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Impact of artificial intelligence on customer engagement and advertising engagement: A review and future research agenda

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Abstract

This study, through a bibliometric analysis, aims to provide increased knowledge of the evolution and effects of artificial intelligence over the last 30 years in customer engagement and advertising engagement. Articles were gathered from three databases by using combinations of keywords (artificial intelligence, customer engagement, advertising engagement, marketing, machine learning, etc.). A set of inclusion/exclusion criteria were then applied to obtain the final sample. The final sample was made up of 190 peer-reviewed articles. Three separate analyses were performed to test the sample. A performance analysis identified the articles' years of publication, contributions per country and the performance/output of the relevant journals. A data analysis created 10 clusters; these are examined in depth, and provide explanations of the evolution of the relevant scientific production. The study's findings offer a wide perspective of research undertaken to date, and identify possible research gaps. This research contributes to the marketing field by bridging a gap, through undertaking a bibliometric analysis, in the research about the impact of artificial intelligence on customer and advertising engagement over the years 1991 through 2022. It offers scholars and researchers ideas for future research.

KEYWORDS
advertising engagement, artificial intelligence, customer engagement, machine learning, marketing

1 | INTRODUCTION

Over the last few decades, the human race has faced a new revolution, the Fourth Industrial Revolution (Faruk et al., 2021). Technical innovations in various fields have attracted great interest from researchers, in fields such as marketing (Abhishek & Srivastava, 2021; Chintalapati & Pandey, 2021; Davenport et al., 2020; Jarek & Mazurek, 2019; Randhawa et al., 2016; Vlačić et al., 2021), business-to-business marketing models (Chen et al., 2016; Chen, Jiang, et al., 2022; Han et al., 2021; Jiang, 2021; Kim & Moon, 2021; Saura et al., 2021), branding (Cheng & Jiang, 2021; Varsha et al., 2021), product management (Duong et al., 2022; Haefner et al., 2021) and the employment of social media/influencers for promotional purposes (Abhishek & Srivastava, 2021; Dwivedi et al., 2021; Voorveld et al., 2018; Ye et al., 2021; Zahay, 2021). Artificial intelligence is a flourishing phenomenon that is attracting intense interest from the public, companies and researchers.

As noted by So et al. (2021), Hentzen et al. (2022) and Hollebeek et al. (2022), the need to enhance customer engagement through the use of technological developments, such as artificial intelligence, has intensified as a consequence of COVID-19. In addition, Dwivedi et al. (2021) emphasized the need to investigate advertising, and factors

such as artificial intelligence, to identify how they affect consumers' perceptions. Gavilanes et al. (2018) showed that advertising is an antecedent of engagement. Thus, the present study analyses the relationships between three different topics: artificial intelligence (AI), customer engagement (CE) and advertising engagement (AE). A brief explanation of each topic follows.

Artificial intelligence (AI) modifies the interplay between machines and humans in exceptional ways (Garg et al., 2022; Overgoor et al., 2019; Paschen et al., 2019), because users authorize computers to make decisions with little human involvement. In the marketing field, AI is seen as an emerging technology capable of gathering real-time data, which can be transformed, after analysis, to fulfil customers' needs and demands (Chintalapati & Pandey, 2021).

Customer engagement (CE) is a marketing concept involving the cultivation of relationships between companies and customers that go far beyond the purchase itself. Companies follow the approach, using different methods, to add value to their interactions with their customers, hoping that this will increase their loyalty (Gambetti & Graffigna, 2010; Yau et al., 2021) which, ultimately, might create an emotional bond between the company and the customer. In the digital context, the synergy between the parties can be measured by actions such as clicks, likes, comments and shares (Trunfio & Rossi, 2021).

