as a valuable resource, offering strategic insights and guidance to ensure ethical, effective, and customer-centric digital marketing practices. The Co-cited Author’ Analysis, enriched by the rigorous application of VOSviewer, has successfully illuminated the network of thought leaders in

Digital Marketing, with “Grewal, Dhruv” emerging as a pivotal figure whose work not only aligns with but also significantly advances the research objectives of this study. His contributions, marked by depth, relevance, and impact, continue to shape and inspire the trajectory of Digital Marketing in the age of AI.

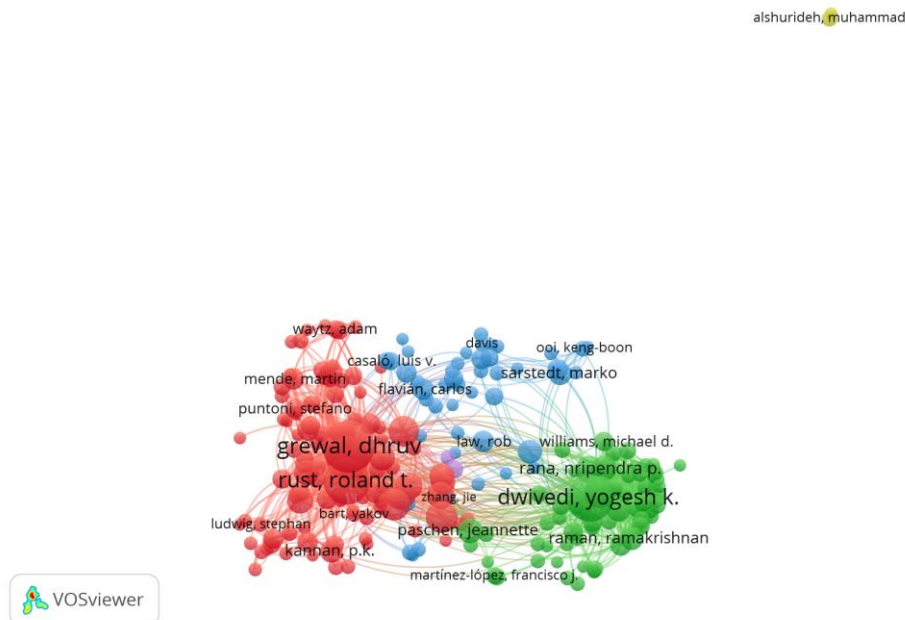


Figure 3:Co-cited Author Analysis

The VOSviewer graph, serving as a visual manifestation of the co-cited author’ analysis, brings to life the intricate web of relationships and influences among the top author in Digital Marketing. In this vibrant graphical representation, each node corresponds to an author, with the node’s size proportional to the citation count and the lines between nodes representing the co-citation links, with their thickness indicating the strength of the connection. At the heart of this academic constellation, “Grewal, Dhruv” stands out prominently, with a node of substantial size, reflecting his top-tier citation count and his central role in the field. The dense network of connections emanating from his node illustrates the extensive influence of his work, highlighting how his ideas and contributions have resonated and intertwined with those of numerous other author in the field. As the eyes traverse the graph, the clusters of nodes become apparent, each representing a thematic grouping or a collaborative community within the broader field of Digital Marketing. The author are not isolated but interconnected, demonstrating the collaborative nature of academic work and the shared trajectories of research and thought. The lines crisscrossing the graph paint a picture of a vibrant, interconnected academic community, with “Grewal, Dhruv” at its

nexus as a critical influencer and contributor. The graph reaffirms the findings of the co-cited author' analysis and provides a visual narrative of the academic dialogue, collaboration, and influence characterising the field of Digital Marketing. Through this graphical interpretation, the VOSviewer graph enhances our understanding of the scholarly landscape, spotlighting key author and revealing the intricate tapestry of relationships that underpin the advancement of knowledge in Digital Marketing.

4.5 EXPLORING INTELLECTUAL FOUNDATIONS: A CO-CITED REFERENCES ANALYSIS IN DIGITAL MARKETING

The Co-cited References Analysis, executed with precision using VOSviewer, navigated through 30,043 terms to distil down to 45 highly cited references, ultimately connecting 41 under specific conditions. This analysis mapped out the citation landscape, organising these pivotal references into four distinct clusters, each reflecting thematic concentrations within the field of Digital Marketing. By adhering to a threshold of 20 citations and employing the robust capabilities of VOSviewer, this analysis has successfully illuminated the central references that form the backbone of academic discourse in Digital Marketing, offering a clear and concise overview of the foundational works and their interconnections in this vibrant field.

The reference that stands out at the pinnacle of this analysis is the work by “Davenport, T. et al. (2019). *Journal of the Academy of Marketing Science*, 48(1), 24-42,” which garnered an impressive 91 citations and a total link strength of 549. This particular work has played a crucial role in shaping the discourse in Digital Marketing, serving as a central node in the network of co-cited references. Following closely is “Verhoef, Peter C.,” with 88 citations and a total link strength of 3595, reflecting the significant impact and widespread recognition of his contributions to the field. “Huang, M.H., et al. (2018). *Journal of Service Research*, 21(2), 155-172” and “Buhalis, Dimitrios” also feature prominently in the analysis, each with 87 citations, further highlighting their integral roles in Digital Marketing research. The works of “Raman, Ramakrishnan” and “Sarstedt, Marko” have also been highly influential, as evidenced by their high citation counts and link strengths, demonstrating their importance in the academic community. “Kannan, P.K.,” “Flavián, Carlos,” and “Law, Rob” are additional key contributors, each bringing unique perspectives and insights to the field, and their works have resonated within the academic community.

works, highlighting the collaborative nature of research. This synthesis forms the basis of academic discourse in Digital Marketing. Through critical analysis, researchers and practitioners can gain valuable insights, drive data-driven advancements and set the foundation for future research in this ever-evolving field.



