

# Digital Transformation Strategy in Advertising: A Study Bibliometric Analysis

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## ABSTRACT

This study analyzes digital transformation in advertising strategies. A search using the keywords “Digital Transformation” and “Advertising” in the Scopus database yielded 114 documents. Using the PRISMA method, the researchers applied inclusion criteria, selecting articles, conference papers, book chapters, conference reviews, books, and reviews available in English, Spanish, Portuguese, German, and Russian. This bibliometric analysis identified key themes, such as “Digital Transformation,” “Advertising,” and “Artificial Intelligence,” with the United States and Germany as the most influential countries. Eight thematic clusters were identified, such as digital transformation based on data and technology, digital business management, digital marketing strategy, data-driven marketing automation, technology, and workforce management, digital innovation in sustainable marketing, technology integration and professional skills development, communication in digital marketing, and the impact of COVID-19 on marketing models. This pioneering bibliometric study provides essential insights for academics and professionals aiming to understand current advancements in digital transformation within advertising. Companies are encouraged to integrate artificial intelligence into digital campaigns to improve personalization and effectiveness in advertising strategies.

**Keywords:** Advertising Strategy, Bibliometric Analysis, Digital Transformation, Research Trends

## ABSTRAK

Studi ini bertujuan untuk menganalisis perkembangan transformasi digital dalam strategi periklanan. Pencarian dengan kata kunci “Digital Transformation” dan “Advertising” pada basis data Scopus menghasilkan 114 dokumen yang relevan. Dengan menerapkan metode PRISMA, peneliti menetapkan kriteria inklusi, yaitu artikel, makalah konferensi, bab buku, ulasan konferensi, buku, dan ulasan yang tersedia dalam bahasa Inggris, Spanyol, Portugis, Jerman, dan Rusia. Analisis bibliometrik ini mengidentifikasi tema utama, termasuk “Digital Transformation,” “Advertising,” dan “Artificial Intelligence,” dengan Amerika Serikat dan Jerman sebagai negara yang paling berpengaruh. Peneliti menemukan delapan kluster transformasi digital yang meliputi: transformasi digital berdasarkan data dan teknologi, manajemen bisnis digital, strategi pemasaran digital, otomatisasi pemasaran berbasis data, teknologi, dan manajemen tenaga kerja, inovasi digital dalam pemasaran berkelanjutan, integrasi teknologi dan pengembangan keterampilan profesional, komunikasi dalam pemasaran digital, covid-19 dalam mengubah model pemasaran. Studi ini merupakan kajian bibliometrik perintis yang menawarkan wawasan penting bagi akademisi dan profesional untuk memahami perkembangan terkini transformasi digital dalam periklanan. Untuk mengembangkan strategi periklanan digital yang lebih efektif, perusahaan perlu mempertimbangkan integrasi kecerdasan buatan (AI) untuk meningkatkan personalisasi dan efektivitas pemasaran.

**Kata Kunci:** Analisis Bibliometrik, Strategi Periklanan, Transformasi Digital, Tren Penelitian

## INTRODUCTION

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Digital transformation in advertising is no longer just a trend, but a determining factor that shapes the direction of modern marketing strategies. With the advent of advanced technologies such as artificial intelligence, big data analytics, and social media platforms, advertising has shifted from a traditional approach to dynamic, interactive, and highly personalized campaigns (Kaplan & Haenlein, 2020). This shift not only revolutionizes the way businesses reach their target audiences, but also introduces complexities that require a deeper understanding of digital transformation strategies to optimize their impact. In this context, the need to explore the evolving dynamics of advertising in the digital age has become increasingly important, requiring systematic and bibliometric analysis to map the current landscape and identify emerging trends (Chaffey & Ellis-Chadwick, 2019).

The rapid digitization of consumer behavior has prompted advertisers to rethink their strategies, leading to the integration of digital tools that improve targeting, engagement, and conversion rates (Lamberton & Stephen, 2016). Digital platforms such as Google, Facebook, Instagram, and TikTok have become essential advertising channels, offering sophisticated algorithms that allow for precise targeting based on user preferences, behaviors, and demographics (Dwivedi et al., 2021). This digital has shifted the advertising paradigm from a one-size-fits-all approach to a more customized and data-driven strategy, where consumer insights guide content creation and delivery. For example, the rise of programmatic advertising that leverages real-time bidding to target specific audiences has significantly improved the efficiency and effectiveness of advertising campaigns (Gretzel, Sigala, Xiang, & Koo, 2015). One of the studies also adapted marketing strategies to effectively utilize digital platforms and target specific consumer demographics for better engagement and business results (Nesterenko, Miskiewicz, & Abazov, 2023). Despite these advancements, the dynamic nature of digital technologies presents challenges, such as maintaining consumer privacy, adapting to rapidly changing algorithms, and managing data overload, making it important to comprehensively investigate digital transformation strategies (Bughin, Catlin, Hirt, & Willmott, 2018).

Research with the keyword digital transformation in the last 5-7 years has attracted the attention of academics from various fields (Gray et al., 2017; Schwertner, 2017; Ebert et al., 2018; Tabrizi et al., 2019; Kraus et al., 2021; Holmstrom, 2022; Plekhanov, 2023). Specifically in advertising, the study of digital transformation in advertising strategy has prompted significant debates in academic literature, highlighting various perspectives that underscore the complex and evolving nature of this field. Scholars differ on the influence of digital transformation technologies, such as artificial intelligence (AI), big data analytics, and programmatic advertising, on advertising effectiveness. For instance, some argue that AI-driven personalization enhances consumer engagement by tailoring ads to individual preferences (Kaplan & Haenlein, 2020), while others caution that such approaches risk compromising user privacy and trust, especially in contexts with strict data protection laws (Bughin et al., 2018). Another debate centers around big data's role in optimizing ad campaigns. While some researchers posit that real-time data analysis significantly improves ad targeting and efficiency (Lamberton & Stephen, 2016), critics argue that an overreliance on data can reduce creative freedom, leading to more formulaic and less engaging content (Nesterenko et al., 2023).