The aim of advertising engagement (AE) is to attract customers to a brand (which makes it quite similar to CE). It is not designed to build relationships, it uses publicity and promotion to seduce the customer (Kaczorowska-Spychalska, 2019). A useful analogy is that CE can be understood as a long-term relationship between a couple, whereas AE is more akin to a love affair, where passion and attraction are always key. Moreover, social media advertising has been shown to obtain prompt responses from consumers and, thus, has a mediating effect on customer engagement (Anubha & Shome, 2021; Herce-Zelaya et al., 2020; Yang et al., 2023); influencers have been proven to be of value in this process (Abhishek & Srivastava, 2021). In this field, AI influencers can increase consumers' trust and drive their behaviours (Alboqami, 2023; Gwon & Seo, 2021; Sands et al., 2022; Youn & Jin, 2021).

Researchers and firms have recognized the potential of artificial intelligence and its effects on the customer–brand relationship. AI is a powerful tool that helps companies when the customer requires a more personalized product, subtly nudging them to make purchase decisions (Dimitrieska et al., 2018; Kumar et al., 2019). For instance, a recent study examined the use of applied technology for enhancing the customer experience in an AI-embedded mixed reality exhibit. This display took place in a retail/entertainment complex that combines highly developed technologies and retail shopping (Sung et al., 2021), and provided a remarkable experience that created a high probability of customer engagement, and even customer loyalty.

Researchers have recognized the potential of AI in this area of marketing; however, the academic literature in the field shows that, while companies have developed intentions to use AI as part of their customer engagement strategies, this has not yet become a reality (Paschen et al., 2019). Some studies used conceptual frameworks to explain the effects of AI on customer behaviours (Hagen et al., 2020; Mariani et al., 2022; Miao et al., 2022; Perez-Vega et al., 2021; Yau et al., 2021), or briefly referred to the subject in literature analyses of non-specific fields, such as marketing (Chintalapati & Pandey, 2021; Varsha et al., 2021; Verma et al., 2021). No previous study has comprehensively investigated the literature to establish how AI might be used to improve customer and advertisement engagement (Han et al., 2021). Researchers, thus, have come to recognize the value of AI, while companies are lagging behind in this regard. The main aim of this study is to analyse the evolution and impact of artificial intelligence on customer engagement and advertising engagement. However, subsidiary objectives can be met. Several research questions are proposed, the answers to which might provide companies with important insights.

RQ1. How can artificial intelligence (AI) be used to enhance customer and advertising engagement?

RQ2. What type of feedback do companies want to obtain from customers once they are considered as being engaged with the firm?

RQ3. Do social media/SM influencers enhance advertising engagement?

It is generally recognized that artificial intelligence is a tool with high potential; RQ1 addresses whether it can positively affect customer and advertising engagement. The second RQ addresses customer feedback. Given that it is assumed that artificial intelligence positively modifies company–customer relationships, companies want to understand this impact, which is where feedback can play a role. Finally, RQ3 addresses a very recently emerged way that companies can attract customers online, social media and the use of influencers.

The study adopts a bibliometric research method to achieve its objectives and address these questions. To obtain a wide view of the topic, we focus on the co-occurrence of keywords, performance analysis per decade, contributions per country and the production of academic journals.

2 | METHODOLOGY

Bibliometric analysis is a research method used to study publication patterns within a field. This statistical data-analysis tool allows researchers to provide directions for future research through the study of current trends (Guo et al., 2019). This sort of analysis is helpful for academics interested in a specific area of study, mainly because it enables them to quickly understand the situation in the area and identify any research gaps that need to be bridged.

The two main bibliometric analysis tools are performance analysis and science mapping (Feng et al., 2017). Performance analysis assesses scientific impact by analysing journals, authors and citations, and science mapping creates a schematic visualization of the structure and the evolution of scientific research through co-word

and co-citation analyses (Feng et al., 2017). Thus, in the present study a bibliometric analysis was conducted to answer the research questions (Han et al., 2021), and both tools were used to provide an extensive perspective of the study area.

The study's methodology is based on the procedures proposed by Feng et al. (2017), Guo et al. (2019) and Paul and Menzies (2023). Their studies used a four-step process composed of: (1) the selection of bibliometric databases; (2) defining keywords; (3) refining the initial results; and (4) a data analysis plan.