The VOSviewer graph, serving as a visual counterpart to the Co-cited References Analysis, effectively translates the complex network of academic influences and connections into a comprehensible visual format. Each node in the graph represents a co-cited reference,

with the node's size proportionally reflecting the citation count and the lines between nodes indicating the co-citation links. The largest node, corresponding to “Davenport, T. et al. (2019),” distinctly stands out, visually reinforcing its status as the most cited reference in the network. The density of connections emanating from this node illustrates its widespread influence and centrality in the field of Digital Marketing. The graph further segregates references into four distinct clusters, each represented by a different colour, elucidating the academic community's thematic groupings and collaborative networks. This visual representation not only corroborates the findings from the analysis of the co-cited reference but also provides an intuitive means for researchers and practitioners to navigate and comprehend the intricate web of scholarly communications and influences in Digital Marketing.

4.5.1 Unravelling Scholarly Connections: Bibliometric Coupling-Document Analysis in Digital Marketing

The Bibliometric Coupling-Document Analysis was adeptly carried out using VOSviewer, adhering to a set of specified conditions to ensure a thorough and insightful examination of scholarly documents in the field of Digital Marketing. From a total of 1118 documents, the analysis focused on 201 documents that met the minimum of 20 citations threshold, subsequently connecting 165 of these documents. The results were then categorised into 11 clusters, each representing a thematic grouping or network of related documents. This structured approach, facilitated by the robust capabilities of VOSviewer, has enabled a nuanced exploration of the bibliometric connections between documents, shedding light on the patterns of scholarly communication and influence within Digital Marketing.

At the forefront of this analysis is the document “Jordan (2015),” which has amassed an astounding 4347 citations and a total link strength of 9, positioning it as the most influential document in the network. This document serves as a cornerstone in Digital Marketing research, with its extensive citation count reflecting its pivotal role in shaping discourse and guiding future research in the field. Following “Jordan (2015)” are the works of “Gerke (2020)” and “Chen (2018),” each with substantial citations of 110 and 76, respectively, highlighting their significance and impact on the academic community. “Mikalef, Patrick” and “Puntoni, Stefano” also feature prominently in the analysis, with 65 citations each, further underscoring their contributions to the field. The documents by “Fang, Zheng,” “Longoni, Chiara,” “Akter, Shahriar,” and “Wetzels, Martin” are integral to the

network of scholarly communication in Digital Marketing, each playing a vital role in the dissemination of knowledge and the formation of academic discourse. “Parasuraman, A.” and “Williams, Michael D.” also stand out as key contributors, with their works being frequently cited and forming critical nodes in the network.

The analysis also sheds light on the contributions of “Gursoy, Dogan,” “Paul, Justin,” “Venkatesh, Viswanath,” and “Waytz, Adam,” each of whom has made substantial contributions to Digital Marketing research. “Quach (2022),” “Ilavarasan, P. Vigneswara,” “Rauschnabel, Philipp A.,” “Casaló, Luis V.,” and “Epley, Nicholas” also emerge as significant figures in the field, their documents being highly cited and playing a central role in shaping the academic landscape of Digital Marketing. The Bibliometric Coupling-Document Analysis has successfully illuminated the network of scholarly connections and thematic groupings in Digital Marketing, providing a comprehensive view of the most influential documents and their interrelations. This analysis not only highlights the key contributors and their works but also reveals the intricate web of scholarly communication that underpins the field, offering valuable insights into the central themes and discourses that define Digital Marketing research. Through this thorough analysis, researchers and practitioners can gain a deeper understanding of the foundational works and the interconnected nature of academic knowledge in Digital Marketing.

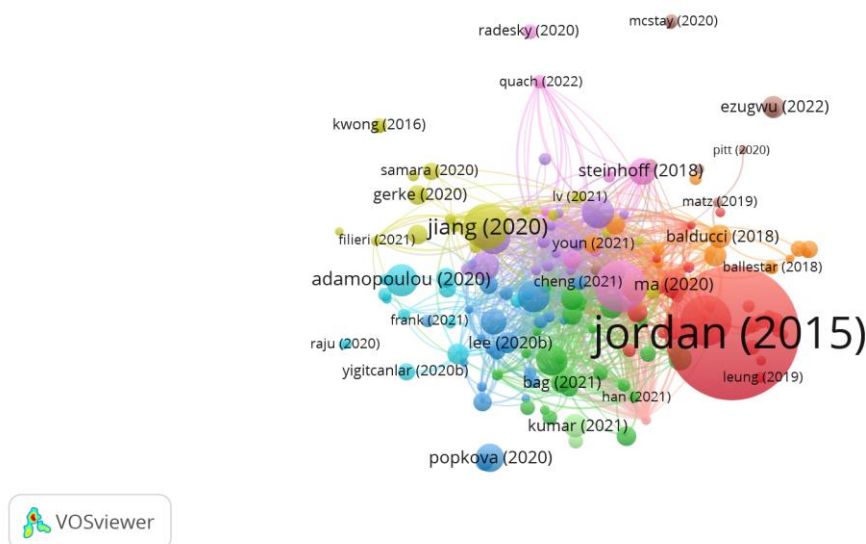


Figure 5: Bibliometric Coupling-Document Analysis

The VOSviewer graph, serving as a visual representation of the Bibliometric Coupling-Document Analysis, provides a clear and concise depiction of the scholarly

connections and thematic landscapes within the field of Digital Marketing. In this graphical interpretation, each node represents a document, with its size proportional to the number of citations it has received, visually emphasising the prominence of the top-cited document “Jordan (2015).” The lines between nodes indicate bibliometric coupling, with thicker lines representing stronger connections, illustrating the intricate web of scholarly relationships and influences. The graph is colour-coded to represent the 11 identified clusters, each showcasing a thematic grouping or network of related documents. This visual representation not only corroborates the findings from the document analysis but also offers an intuitive means for researchers to navigate and comprehend the complex network of academic discourse and collaborations in Digital Marketing. Through this graphical lens, the VOSviewer graph enhances our understanding of the critical documents and their interconnections, providing valuable insights into the field’s foundational works and intellectual structure.