Additionally, there is an ongoing discourse on the ethical implications of digital transformation in advertising. While some studies suggest that data-driven techniques increase transparency and accountability, others worry that they perpetuate consumer manipulation by exploiting behavioral insights (Gretzel et al., 2015). Further debate exists regarding digital advertising's impact on business models, with some scholars emphasizing how digital platforms enable a direct-to-consumer approach, reshaping traditional media models (Dwivedi et al., 2021). Contrarily, others argue that such transformations lead to intense market competition, often disadvantaging smaller firms that cannot match the digital capabilities of larger entities (Smith & Zook, 2016). The complexity is amplified by the global nature of digital advertising, as practices and ethical standards differ substantially across markets, highlighting a gap in the literature concerning cross-cultural and regulatory impacts on digital transformation strategies (Mansell, 2018).

Despite advancements, existing literature fails to offer a consensus on the overall impact of digital transformation on advertising strategy. Studies primarily focus on isolated technological benefits or challenges, leaving a gap in understanding the holistic implications of digital transformation. For example, while AI and data-driven personalization are frequently discussed, few studies explore their long-term effects on consumer trust and brand loyalty (Batra & Keller, 2016). Moreover, the ethical and regulatory concerns associated with these transformations are often treated as secondary, limiting

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insights into how advertising strategies can balance innovation with ethical responsibility. Given these debates, a comprehensive bibliometric and systematic review approach is crucial to mapping existing knowledge and identifying unresolved questions in the digital transformation of advertising, thereby establishing a robust foundation for future research.

However, the existing literature does not offer a consensus on the impact of digital transformation on advertising strategies. In addition, existing studies fail to answer the research question of the effects of digital transformation on advertising strategies. The debate and inconsistency of the existing literature indicate that this study is essential for a holistic understanding of digital transformation strategies in advertising; a bibliometric and systematic review approach provides a structured framework for examining the existing knowledge base.

Bibliometric analysis provides valuable insights into the evolution of research themes, influential authors, and key publications that have shaped the discourse on digital advertising (Hosseini, Pham, & Lim, n.d.). By analyzing the citation network and author collaboration patterns, the study identifies prominent contributors and emerging trends in digital advertising strategies. In addition, systematic reviews allow for critical evaluation of relevant literature, ensuring that findings are based on evidence-based research and provide a comprehensive understanding of the digital transformation landscape (Kitchenham & Charters, 2007). Through this dual approach, the study not only maps the theoretical foundations of digital advertising but also highlights the practical implications for businesses looking to adapt to digital disruption.

The significance of this study lies in its potential to inform advertising practitioners, researchers, and policymakers about the current state of digital transformation strategies in advertising. By identifying key trends, challenges, and opportunities, this research contributes to the development of more effective and sustainable advertising practices in the digital age (Smith & Zook, 2016). For example, understanding how digital technologies can be leveraged to improve customer experience, optimize ad spend, and drive brand loyalty can provide a competitive advantage for businesses in an increasingly crowded digital market (Batra & Keller, 2016). Additionally, the study provides insight into the ethical considerations and regulatory frameworks governing digital advertising practices, ensuring that digital transformation strategies align with consumer expectations and societal norms (Mansell, 2018). As advertising evolves, the study is becoming a fundamental resource for stakeholders looking to navigate the complexities of digital transformation. This introduction aims to outline the importance of digital transformation in advertising, the role of systematic and bibliometric reviews in understanding this phenomenon, as well as the reasons for conducting this comprehensive study.

In conclusion, digital transformation has revolutionized advertising, offering incredible opportunities for engagement, targeting, and conversions. However, the complexities and challenges associated with digital advertising demand a thorough examination of existing strategies to optimize their impact. The bibliometric and systematic review approach in this study provides a comprehensive understanding of digital transformation in advertising, highlighting important trends, challenges, and future directions. As the advertising landscape evolves, the research offers valuable insights for practitioners, researchers, and policymakers, guiding them towards more effective and ethical digital transformation strategies. The next section of this paper will delve into the methodology, findings, and implications of this study, contributing to the broader discourse on digital transformation in advertising.

## METHODS

This study employs bibliographic analysis (BA), guided by the PRISMA model. The search flow, including source filtering and process identification, is depicted in Figure 1 (Donthu, Kumar, Mukherjee, Pandey, & Lim, 2021). Bibliographic analysis is particularly effective for identifying trends, patterns, and visualizations of research metadata, which are the core objectives of this method. By adhering to this rigorous approach, the bibliometric analysis aims to provide a comprehensive and objective overview (Musa, Kumalasari, & Musa, 2023).

The application search flow of the PRISMA model guidelines is shown in Figure 1 along with source filtering and process identification (Donthu et al., 2021). PRISMA is used because it ensures a clear process for identifying and filtering sources to meet the goals of bibliographic studies, such as

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uncovering research trends and patterns and visualizing metadata (Fadillah, Sularso, & Huiqian, 2023).