2.1 | Selecting the bibliometric databases

The first step undertaken consisted of an exhaustive search in three databases (Verma et al., 2021), in this case, Web of Science (core collection), Scopus and Google Scholar. The use of three websites allowed a wider variety of articles from different sources and countries to be analysed.

Web of Science is one of the most globally known, employed databases in the research field. A measure of Scopus' coverage is that it contains output from more than 20,000 peer-reviewed journals, produced by different publishers (Verma et al., 2021).

Authors have also used Google Scholar to expand their ability to find articles not available on other databases (Akbari & Do, 2021; Guo et al., 2019; Sarsam et al., 2020). While drawing on multiple databases introduces complexity into the search process, the ability this provides to gather various viewpoints from different researchers makes it an effective method of data collection. Mendeley management software was used to combine the articles, with the objective of creating the final sample.

2.2 | Defining the keywords

The initial search used keywords included in the research questions, 'artificial intelligence', 'advertising engagement' and 'customer engagement'. These keywords were entered into the three databases, using the 'all fields' search function.

On the one hand, to address the essential elements of the research, we introduced 'customer engagement' and 'engagement'; Finally, to ensure that these relationships were connected to marketing, we introduced the terms 'digital marketing' and 'advertising'.

As aforementioned, few articles to date have examined the impact of artificial intelligence on advertising engagement and customer engagement; thus, to obtain a wider sample, compound terms, such as 'artificial intelligence' AND 'customer engagement' and 'artificial intelligence' AND 'advertising engagement' were used.

The use of synonyms was key for expanding the research; thus, we introduced 'marketing', 'digital marketing', 'machine learning', 'robot' and 'chatbots'. Related combinations of these synonyms were also used, such as 'artificial intelligence' AND 'marketing', 'chatbots' AND 'customer engagement', 'machine learning' AND 'customer engagement' and 'digital marketing' AND 'customer' AND 'advertising'.

TABLE 1 Combinations of keywords introduced into the databases.

Web of Science	
'artificial intelligence' AND 'customer engagement'	54
'artificial intelligence' AND 'advertising engagement'	2
'artificial intelligence' AND 'marketing'	428
'chatbots' AND 'customer engagement'	8
'machine learning' AND 'customer engagement'	8
'digital marketing' AND 'customer' AND 'advertising'	84
Total	584
Scopus	
'artificial intelligence' AND 'customer engagement'	2714
'artificial intelligence' AND 'advertising engagement'	1369
'artificial intelligence' AND 'marketing'	16,633
'chatbots' AND 'customer engagement'	211
'machine learning' AND 'customer engagement'	1741
'digital marketing' AND 'customer' AND 'advertising'	10,885
Total	33,553
Google Scholar	
'artificial intelligence' AND 'customer engagement'	380
'artificial intelligence' AND 'advertising engagement'	8000
'artificial intelligence' AND 'marketing'	10,400
'chatbots' AND 'customer engagement'	91
'machine learning' AND 'customer engagement'	330
'digital marketing' AND 'customer' AND 'advertising'	801
Total	20,002

As can be seen in Table 1, this methodology was used with all three databases. While Scopus and Google Scholar returned a higher number of articles, some were not closely related to the main subject matter of the research. From all these possible combinations, 54,139 articles were collected. The review was conducted in March 2022.

2.3 | Refining the initial results

The 54,139 publications collected encompassed several document types, such as articles, reviews, books and conference papers; however, to ensure we gathered the highest quality of information possible, the present study is based mostly on peer-reviewed academic journal articles (1 step of Figure 1). All the terminology was included in 'broad match', the search resulted in a large number of potentially relevant papers, exceeding 30,000. To narrow down the search results and select the most relevant papers for the bibliometric analysis, a two-step selection process was used. Even if the initial sample was vast, we keep the original number to emphasize the trend of our topic.