4.5.2 Navigating Academic Territories: Unveiling Key Journals through Bibliometric Coupling-Source Analysis in Digital Marketing

In this intricate exploration of Digital Marketing’s scholarly landscape, the Bibliometric Coupling-Source Analysis was meticulously executed using VOSviewer, adhering to stringent conditions to ensure a thorough and precise examination of academic journals contributing to the field. From an initial pool of 445 journals, 35 distinguished themselves by meeting the criteria of publishing a minimum of five documents and garnering at least five citations each. These selected journals were intricately connected and subsequently categorised into six distinct clusters. Utilising the advanced capabilities of VOSviewer’s bibliometric tools, this analysis charted the scholarly terrain, illuminating the intricate relationships and thematic concentrations pervading various academic journals in Digital Marketing. This endeavour has culminated in invaluable insights, revealing the complex tapestry of interconnected knowledge and thematic diversity characterising the academic discourse in this dynamic field.

The journal “Lecture Notes in Networks and Systems” emerges as a leading contributor with 49 documents and 152 citations, underscoring its substantial impact on the academic discourse in Digital Marketing. Similarly, “Lecture Notes in Computer Science” holds a prominent position with 46 documents and 145 citations, further attesting to its influence and relevance in the field. The journals “Advances in Intelligent Systems and

Computing” and “Contributions to Management Science” also play significant roles, each providing a rich collection of research and insights with a substantial number of documents and citations. “Communications in Computer and Information Science” and “Studies in Computational Intelligence” are additional noteworthy journals contributing a diverse range of research to the Digital Marketing landscape. The “Journal of Business Research” stands out distinctly with an impressive 915 citations across 20 documents, highlighting its central role and pervasive influence in disseminating crucial knowledge in Digital Marketing. Journals such as “Psychology and Marketing” and “Industrial Marketing Management” also command attention with their substantial contributions in citations and published documents, reflecting their integral roles in shaping the field’s academic and practical dimensions.

“Journal of the Academy of Marketing Science” and “European Journal of Marketing” add to the academic richness, each bringing unique perspectives and valuable contributions to the field. Journals like “Sustainability,” “IFIP Advances in Information and Communication Technology,” and “Journal of Physics Conference Series” contribute to the diversity of research, enriching the academic dialogue within Digital Marketing. Furthermore, journals like “Australasian Marketing Journal (AMJ),” “Journal of Research in Interactive Marketing,” and “Springer Proceedings in Business and Economics” play crucial roles in disseminating research and fostering scholarly discussions. “Technological Forecasting and Social Change” and “Information Systems Frontiers” complete the list of top journals, highlighting the interdisciplinary nature and collaborative efforts prevalent in Digital Marketing research. The Bibliometric Coupling-Source Analysis has successfully highlighted the influential academic journals that form the foundational pillars of research in Digital Marketing. This comprehensive overview not only identifies the significant journals contributing to the field but also reveals the thematic clusters and collaborative networks that define the scholarly community in Digital Marketing, providing invaluable insights for academics and practitioners navigating this dynamic field.