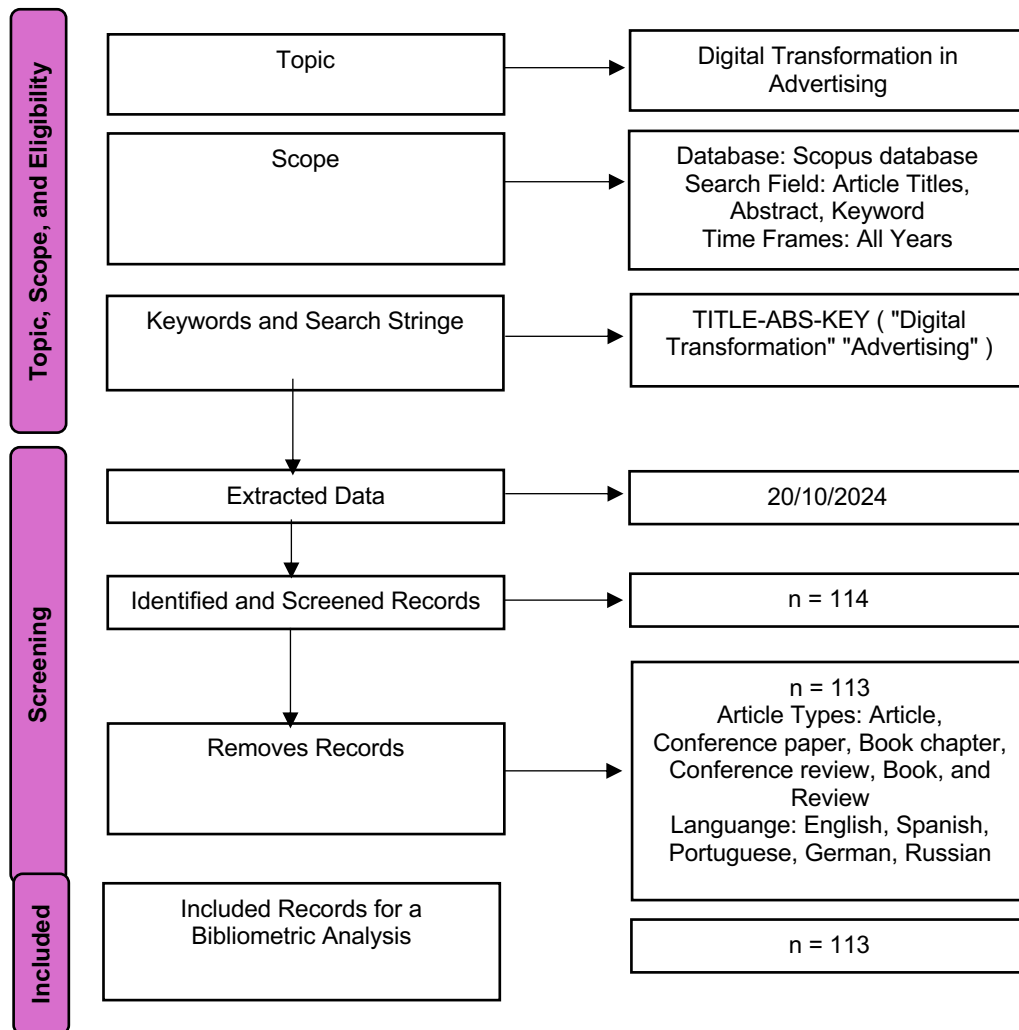


Figure 1. Diagram of PRISMA

### Data Search and Identification

The data for this study is sourced from the Scopus database, retrieved on October 20, 2024. It includes scientific articles published over the years that focus on digital transformation in advertising. Scopus is a comprehensive academic database containing abstracts and citations from leading scientific journals globally, ensuring the high quality of articles through rigorous peer-review processes. Therefore, the data used in this study is reliable. The database, managed by Elsevier, spans from 2004 to 2023 and is widely regarded as a publishing reference in many countries. For this study, only articles, conference papers, book chapters, conference reviews, books, and reviews indexed in Scopus were considered.

The keywords "digital transformation" and "advertising" were employed to identify relevant articles aligned with the research objectives. To maintain the quality of the data, inclusion and exclusion criteria were applied to ensure that only appropriate terms were included for analysis (Donthu et al., 2021). The search was conducted using the Scopus search engine (scopus.com) with the selected topic categories. Additionally, various inclusion and exclusion criteria, as outlined in Table 1, were applied to refine the scientific literature. Given the strong correlation between the keywords, "digital transformation" and "advertising" were used simultaneously in the search.

Table 1. Inclusion Criteria - Exclusion

Inclusion Criteria	Exclusion Criteria
Article, Conference paper, Book chapter, Conference review, Book, and Review dalam Bahasa English, Spanish, Portuguese, German, and Russian	Editorial

Source: Researcher Data

Once the research topic is determined through keyword analysis, the data is exported in CSV format. This CSV data is then reviewed using MS Excel and the VOSviewer program. In addition to bibliometric analysis, this study incorporates content analysis as a supplementary method. The results are presented through visual representations such as images, graphs, and tables. After data collection, the dataset is imported into OpenRefine for organization, cleaning, and selection. VOSviewer is then used to generate visualization maps based on the processed data.

**Data Analysis Technique**

To build and visualize Scopus-indexed bibliometric networks, a bibliographic field visualization application called VOSviewer is utilized. VOSviewer offers three types of visualization views for bibliometric analysis: network, overlay, and density visualizations. Network visualization is used to illustrate the relationships between keywords in the dataset. Overlay visualization shows the temporal or historical development of research, highlighting the evolution of a topic over time. Density visualization displays the frequency or density of data within a specific area, revealing how often or extensively a topic is researched or discussed (Zakiyyah, Winoto, & Rohanda, 2022). This research uses both network and overlay visualizations. Network visualization is used to identify the themes of digital transformation research in advertising, with different clusters representing various topics. Overlay visualization, on the other hand, helps identify trends in the development of digital transformation research in advertising over time.