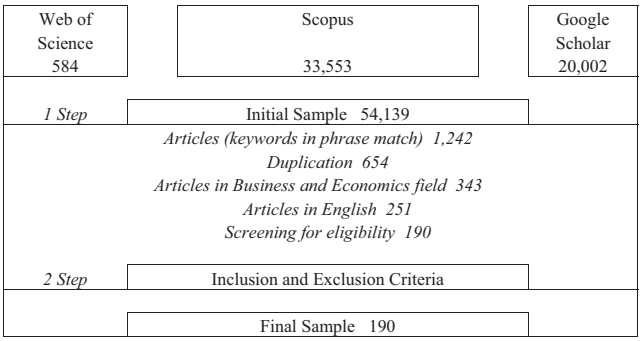

FIGURE 1 Flowchart.

TABLE 2 Inclusion and exclusion criteria.

Inclusion criteria	Exclusion criteria
(1) The use of AI in marketing	(1) AI not related to the business and economics fields
(2) Use of machine learning, chatbots and robots in customer engagement	(2) Non-English language journals
(3) Use of AI in advertising	

However, it is worthy to notice that there is an overuse of the word 'artificial intelligence', which might lead to adverse selection.

The search procedure followed the PRISMA protocol (Liberati et al., 2009). In addition, the authors of the present study separately evaluated each work. Thereafter, the findings were compared; the disagreements between the authors in terms of which articles to include in the sample, or not, were less than 10%. The differences were discussed and resolved.

A coding document was then created to identify and extract descriptors, abstracts, study techniques, year, countries and empirical implementations for the whole coding stage. Again, all the articles were separately coded by each author. A comparison of the results showed that the authors had reached more than 90% agreement as to which articles to include in the sample, and all differences were discussed and resolved.

The next step was to define criteria to allow the researchers to exclude irrelevant and duplicate documents from the sample. Table 2 describes the inclusion and exclusion criteria (Han et al., 2021).

During the course of this research study, the inclusion and exclusion criteria played distinct roles. The exclusion criteria were primarily concerned with filtering out articles that did not align with the research objectives. First, the titles and abstracts of all the papers were screened to eliminate irrelevant papers, duplicates, and papers that did not meet the inclusion criteria and using 'phrase match' (which narrow the previous selection). For instance, articles from fields such as health or engineering were excluded, as the primary focus was on the impact of Artificial Intelligence on the business and economics domains. Additionally, articles that were not written in English were also excluded.

In contrast, the inclusion criteria were designed to identify articles that were closely related to the effects of Artificial Intelligence on customer and advertising engagement. Given the diverse areas of expertise within the business and economics fields, this study specifically focused on the marketing domain. Moreover, it is worth noting that all of the selected articles were related to Artificial Intelligence or comparable topics.

The first inclusion criterion encompassed a broad scope, including the use of Artificial Intelligence in the marketing sector. Subsequently, the second and third inclusion criteria focused on two specific concepts: customer and advertising engagement, with technological aspects serving as supplementary factors.

As artificial intelligence is the main focus of this research, and is a concept that features in many different fields, all articles were manually chosen on the basis of their titles and abstracts. The objective of this search was to identify articles closely related to the topic in question. The research was limited to studies in the business management and economic fields, or similar. It can be seen from Figure 1 that the first sample was large; however, the criteria applied were quite restrictive. After eliminating duplicates and applying the exclusion and inclusion criteria, a final sample of 190 articles was obtained, which were introduced into the Mendeley reference management system.

2.4 | Data analysis plan

Once the final sample was determined, the data were analysed. VOSviewer was used to obtain a cluster-oriented organization of the sample and depict visual connections among the keywords (Van Eck & Waltman, 2010). VOSviewer is software used for building and visualizing bibliometric networks; it creates a cloud map based on various relevant factors, such as authors, journals and keywords (Srivastava & Sivaramakrishnan, 2021). For the purposes of the present study, a co-occurrence analysis of keywords was applied to gain a deeper understanding of the word associations between AI and customer and advertising engagement.

The final sample was introduced into the Mendeley reference manager system. Once the final sample was established, the data were exported into a research information system (*.ris) format, and imported into VOSviewer.