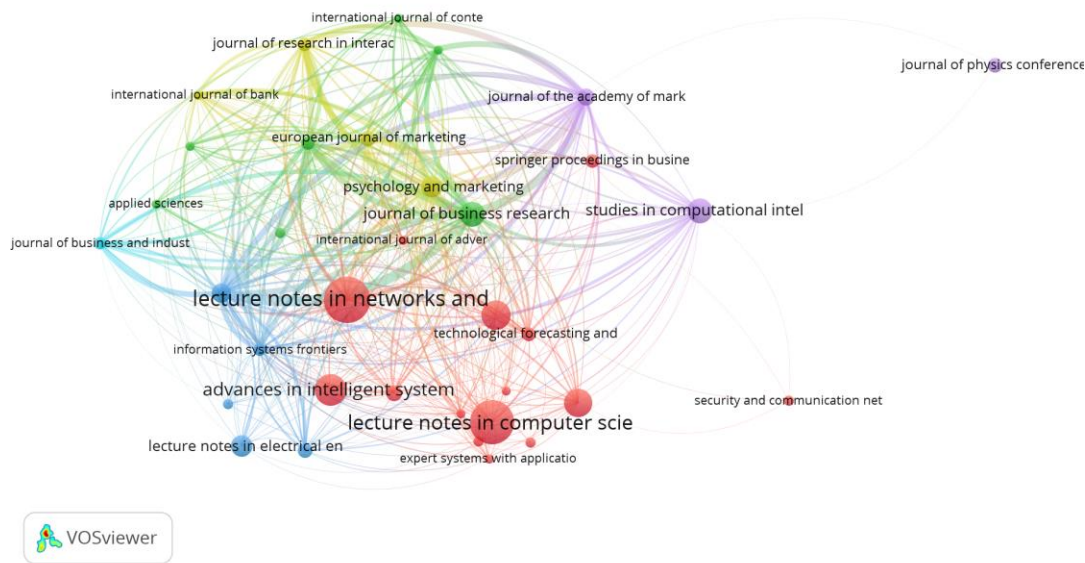


Figure 6: Key Journals Bibliometric Coupling-Source Analysis

The VOSviewer graph, serving as a visual complement to the Bibliometric Coupling-Source Analysis, proficiently illustrates the intricate relationships and thematic concentrations among the academic journals in Digital Marketing. In this vibrant graphical representation, each node corresponds to a specific journal, with the node's size reflecting the volume of published documents and citations, thus highlighting the most influential journals in the field. The lines connecting the nodes represent bibliometric coupling, with thicker lines indicating more robust journal relationships. This showcases how research in one journal closely relates to the work published in another. The graph is colour-coded to represent the six identified clusters, each corresponding to a thematic grouping or network of related journals. This visual interpretation not only aligns with the findings from the source analysis but also provides a more intuitive understanding of the scholarly network, emphasising the most central and influential journals while showcasing the diversity and interconnectedness of research across different areas of Digital Marketing. Through this visual analysis, the VOSviewer graph enhances our comprehension of the academic landscape, offering a holistic view of the critical journals and their interconnections in the field.

4.5.3 Unveiling Scholarly Interactions: A Bibliometric Coupling Analysis of Author in Digital Marketing

The Bibliometric Coupling-Author Analysis for this study was adeptly conducted using VOSviewer, adhering to a defined set of conditions to ensure a thorough and nuanced exploration of author interactions in the field of Digital Marketing. A total of 2,987 author were initially considered, with 35 author meeting the stringent criteria of having published at least three documents and receiving at least five citations. These selected author were subsequently interconnected and divided into six distinct clusters, each representing a specific network or thematic focus within the broader academic community. This analysis, facilitated by the robust capabilities of VOSviewer, has provided a valuable lens through which we can view and understand the intricate relationships and collaborative networks among author contributing to the field of Digital Marketing.

Arpan Kumar Kar is the most influential author, with nine documents and 143 citations, demonstrating a significant impact and strong connections within the field. Yogesh K. Dwivedi also holds a prominent position with six documents and an impressive 763 citations, underscoring his substantial contribution to the body of knowledge in Digital Marketing. With five documents each, Jan Kietzmann and Patrick Van Esch further solidify the list of top contributors, showcasing their expertise and active participation in the scholarly discourse. The analysis reveals various author, including Alexandru Capatina, Adrian Micu, Emmanuel Mogaji, and Sean Sands, each contributing to the field's richness through their varied research interests and collaborations. Scott Weaven and Yang Yang add to this diversity, bringing unique perspectives and valuable insights to the academic community. The inclusion of the "Lecture Notes in Computer Science" as an author in this analysis highlights the significance of collaborative works and compilations in shaping the field of Digital Marketing. Shahriar Akter, Reema Aswani, Satish Chandra, and Carla Ferraro further emphasise the collaborative nature of research in this domain, showcasing a network of author collectively advancing the field through their scholarly contributions.

The analysis also sheds light on emerging contributors such as S. P. Ghrera, Dimitris C. Gkikas, Amit Kumar Kushwaha, Yishu Liu, and İlker Met, who are making their mark and establishing themselves as significant players in the academic community of Digital Marketing. The Bibliometric Coupling-Author Analysis provides a comprehensive overview of the critical author contributing to the field of Digital Marketing, highlighting their

interconnectedness and the strength of their scholarly networks. This analysis not only identifies the central figures in the academic discourse but also reveals the collaborative and dynamic nature of research in Digital Marketing, offering invaluable insights for scholars and practitioners navigating this multifaceted field.

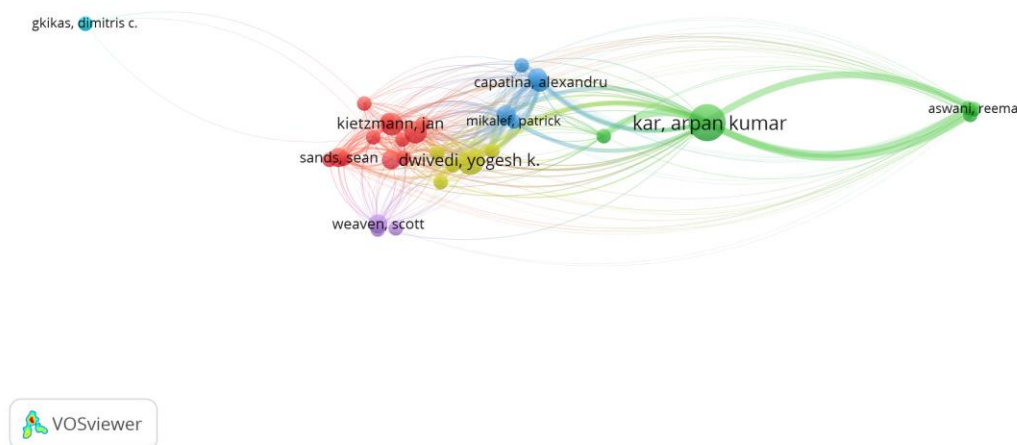


Figure 7: Bibliometric Coupling Analysis of Author

The VOSviewer graph, serving as a visual representation of the Bibliometric Coupling-Author Analysis, elegantly illustrates the complex network of relationships and collaborations among author in the field of Digital Marketing. Each node in the graph represents an author, with the node's size correlating to the number of citations, highlighting the influence and prominence of each author within the academic community. The lines connecting the nodes signify bibliometric coupling, indicating collaborative relationships and shared thematic focuses between author. The graph is colour-coded to represent the six identified clusters, demonstrating distinct networks of author who frequently collaborate or contribute to similar areas within Digital Marketing. The central placement and larger size of nodes corresponding to author like Arpan Kumar Kar and Yogesh K. Dwivedi visually reaffirm their status as critical contributors identified in the analysis. The VOSviewer graph not only corroborates the findings from the bibliometric analysis but also provides a more intuitive and accessible way to comprehend the intricate web of author interactions, enhancing our understanding of the collaborative landscape in Digital Marketing.