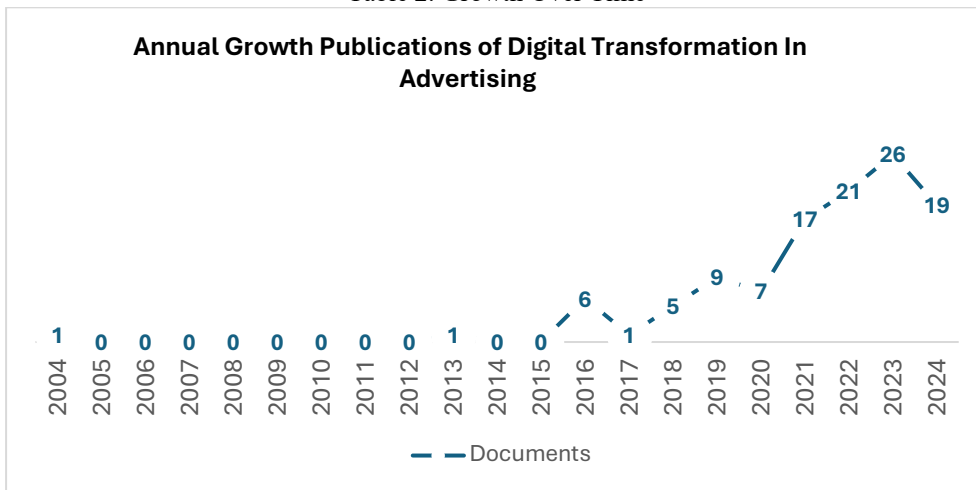
**RESULT AND DISCUSSION**

The bibliometric analysis conducted on the topic "Digital Transformation in Advertising Strategy" offers a comprehensive examination of articles, conference papers, book chapters, conference reviews, books, and reviews from the Scopus database. This analysis aims to identify key trends, influential countries, and the evolution of research in this field over time.

**Annual Growth of Digital Transformation Publications in Advertising**

The number of studies published in reputable journals related to digital transformation and advertising does experience an increasing trend every year, in table 2 it is clear how the increase is.

Table 2. Growth Over Time



Based on the table above, when 113 articles with the key concepts “Digital Transformation” and “Advertising”, it can be seen that the first article was published in 2004 which discusses the development of digital broadcasting technology that allows personalization and flexibility in content consumption. From 2005-2012, there were no publications on digital transformation in advertising. Until 2013, there was one published article exploring how media companies are adapting to digital transformation and creating new sources of revenue through the utilization of digital content and the incorporation of new business models. There was another decline with no articles published between 2014-2015 and a rapid rise in 2016 with six articles published discussing how digital transformation is driving fundamental changes in various sectors, from more personalized advertising to television media turning to digital streaming to expand market reach.

In 2017, there was another decline with only one article published, focusing on consumer preferences and their willingness to pay for apps. However, a consistent increase began in 2018, with five publications addressing how industries are adapting to the digital era. In 2019, the trend centered on the impact of digital transformation on business strategy, marketing, and resource management across various industries. In 2020, seven publications emerged, primarily discussing the impact of digital transformation on industry dynamics, wage inequality, changes in work structures, and the evolution of media and advertising. A sharp increase occurred in 2021, with 17 publications focusing on the adoption of new technologies that change communication strategies, advertising, and business models, as well as the challenges faced in advertising regulation and adaptation to evolving consumer behavior. The trend continued in 2022, with 21 publications examining technological innovations, digital marketing, business model changes, and the challenges and opportunities in industry adaptation to the digital age.

In 2023, the number of publications rose to 26, the highest recorded to date, focusing on sustainable advertising trends and the impact of COVID-19 on the digital advertising landscape. So far in 2024, there have been 19 publications, mainly addressing the role of artificial intelligence in digital marketing communication. The mapping results, presented in Overlay Visualization, display the historical progression of research over the years. This can be seen in Figure 2.

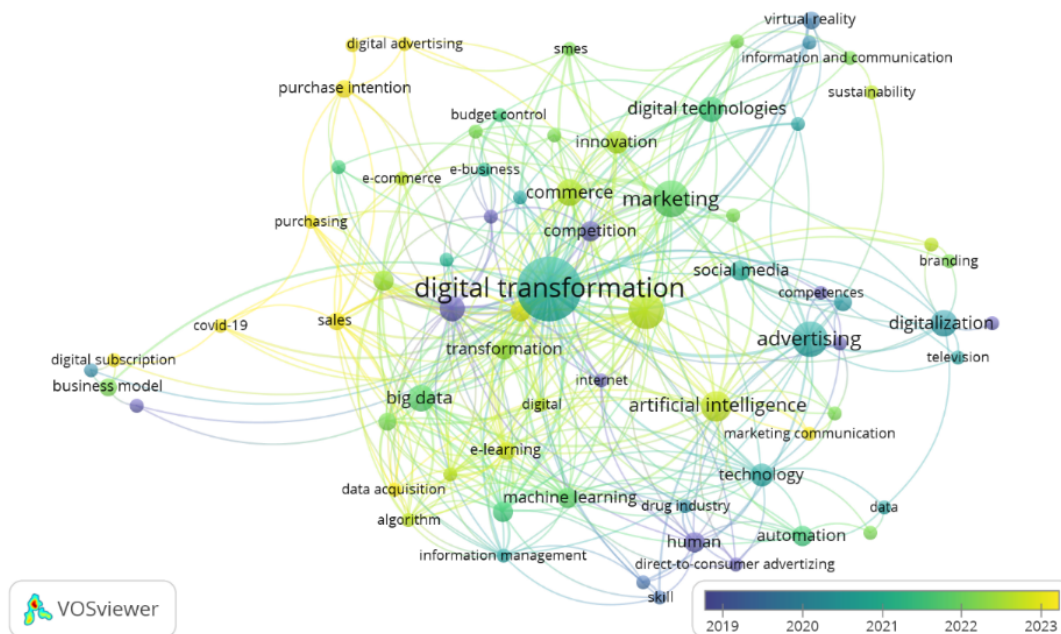


Figure 2. Research Trends by Year

Table 2 and Figure 2 illustrate the temporal evolution of digital transformation research in advertising, analyzed through the bibliometric method. Research on digital transformation in advertising began in 2004, with a significant surge in 2021, when the COVID-19 pandemic subsided, resulting in 17 documents. This increase indicates that the pandemic had a direct and significant

impact on the way digital transformation in advertising unfolded. This rise in publications contrasts with 2016, which saw only six articles on the subject.