When a minimum number of two occurrences per keyword was set, 100 out of the 632 total keywords met the threshold. A thesaurus was used to help us obtain the most accurate visualization, for example, we were able to remove duplicates among the keywords (i.e., artificial Intelligence/AI; chatbot/chatbots).

Words such as 'bibliometric' and 'systematic', considered unimportant to the objectives of the present study, were found in the various documents, and so a final clean-up of the keywords was carried out.

VOSviewer offers different types of visualization, network, overlay and density. For the purposes of the present study, network and overlay visualization were mainly used (Van Esch & Black, 2021).

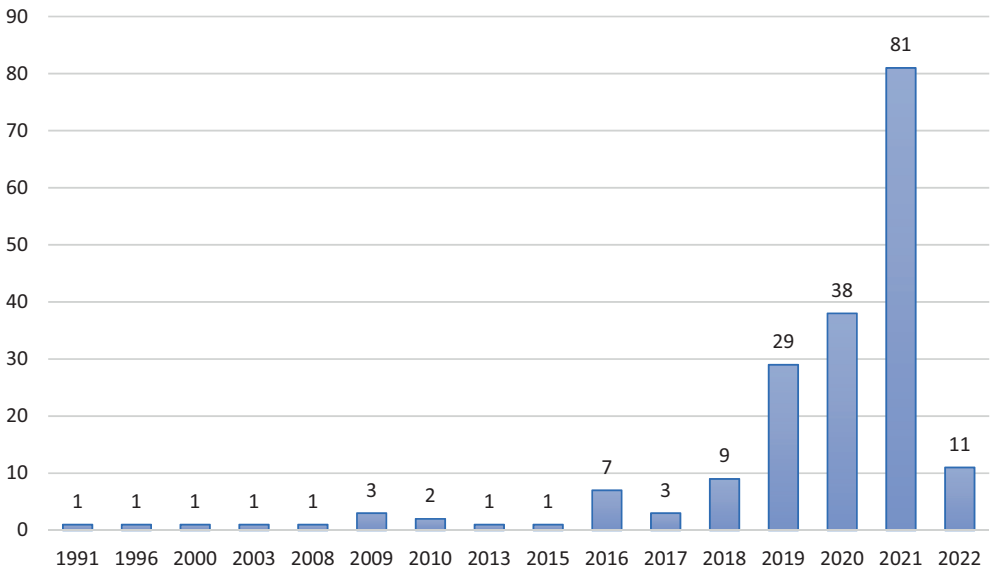

FIGURE 2 Publications per year.

The subject of artificial intelligence, as related to the business sector in general, is daily attracting more attention, and great interest has been shown in it within the academic domain (León-Castro et al., 2021). Before carrying out the cluster-oriented analysis, therefore, different assessments from diverse perspectives were undertaken. Three distinct examinations were made: (1) a performance analysis of the publications per year; (2) contributions per country; and (3) the production/performance of the academic journals.

2.4.1 | Performance analysis

A total of 190 related articles, 120 academic journals and 612 authors were obtained in the search. The evolution of the sample between 1991 and 2022 is shown in Figure 2. The research covered 30 years; an increase in scientific production over the last few years can be seen.

Decade of the 1990s (1991–2002)

Only three articles were published in this period. While these articles did not specifically use the term AI, they addressed the concept of AI and customer and advertising engagement (Blattberg & Deighton, 1991). Blattberg and Deighton (1991) showed that artificial intelligence has the ability to create new messages and learning from previous experiences, which can improve company–customer relationships. An exhaustive evaluation of this article suggests its importance lies in that it was the first to identify these new technological concepts. Overall, the earlier articles introduced ideas which have been developing over the last few years.

Decade of the 2000s (2003–2012)

Consumer behaviour studies began, examining the effects of implementing and integrating artificial intelligence. In general terms, this period could be characterized as the time during which researchers developed an appreciation of how the concepts addressed in the previous decade could be applied in the future.