4.6 UNRAVELLING GLOBAL COLLABORATIONS: A BIBLIOMETRIC COUPLING-COUNTRIES ANALYSIS IN DIGITAL MARKETING

The Bibliometric Coupling-Countries Analysis, conducted using VOSviewer, meticulously adhered to predefined conditions to ensure a robust and comprehensive exploration of global collaborations in Digital Marketing. A total of 183 countries were assessed, with 47 meeting the threshold of a minimum of five documents and five citations, resulting in 47 connected references. The analysis categorised these countries into seven distinct clusters, revealing the intricate web of interactions and collaborations across different regions. This approach, facilitated by VOSviewer's capabilities, sheds light on the international landscape of Digital Marketing, showcasing the diversity of contributions and the interconnectedness of research efforts worldwide.

The United States stands out as a central hub in this network, with a staggering 143 documents and 9,927 citations, showcasing its pivotal role in shaping Digital Marketing research. China and India follow closely, with 121 and 120 documents underlining their significant contributions and growing influence in the field. The United Kingdom and Australia further complement this global tapestry with their substantial academic output and citation counts, highlighting Digital Marketing research's diverse and widespread nature. The clusters formed through the analysis reveal patterns of regional and thematic collaborations, shedding light on how different countries and regions are interconnected in pursuing knowledge in Digital Marketing. Countries within the same cluster tend to have stronger bibliometric coupling, indicating a higher level of shared references and research focus.

The total link strength is a testament to these connections' intensity, with the United States leading the pack, followed by the United Kingdom, Australia, China, and India. These strong links underscore the depth of collaboration and exchange of ideas, contributing to a richer and more nuanced understanding of Digital Marketing. The diversity in the geographical distribution of the countries involved in this analysis reflects the universal relevance and applicability of Digital Marketing, transcending regional boundaries. The clusters formed paint a picture of how different regions and countries bring unique perspectives and strengths to the table, collectively enriching the global discourse in Digital Marketing. The Bibliometric Coupling-Countries Analysis has adeptly revealed the extensive network of international collaborations in Digital Marketing, highlighting key contributors,

uncovering patterns of academic interaction, and showcasing the global nature of research in this dynamic field.

The visualization of international collaborations reveals a dense network where numerous countries interact, underscoring the global nature of modern research. When evaluating the prominence of these countries in terms of scholarly output and impact, it can be identified both the most broadcasting (productive) countries and the most cited (influential) ones. In this framework, the United States stands out as the most broadcasting country, having published the highest number of documents, totalling 143. This volume of research output indicates a prolific academic environment with wide-ranging research activities. Regarding citations, which serve as a proxy for the influence and recognition of research, the United States also leads, amassing 9,927 citations. This points to the significant impact American research has on the international scholarly community.

Australia and the United Kingdom follow as significant contributors. Australia, with 66 documents and 2,643 citations, and the United Kingdom, with 80 documents and 2,615 citations, both exhibit strong research outputs and substantial citation figures, indicating the high quality and global impact of their research. China and India also present themselves as significant players. China has a high number of documents at 121, indicating extensive research activities, and has garnered 2,068 citations, which reflects a growing influence in the academic world. India parallels this with 120 documents and 1,886 citations, showcasing its role as a central knowledge producer with a significant scholarly footprint. While the United States is the most dominant in research output and citations, other countries like Australia, the United Kingdom, China, and India have substantial contributions, indicating a diverse and interconnected landscape of international academic collaborations.