Figure 2 shows that there was a shift in research focus around 2021 and 2022 emphasizing digital technologies, machine learning, big data, and artificial intelligence. This shift reflects a global trend that increasingly recognizes the importance of digital technology in various aspects of life, especially in the business and information technology industries. The focus of research in this period may be driven by the acceleration of digital technology adoption due to the COVID-19 pandemic, which forced various sectors to rely more on these technologies to remain competitive and relevant.

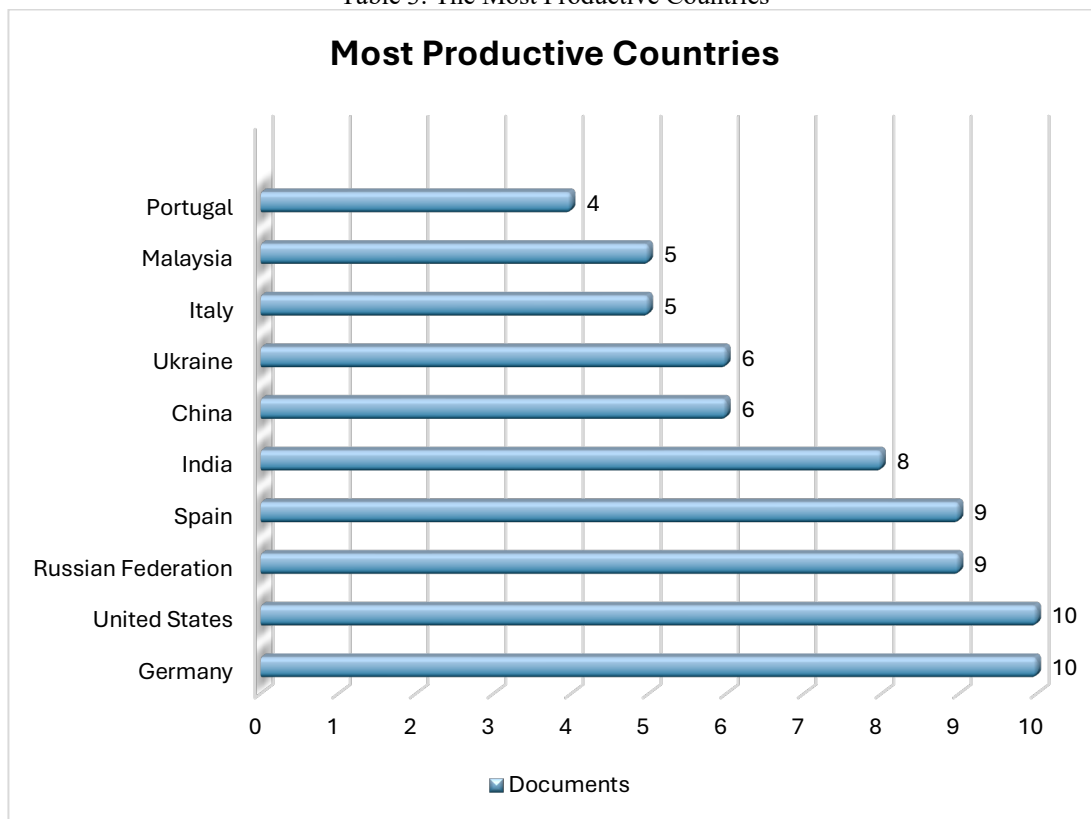
However, in 2023 the surge in research occurred on themes such as covid-19, *digital advertising*, *digital subscription*, *data acquisition*, *purchase intention*, *sales*, and *marketing communication*. This surge is likely to reflect the practical needs of businesses and industry to respond to changes in consumer behavior and marketing strategies that have shifted to digital platforms during and after the pandemic. This focus shows how digitalization is not only applied to advanced technologies but also directly affects sectors such as marketing, sales, and business communications.

Overall, this change signifies that the research is not only moving from fundamental technologies to commercially relevant practical applications, but also reflects the industry's adaptation efforts to the challenges and opportunities posed by major changes in the global market environment, including the impact of the pandemic and the acceleration of digital transformation.

**Most Productive and Influential Countries in Digital Transformation Publications on Advertising**

Research on “Digital Transformation” in “Advertising” consists of many countries. From the Scopus database results from all years, it shows that there are top ten countries that have publications about “Digital Transformation” in “Advertising”.

Table 3. The Most Productive Countries



Based on Table 3, Germany and the United States are the leading countries, each publishing ten documents. They are followed by the Russian Federation and Spain, with nine publications each.

India ranks next with eight publications, while China and Ukraine each have six. Malaysia and Italy have published five documents, and Portugal follows with four publications.

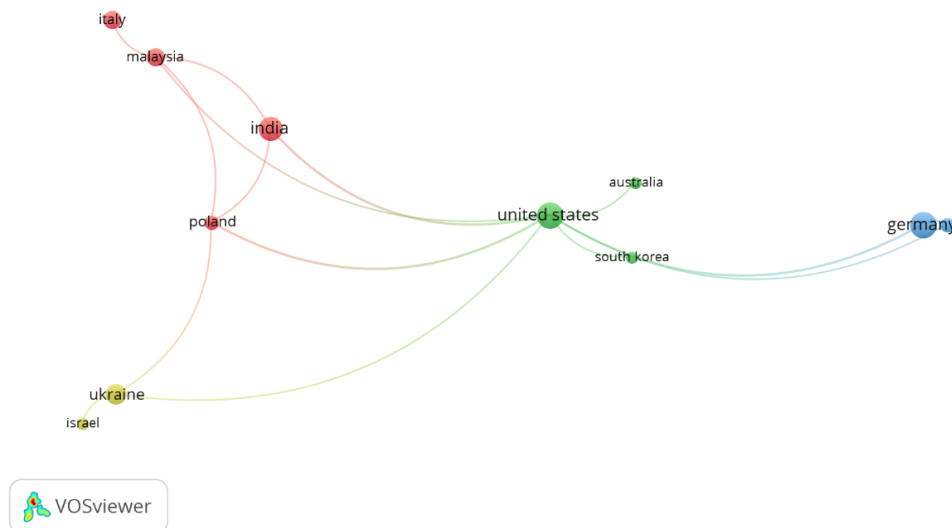


Figure 3. The Most Influential Countries

Table 3 and Figure 3 reveal that research on digital transformation in advertising is dominated by Germany and the United States, each contributing 10 documents. This dominance highlights the significant research capacity of these countries, driven by their economic strength, advanced technological infrastructure, and strong focus on innovation in business and information technology. The United States, for example, is home to major tech companies like Google and Meta, which lead global innovation in digital advertising. Similarly, Germany's strong technology ecosystem and its focus on the development of artificial intelligence and *big data technologies* play a key role in its contribution to this research.