Decade of the 2010s (2013–2022)

The latter part of this period saw a sharp increase in the publication of research articles. The highest publication rate was in 2021, with 81 articles being published, more than double the previous year. It should be noted that the data for the present study were collected at the beginning of 2022 (February); even in this short period in 2022 the trend was seen to increase.

2.4.2 | Contributions per country

The data collection showed that the authors of the articles came from a wide variety of countries. We started the process by manually entering the articles in an Excel file, but because most articles had co-authors the analysis ran into some difficulties. To overcome these difficulties specific criteria were applied: (1) if an article was authored by researchers from different countries, the country of origin of most of the authors was designated as the country of origin; but (2) if the relevant countries featured just once, then the country of origin of the first author was designated as the country of origin.

Following establishment of these criteria, 41 countries were identified. An inverse scale was used to create a worldwide map in Excel. Figure 3 shows the most prolific countries in terms of authorship.

The United States, India and the United Kingdom were the countries of origin of most authors returned in the search process. It is important to note that U.S. authors published more than twice as many articles as were published by authors from the second-ranked country. Table 3 lists the top 10 countries of origin (in terms of authors).

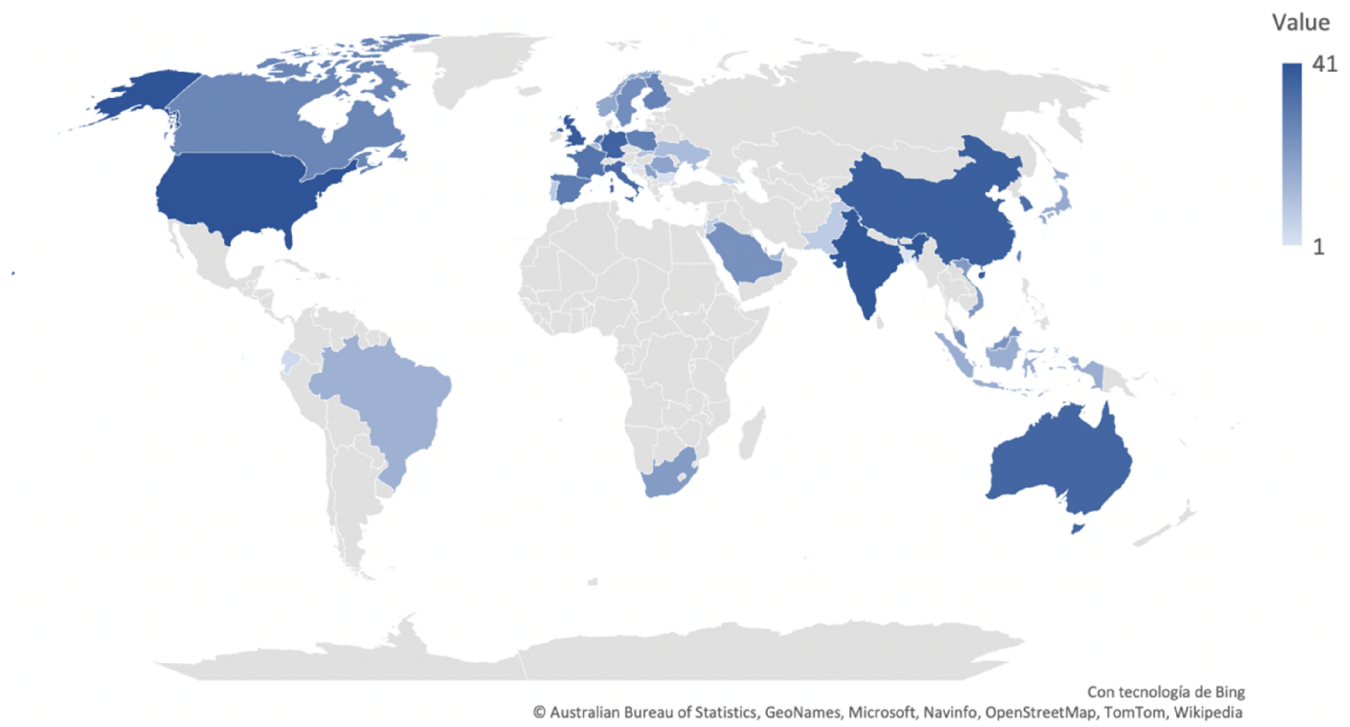

FIGURE 3 Map of the most prolific countries in terms of authorship origin.