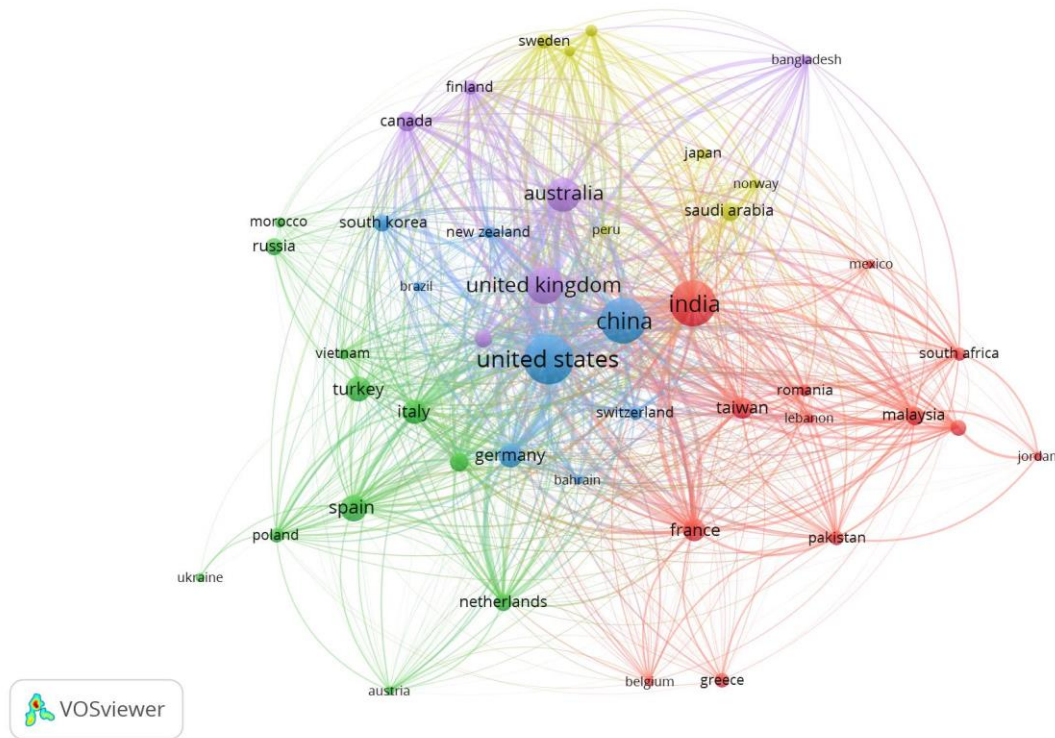


Figure 8: Bibliometric Coupling-Countries Analysis

The Vosviewer graphical representation for the Bibliometric Coupling-Countries Analysis provides a visual interpretation of the interconnectedness and impact of various countries in the field of Digital Marketing. Each node in the graph represents a different country, with the size of the node correlating to the number of documents and citations, showcasing the prominence and contribution of each country in the domain. The links between nodes show the bibliometric coupling strength. Thicker lines show stronger connections, which show how countries work together and share knowledge.

The clustering of nodes into different colours highlights the formation of scholarly communities, where countries within the same cluster tend to have stronger bibliometric coupling, indicating a higher degree of shared references in their publications. This clustering provides insights into regional and thematic research concentrations, helping to identify global trends and collaborative networks. The United States, being one of the most prominent nodes, indicates its significant influence and contribution to the field. In contrast, the diverse spread of nodes across the graph reflects the global nature of Digital Marketing research. The graph serves as a valuable tool for researchers and policymakers, helping to navigate the

complex landscape of international collaborations and to identify key players and emerging hubs in Digital Marketing research.

4.7 THE QUALITATIVE ANALYSIS OF THE TOP 10 DOCUMENTS

The qualitative analysis of the top 20 documents in the domain of Digital Marketing, as identified through the Bibliometric Coupling-Document Analysis, provides a panoramic view of the most influential scholarly works in this field, drawing from a cumulative total of 20,287 citations. The documents analysed span diverse topics, methodologies, and applications, reflecting the multifaceted nature of Digital Marketing research.

Jordan (2015), with a staggering 4,347 citations, emerges as the most cited document, indicative of its seminal role in shaping discourse and research trajectories in Digital Marketing. Despite its profound impact, the document's total link strength of 9 suggests a more isolated position in the bibliometric network, possibly signifying a groundbreaking or divergent approach to Digital Marketing.

Gerke (2020) and Chen (2018), with 110 and 76 citations, respectively, represent newer contributions to the field, gaining rapid recognition and establishing their relevance in ongoing academic conversations. Their modest total link strengths suggest emerging influence and potential for future integration within the broader network of Digital Marketing research.

The middle tier of the list, encompassing works by **Mikalef, Patrick, Puntoni, Stefano, Fang, Zheng, Longoni, Chiara, and Akter, Shahriar**, showcases a balance between citation count and total link strength, indicating robust engagement and interconnectedness within the academic community. These documents serve as pivotal nodes, weaving together diverse strands of Digital Marketing research and contributing to a cohesive and dynamic scholarly ecosystem.

The lower tier, featuring documents by **Wetzels, Martin, Parasuraman, A., Williams, Michael D., and Gursoy, Dogan**, continues to demonstrate significant bibliometric influence, albeit with varying degrees of connectivity within the network. These works contribute to the richness and diversity of Digital Marketing research, addressing various topics and methodologies.

This qualitative analysis paints a picture of a vibrant and diverse field, with documents spanning a broad spectrum of topics and approaches, all contributing to the ongoing evolution of Digital Marketing research. The top 20 documents serve as beacons, guiding scholars through the complex landscape of Digital Marketing and shaping the contours of future research endeavours.



5 CONCLUSION AND IMPLICATIONS

Summary of the Findings

This bibliometric analysis encapsulates the considerable expansion of digital marketing research over the last ten years. The methodological rigour of this study has been exemplified by the thorough examination of 11,018 documents, offering an expansive overview of the knowledge and trends proliferating within this dynamic field. Based on the analysis of 11,018 documents from 546 academic sources, the data in this study gives a clear picture of the growing academic interest in and dedication to digital marketing. The surge in research activities is further accentuated by identifying 2,652 unique keywords, illustrating the evolving vernacular and focus areas that continue diversifying the field. The scholarly engagement is also reflected in the total of 2,987 authors who contributed to the dialogue on digital marketing, with their works making 2,397 appearances throughout the literature, signifying a robust and dynamic academic community.

In digital marketing research, the analysis unequivocally underscores the increasing integration of cutting-edge technologies such as machine learning. With 146 occurrences, machine learning not only tops the relevance score chart but also symbolizes a seismic shift toward more sophisticated, data-centric marketing methodologies. The prevalence of this term mirrors the industry's swift evolution and its growing reliance on algorithm-driven tools to forge customer relationships and personalize marketing efforts. Concurrently, the bibliometric analysis brings to the forefront the extraordinary contributions of individual scholars, most notably the preeminent author responsible for 208 single-authored documents. This staggering number speaks not only to the author's dedication and prolificacy but also to the significant role that individual intellectual tenacity plays in the broadening and deepening of the field's academic corpus. Their work, likely diverse and comprehensive, contributes to an extensive array of sub-topics within digital marketing, offering insights and spawning new lines of inquiry for academics and practitioners alike.