On the other hand, Russia and Spain follow with nine documents each, suggesting they have considerable research capacity, though not as extensive as the United States or Germany. Malaysia, the only Southeast Asian country with five publications, demonstrates that developing nations in the region are beginning to invest in research on digital transformation, signaling the growth of its digital economy as a technology hub in Southeast Asia.

Portugal, with the smallest contribution of four documents, may reflect more limited research capacity, but it still plays a role in the global research landscape. The disparity in the number of documents among these countries underscores a gap in research capabilities, influenced largely by economic factors, technological investment, and the academic environment. While the United States and Germany remain dominant in innovation, countries like Malaysia show the potential for growth in the future. Ultimately, the capacity for research and innovation in digital advertising is shaped by a combination of economic strength, technological development, and robust research infrastructure.



**Top Digital Transformation in Advertising Research Field Categories**

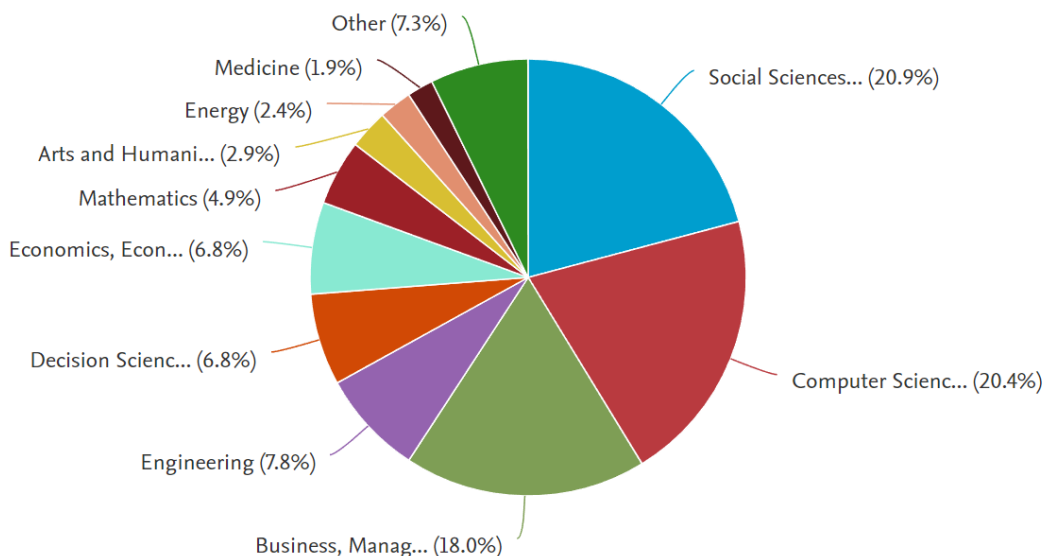


Figure 4. Category: Digital Transformation and Advertising Research Field

Figure 4 presents a comprehensive overview of the main subject categories in digital transformation research in advertising. The social sciences emerge as the most dominant field, with 44 documents, followed by computer sciences with 43 documents, and business, management, and accounting with 37 documents. These findings underscore the multidisciplinary nature of digital transformation, highlighting its connections with the social sciences, computer sciences, and business disciplines, all of which are essential for a deeper understanding of the phenomenon.

Based on the data in Figure 4, a comprehensive landscape of the main subjects in digital transformation research in advertising shows that *social sciences* is the most dominant field with 44 documents, followed by *computer sciences* with 43 documents, and *Business, Management and Accounting* with 37 documents. These findings emphasize the importance of a multidisciplinary approach in understanding digital transformation in advertising.

The dominance of *social sciences* with 44 documents indicates that digital transformation in advertising is greatly influenced by changes in people's behavior, culture, and social interaction in the digital era. The role of social media, changing consumption patterns, and the impact of digitalization on social structures place *social sciences* as key in understanding how advertising is captured and responded to by society.

Furthermore, *computer sciences* with 43 documents highlights the importance of technology in supporting digital transformation in advertising. Technologies such as *machine learning*, *artificial intelligence*, *big data*, and automation are core elements in creating more personalized and effective advertising. Innovations in technology are enabling larger and faster data processing, allowing companies to devise more targeted advertising strategies.

The field of *Business, Management and Accounting* with 37 documents shows the relevance of strategic management and business decisions in the context of digital transformation. Digitalization has changed the business model in the advertising industry, from traditional media to more dynamic digital platforms. Companies are required to manage resources, finances, and relationships with consumers in a new, data-based, and digitally integrated way.

Overall, these three main subjects show that digital transformation in advertising cannot be understood from just one perspective, but rather requires a multidisciplinary approach that combines social sciences, computer technology, and business management. This approach allows for a more holistic understanding of how technology and digitalization are impacting advertising strategically, operationally, and socially.