TABLE 3 Top 10 countries of origin (in terms of authors).

Number	Country	Number of articles
1	United States	39
2	India	17
3	United Kingdom	15
4	China	13
5	Germany	10
6	Australia	9
7	Italy	8
8	South Korea	6
9	The Netherlands	5
10	France	5

2.4.3 | Performance of academic journals

The 190 articles were published in 120 journals: the statistics show that the articles were not concentrated in a just a few journals, but were published over a wide variety. Table 4 lists the 20 most featured academic journals. As advertisement and customer engagement relate to the business field, and more specifically marketing, most journals were, in some way, associated with marketing.

The performances/production of the Journal of Business Research and the Journal of Advertising should be highlighted, as these published the most articles throughout the overall period.

TABLE 4 Twenty most featured academic journals.

Name of the journal	Number of cited articles
Journal of Business Research	12
Journal of Advertising	8
International Journal of Market Research	5
Journal of the Academy of Marketing Science	5
Industrial Marketing Management	5
Journal of Services Marketing	4
International Journal of Contemporary Hospitality Management	4
Journal of Business and Industrial Marketing	4
Expert Systems with Applications	4
Benchmarking: An International Journal	3
International Journal of Research in Marketing	3
Psychology and Marketing	3
Marketing Letters	2
International Journal of Information Management	2
International Journal of Production Research	2
Industrial Management and Data Systems	2
Journal of Product and Brand Management	2
Computers in Human Behavior	2
Journal of Retailing and Consumer Services	2
Journal of Service Research	2