The landscape of digital marketing research has been significantly shaped by leading academic publications, with the 'Journal of Business Research' emerging as a pivotal platform. With an impressive citation count of 1,020 and an equally formidable total link strength, this journal's influence is unmatched in the propagation of scholarly work within the domain. It is a cornerstone for new insights and theoretical advancements, disseminating high-calibre research that becomes a reference beacon for contemporaneous and future

studies. At the nexus of this intellectual ecosystem, figures such as Yogesh K. Dwivedi stand out. Dwivedi's total link strength of 763 not only highlights his numerous citations but also encapsulates the substantial impact of his co-authored analyses. His research, often created in collaboration with others, underscores the synergetic power of joint intellectual ventures in driving the field forward. It is this spirit of collaboration, quantified by a collaboration index of 2.52, that showcases the collective endeavour characteristic of digital marketing scholarship. This collaborative trend is further mirrored in the focus areas of research, where terms like 'digital marketing' appear with notable frequency (94 occurrences). Such terms are not just mere linguistic placeholders but rather reflect a continuous, evolving conversation within academia that revolves around core concepts. Digital marketing, as both a term and a field, has sustained its position as a central theme, revealing the enduring focus of researchers on exploring the multifaceted interactions between digital technologies and marketing practices. The enduring interest in this area underscores the field's recognition of the pivotal role that digital channels play in modern marketing strategies and consumer engagement.

The interplay between scholarly inquiry and practical application within digital marketing vividly illustrates the emphatic focus on 'user experience,' a term surfacing in 134 documents analyzed. The salience of user experience in research underscores a paradigm shift towards a user-centric approach in digital marketing. It signifies an acute awareness among academics and practitioners of tailoring marketing strategies to enhance the consumer journey. The pertinence of this focus is further cemented by its relevance score, which quantifies the term's prominence within the academic discourse, underscoring the theoretical emphasis on practices that prioritize the end-user's engagement and satisfaction. The ripple effect of academic contributions on business practices is most tangible when examining the influence of cornerstone research. For instance, the seminal work of Jordan (2015) has been cited 4,347 times, evidencing its pivotal role in shaping contemporary digital marketing strategies. Such high citation counts are indicative not only of the scholarly value but also of the operational utility of the research findings. Seminal documents like these serve as a bridge between theory and practice, guiding business professionals in integrating data-driven insights into effective marketing initiatives. They reflect an academia-industry symbiosis where theoretical advancements inform practical applications, which, in turn, stimulate further scholarly investigation. This dynamic interconnection ensures that the evolution of digital marketing remains both progressive and grounded in empirical research, fostering advances that are as innovative as they are applicable.

The bibliometric analysis reveals a compelling ascendance of ‘deep learning’ within the digital marketing scholarship, marked by its mention in 43 documents and its distinction as having the highest relevance score. This burgeoning interest signifies the field’s trajectory toward more sophisticated, AI-driven marketing solutions. The prominence of deep learning in recent literature is a harbinger of transformative changes in marketing strategies, anticipating an era where artificial intelligence will not merely support but lead decision-making processes. This shift indicates the increasing complexity and personalization that deep learning algorithms can offer, heralding unprecedented efficiency in targeting, segmentation, and consumer engagement. Simultaneously, perennial themes like ‘big data’ and ‘social media’ remain central to digital marketing research, suggesting a sustained, if not growing, industry interest. The intersection of these topics with emergent technologies forecasts a fertile ground for innovation. Big data analytics, when combined with deep learning, could yield more nuanced consumer insights. At the same time, the pervasive influence of social media opens avenues for real-time engagement and brand-consumer interactions facilitated by advanced algorithms.

The confluence of these emergent topics and technologies points toward a future where marketing strategies become more predictive, adaptive, and personalized. The scholarly spotlight on these areas suggests that the industry is on the cusp of a paradigm shift, where data is not just a resource but a central axis around which marketing orbits. As such, the continuous influx of research in these domains is likely to spur profound shifts in digital marketing, catalyzing a more analytical and technology-driven approach that is intricately woven into the fabric of how companies connect with their customers. The geographic distribution of research within digital marketing is markedly centred around the United States, which emerges as the nation with the most robust bibliometric coupling across examined documents. This metric underscores the United States’ integral position within the global network of digital marketing research, acting as a primary node from which scholarly communication and collaboration emanate. The prolific output and international collaboration patterns underscore the country’s contribution to setting research agendas and shaping the discourse within the field.

Further analysis reveals a nuanced landscape of research clusters, each representing a constellation of interconnected themes and cooperative efforts. Notably, Cluster 1, which its red labels can identify, has the highest number of items—109—suggesting that the topics in this cluster reflect the most popular research interests and intellectual connections during the

studied period. This cluster's preeminence reflects not only the volume of contributions within these thematic areas but also their centrality to contemporary digital marketing discourse. The presence and prominence of this cluster offer insights into the most vigorous areas of study and collaboration, likely encompassing pivotal subjects such as consumer behaviour, data analytics, and online engagement strategies. The vitality of this cluster may also reflect broader trends in the field, such as the digital transformation of marketing practices and the intensifying focus on leveraging data for strategic advantage. As such, the distribution of research clusters, with Cluster 1 at the forefront, acts as a barometer for the dynamic flows of knowledge and scholarly attention in digital marketing research across geographic boundaries.