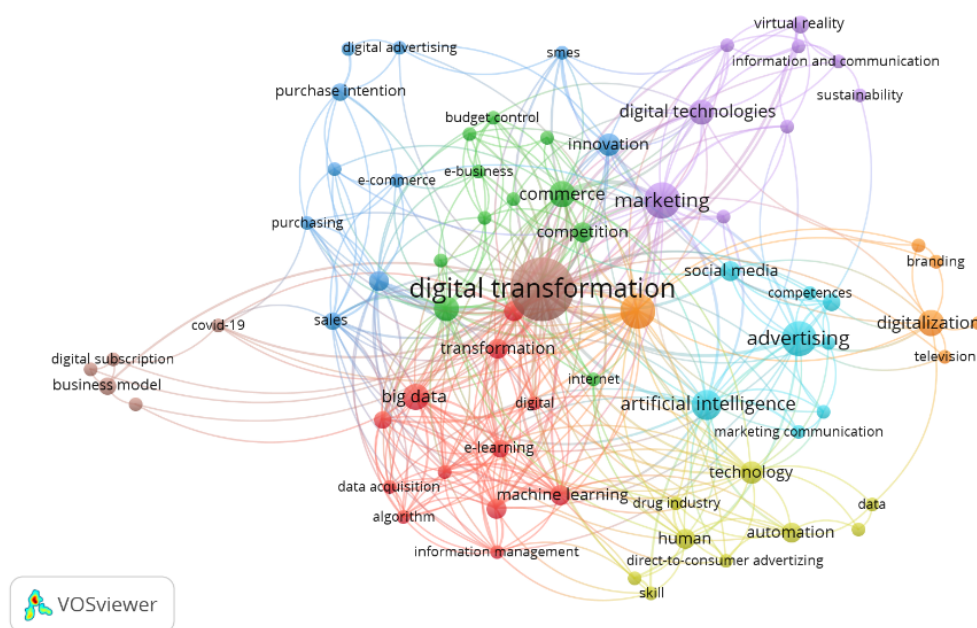


Figure 5. Thematic Trends in Digital Transformation and Advertising Research

The primary goal of this study is to perform a thematic analysis of 113 publications on digital transformation in advertising. This analysis focuses on identifying co-occurring keywords found in the titles, keywords, and abstracts of the collected publications. Examining publication trends in this area opens new avenues for researchers to explore opportunities and novel connections between topics, making the analysis of publication themes a pivotal aspect of this research.

By analyzing keyword content, researchers can uncover valuable ideas and research objects, establish unique contributions, and advance the body of knowledge in the field. For this analysis, a co-occurrence method was applied using VOSviewer, with "All keywords" chosen as the unit of analysis. A threshold of at least two occurrences per keyword was set, ensuring that only frequently occurring terms were included.

The resulting keyword network visualization map, shown in Figure 5, reveals eight prominent thematic clusters. These clusters represent cohesive areas of research interest, offering significant insights into the core focal points of digital transformation in advertising. The analysis identified 414 interconnected keywords distributed across these eight clusters, providing a comprehensive view of the research landscape in this domain.

Table 2. Themes in Publications

Cluster Color	Theme	Sub-Theme
Red Cluster	The Role of Digital Transformation based on Data and Technology	Algorithm, Big Data, Data acquisition, Deep learning, Digital, E-learning, Information management, Internet of things, Machine learning, Transformation
Green Cluster	The Role of Digital Business Management	Application program, Budget control, Business models, Commerce, Competition, Digital television, E-Business, Ecosystems, Electronic commerce, Internet, Media industry
Blue Cluster	The Role of Digital Marketing Strategy	Consumer behavior, Digital advertising, E-Commerce, Influencer marketing, Innovation, Online advertisement, Purchase intention, Purchasing, Sales, SMES

Yellow Cluster	The role of data-driven marketing automation, technology, and workforce management	Automation, Data, Direct-to-customer advertising, Drug industry, Human, Platforms, Skill, Technology, Workforce
Purple Cluster	The role of digital innovation in sustainable marketing	Advertising industry, Augmented reality, Digital technologies, Economic and social effects, Information and Communication Technology, Marketing, Sustainability, Tourism industry, Virtual reality
Tosca Cluster	The role of technology integration and professional skills development	Advertising, Artificial intelligence, competences, digital communication, professional skills, public relations, social media
Orange Cluster	The Role of Communication in Digital Marketing	Branding, Digital Marketing, Digitalization, Marketing Communications, Media Management, Television
Brown Cluster	The role of Covid-19 in changing marketing models	Business model, Covid-19, Digital subscription, Digital transformation, Strategy, Willingness to pay

There are eight themes in the digital transformation in advertising research. The red cluster focuses on data and technology-driven transformation, emphasizing how big data platforms enhance intelligent manufacturing systems by addressing information asymmetry between manufacturers and customers, ultimately improving decision-making and operational efficiency (Liou, Weng, & Lee, 2020). Additionally, the collaboration between software developers and marketing professionals, utilizing deep learning to analyze consumer behavior, provides businesses with targeted insights that yield significant advantages (Jayashree et al., 2022). Keywords such as "algorithm," "deep learning," and "Internet of Things" reflect the central role of technology in shaping modern advertising strategies.

The green cluster explores digital business management, showcasing the transition from the traditional "business-to-customer" model to an "actor-to-actor" perspective. This shift highlights the importance of understanding the interactions and relationships between various actors in the value creation process (Fehrer, Woratschek, & Brodie, 2018). The cluster emphasizes the importance of understanding the potential for collaboration, technology interfaces, and network relationships when designing business models based on the logic of digital platforms.

The blue cluster examines digital marketing strategies, focusing on e-commerce, SME adaptation, and influencer marketing. Research reveals the importance of SMEs fostering an innovative and relational culture while embracing digital technology to build sustainable businesses (Matarazzo, Penco, Profumo, & Quaglia, 2021; Müller, Buliga, & Voigt, 2018; Troise, Corvello, Ghobadian, & O'Regan, 2022). In addition, the terms Influencer marketing, consumer behavior, Online advertisement, Purchase intention, Purchasing explain that brands need to utilize nano influencers effectively to improve marketing strategies and encourage economic growth. This change underscores the importance for brands to tailor their strategies by understanding the nuanced role influencers play in shaping consumer perceptions and brand narratives. The focus is no longer just on the number of followers, but rather on the quality of interaction between the influencer and his followers, as deep engagement proves to be more effective in supporting brands than just large audience sizes (Hess, Dodds, & Rahman, 2022; Rundin & Colliander, 2021; Wibawa, Pratiwi, & Larasati, 2021).

Digital transformation in the advertising industry cannot be separated from the role of marketing automation based on data, technology, and workforce management, which is discussed in the yellow cluster. This cluster focuses on data-based marketing automation factors and technology with human resource skill management. The complex relationship between automation and work design, highlights the need for careful consideration of human factors in the implementation of automated systems (Parker & Grote, 2022). In addition, the terms Human, Platforms, Skill, and Technology emphasize on the role of HR in digital transformation, focusing more on how technology improves HR practices rather than HR contribution to the digital strategy itself and using information about the digital literacy of candidates or existing employees as a high-priority indicator for personnel selection

purposes, as this requires the acquisition of digital skills, which facilitates high productivity in most industries in the current era (Bokek-Cohen, 2018; Fenech, Baguant, & Ivanov, 2019).

Digital innovation is an important aspect to realize sustainable marketing in digital advertising transformation. This is revealed in the purple cluster. This cluster discusses how the "advertising industry" "Economic and social effects" "Information and Communication Technology" reveals that the advertising industry is evolving as digital transformation, with agencies adapting structures, embracing team diversity, and rethinking the creative process to operate in a rapidly changing environment (Lynch, 2019). Technology plays an important role in improving communication and operational efficiency, enabling teams to collaborate virtually from anywhere in the world, opening up new perspectives as well as more innovative approaches to problem-solving (Antonizzi & Smuts, 2020). In addition, the terms "Digital technologies" "Marketing" and "Sustainability" emphasize on "green digital transformation," which refers to the integration of digitalization and green technology into business processes. This approach allows companies to become environmentally friendly by innovating their activities, products, and business models as well as the introduction of virtual reality is expected to significantly transform the sector, allowing it to become an essential part of the digital economy (Bednarčíková & Repiská, 2021; Voronkova, 2018).

The toska cluster further explores the success of digital transformation in advertising, emphasizing the integration of advanced technologies and professional skill development. This cluster highlights the transformative role of artificial intelligence (AI) in automating tasks traditionally performed by humans, thereby enhancing efficiency and effectiveness in production and marketing strategies. AI applications span the marketing mix (4Ps: product, price, place, promotion) and consumer benefits (4Cs: consumer, cost, convenience, communication), enabling marketers to employ AI for standardization, personalization, and relationship-building tailored to specific needs (Huang & Rust, 2021; Yu, 2022). The prominence of terms such as "digital communication," "professional skills," "public relations," and "social media" underscores the necessity of equipping individuals with diverse skills to support digital transformation in advertising strategies effectively.

Communication is a crucial role in digital marketing, as in the orange cluster which explores the factors of "Branding", "Digital Marketing", "Digitalization", "Marketing Communications", "Media Management" revealing that marketing communication is described as a fundamental component of modern marketing strategies, important to engage consumers, adapt to digital changes, and achieve business goals (Nesterenko et al., 2023). Digital marketing has three potential paths for the evolution of digital marketing, suggesting that it can empower consumers, maintain centralized management while enabling diverse behaviors, or move towards a more collaborative system (Busca & Bertrandias, 2020).

Finally, the brown cluster focuses on the profound impact of the Covid-19 pandemic on marketing models, demonstrating how the crisis has redefined strategies with an emphasis on innovation, digital engagement, and a customer-centric approach. Keywords such as "Business model," "Covid-19," "Digital subscription," "Digital transformation," "Strategy," and "Willingness to pay" reveal significant shifts in the marketing landscape. Businesses have had to adapt their strategies to address pandemic-induced challenges by reassessing brand equity, employing empathic communication, and strengthening stakeholder engagement to maintain strong customer relationships (Dubbelink, Soria, & Constantinides, 2021; Ozuem, Ranfagni, Willis, Rovai, & Howell, 2021).

## CONCLUSION

In conclusion, this bibliometric analysis offers a comprehensive examination of the research landscape surrounding "Digital Transformation" in "Advertising." By identifying thematic trends, geographical contributions, and key research areas, this study provides valuable insights for academics and professionals seeking to navigate this dynamic and rapidly evolving field.

The findings highlight the development of digital transformation in advertising strategies through detailed bibliometric analysis. The dominant themes emerging in the literature include "Digital Transformation," "Advertising," and "Artificial Intelligence," with a significant concentration of research originating from the United States and Germany. Furthermore, the study uncovered eight distinct thematic clusters, underscoring the complexity and diversity of topics related to digital advertising. The predominance of *social sciences*, *computer sciences*, and *business management*

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disciplines in this research underscores the necessity of a multidisciplinary approach to comprehending the effects of digital transformation within the advertising industry.

This research provides actionable insights for advertising managers. First, it emphasizes the need for companies to integrate advanced digital technologies, such as artificial intelligence and *big data*, into their advertising campaigns to enhance personalization and effectiveness. Second, it underscores the urgency for companies in developing countries, particularly in Southeast Asia, such as Malaysia, to accelerate the adoption of digital technologies to remain competitive in a global market largely dominated by developed nations like the United States and Germany. Third, the study highlights the importance of understanding evolving consumer trends and behaviors driven by digitalization and the necessity of managing marketing strategies efficiently through real-time data and automation tools.

Based on these findings, future research can explore several critical areas. The role of *blockchain technology* in enhancing transparency and trust in digital advertising deserves attention. Additionally, investigating the impact of artificial intelligence on creativity and personalization in advertising, particularly concerning ethics and privacy, is essential. Cross-cultural studies comparing developing and advanced countries in their adoption of digital advertising strategies could offer deeper insights into technological disparities and opportunities. Lastly, longitudinal research is needed to assess the long-term effects of digital transformation on consumer behavior and advertising effectiveness, paving the way for a more holistic understanding of this transformative trend.

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