Concluding Remarks

This bibliometric analysis has systematically encapsulated the expansive trajectory of digital marketing research from 2013 to 2023. The data reveal a substantial scholarly footprint, with an average citation count per document of 9.925, underscoring the profound impact and reach of the field within the academic and professional domains. The decade has witnessed a transformative proliferation of digital marketing literature, with leading journals, prolific authors, and influential countries driving the intellectual expansion and diversification of the domain. The United States is a pivotal nation in the geographical research network, contributing significantly to the field's evolution. Authors who have dominated single-authored publications and those whose co-authored works have accrued notable citations have been instrumental in advancing the research frontier. Journals like the 'Journal of Business Research' have been primary conduits for disseminating pivotal findings, reflecting the field's vibrant academic exchange.

Implications for Future Research

Looking forward, there is an impetus for researchers to delve into the burgeoning realms of 'machine learning', 'user experience', and 'mobile marketing'. These areas have shown prolific growth and are poised to redefine the contours of digital marketing. Machine learning's promise in personalizing customer interactions, along with the critical role of user experience in customer satisfaction and mobile marketing's ubiquity, are frontiers ripe for scholarly exploration. These dimensions reflect a more technologically nuanced and data-driven marketing landscape that future studies could richly contextualize and expand upon. Additionally, there is an evident schism in the geographic distribution of digital marketing research, with developing nations less represented. Future studies could bridge this divide,

offering a more globally inclusive perspective encompassing diverse market dynamics. Furthermore, nascent technologies and their marketing applications, such as augmented reality, the Internet of Things (IoT), and blockchain, suggest uncharted territories for academic inquiry. These technologies could redefine engagement strategies and operational paradigms, presenting novel challenges and opportunities for researchers. The past decade of digital marketing research has laid a robust foundation for further exploration. It is imperative that future research not only builds upon these established areas but also ventures into new terrains, mindful of the field's rapid evolution and the emergent digital marketing ecosystems around the globe.

Final Thoughts

The landscape of digital marketing research has expanded exponentially between 2013 and 2023, marked by an ever-increasing volume of scholarly work and a dynamic evolution of themes and methodologies. This decade has chronicled a remarkable progression from nascent digital tools to advanced analytical algorithms, painting a rich tapestry of scholarly dialogue that reflects the rapid technological changes and consumer trends of our time. The insights gleaned from this bibliometric analysis provide a beacon for practitioners in the field, offering a data-driven foundation for strategic planning and decision-making. These professionals need to absorb and apply the learnings from this body of research to stay at the forefront of innovation. In a digital landscape that is continually reshaped by new technologies and shifting consumer behaviours, the ability to adapt and leverage academic insights becomes a critical competitive advantage. For those in the throes of digital marketing, the research of the past decade serves not only as a historical account but also as a forward-looking guide. It encourages the industry to be predictive rather than reactive, to anticipate changes, and to craft strategies that resonate with the digital consumer's evolving journey. In sum, the symbiosis between research and practice is vital for sustained success in a world where digital marketing has become an indispensable facet of business.

Recommendations

The dynamic and expansive growth of digital marketing research over the last decade has unearthed valuable insights, emphasizing businesses' need to adapt to the increasingly AI-driven marketing environment. Reflecting on these developments, the following recommendations are aligned with the emerging trends and technological advancements observed in the research:

1. Develop Comprehensive AI Integration Strategies:

To harness the full potential of AI, businesses must establish comprehensive integration strategies that embed AI across all customer touchpoints and marketing channels. This seamless integration should elevate customer engagement and improve conversion rates by leveraging the predictive powers of AI within existing marketing frameworks.

2. Invest in Continuous Learning and Skill Enhancement:

The landscape of digital marketing is in constant flux with the advancement of AI technologies. Marketers should, therefore, commit to continual skill development through education and training in AI and data analytics. This ensures that marketing teams remain innovative and can effectively translate data-driven insights into strategic marketing initiatives.

3. Prioritize Personalization for Enhanced Customer Experiences:

Personalization, powered by AI, is no longer a luxury but a necessity for customer engagement. Adopting AI-driven content management systems and recommendation engines will enable businesses to tailor their services and communications to individual user preferences, thereby increasing customer loyalty.

4. Adopt Ethical AI Practices:

The use of AI in marketing must be anchored in ethical practices. Transparency with consumers about AI use and adherence to stringent data privacy regulations will build trust. Ethical practices will not only foster customer loyalty but also ensure compliance with regulatory standards.

5. Leverage Predictive Analytics for Proactive Decision-Making:

AI's predictive analytics enables marketers to anticipate trends and consumer behaviour. By employing predictive models, businesses can make informed decisions regarding resource distribution, product launches, and marketing strategies, leading to more efficient and impactful outcomes.

6. Foster Collaboration between Marketing and Data Science Teams:

Collaborative efforts between marketing and data science can yield potent insights that drive AI-powered marketing strategies. Assembling interdisciplinary teams will allow for the strategic employment of data in targeting, segmentation, and campaign optimization.

7. Regularly Monitor and Adapt AI Strategies:

Implementing robust monitoring systems to track the effectiveness of AI-driven marketing initiatives is crucial. By continuously analyzing key performance indicators and adjusting strategies based on real-time feedback, businesses can ensure that their AI initiatives deliver tangible results.

By considering these recommendations, businesses can confidently navigate the evolving digital marketing landscape. Integrating the insights from a decade of research into practical, AI-driven strategies will be instrumental for businesses aiming to enhance consumer experiences, increase engagement, and drive growth in an increasingly competitive digital marketplace.

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