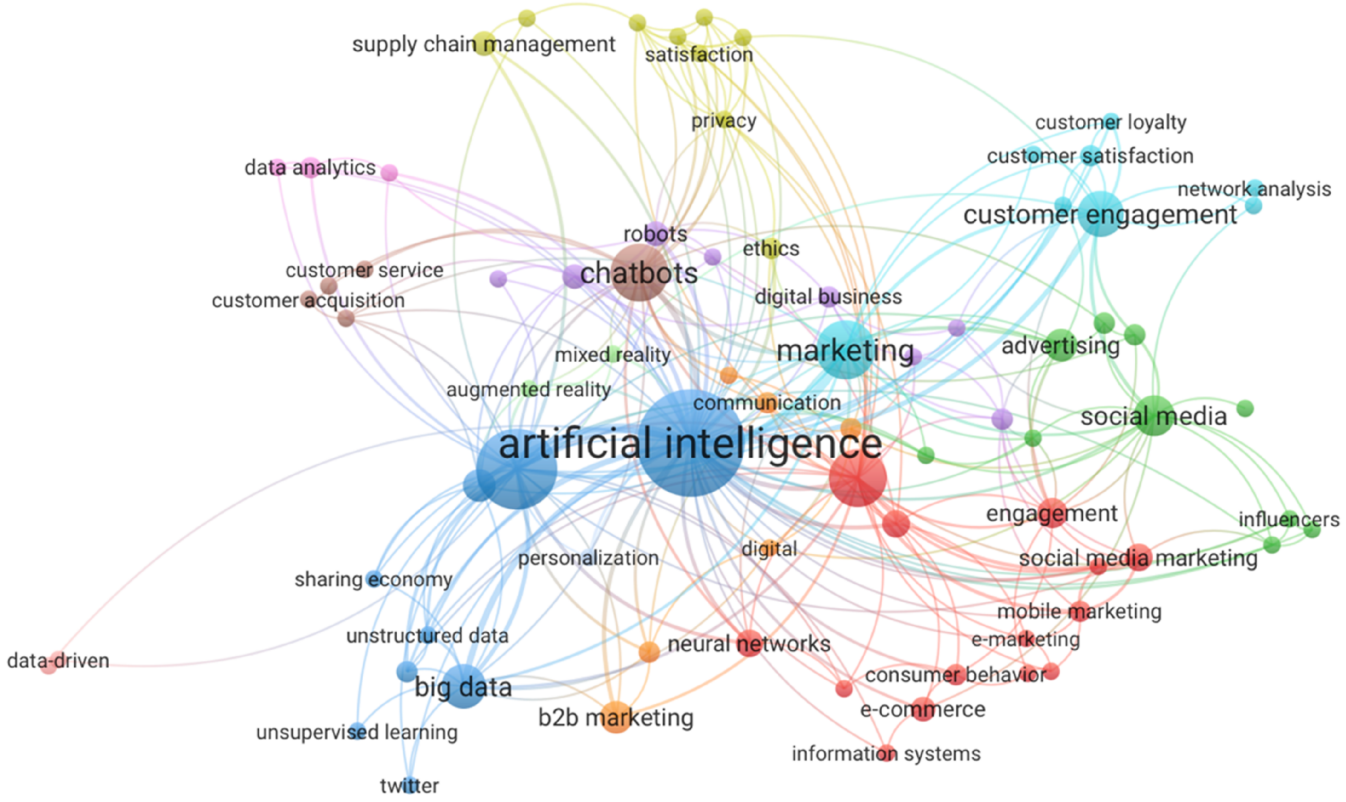

FIGURE 4 Keyword visualization. *Source*: VOSviewer.

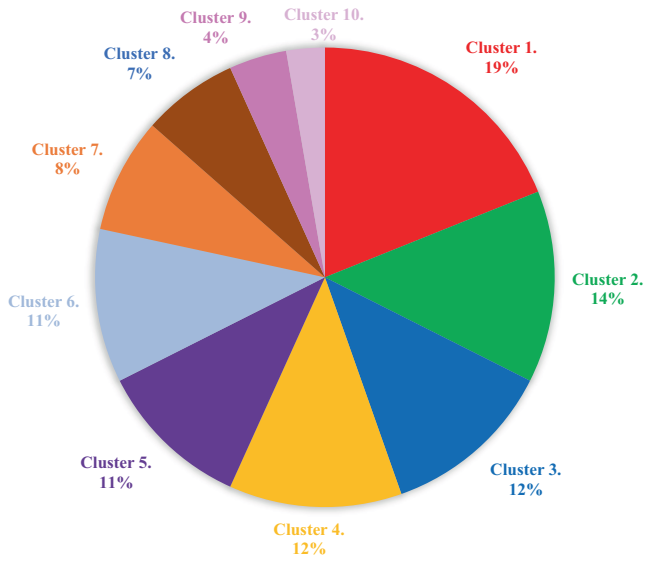

FIGURE 5 Keywords per cluster.

3 | FINDINGS AND DISCUSSION

The VOSviewer tool was used for the co-occurrence of keywords analysis. The results indicated the presence of 12 clusters; however, two clusters were considered irrelevant for the purposes of the present study. One was too general, and could not be readily associated with AI and customer and advertising engagement, and the other involved a more highly technological approach to AI than was appropriate for the present study. Ten clusters were therefore taken into consideration in the hypothesis development.

The network visualization is depicted in Figure 4. The clusters, given different colours, are easily distinguishable, and their keywords are of various sizes, depending on the extent of the relevant production. This helped us differentiate among the clusters, and the overlay visualization was extensively used in the development of the hypotheses as it provided the average years of publication of articles.

Moreover, as depicted in Figure 5, the quantity of keywords assigned to each cluster is observed to exert a significant influence. Notably, approximately 79% of the keywords form the foundation of the initial six clusters, which are centred around the pivotal theme of artificial intelligence. This observation potentially unveils the researchers' keen interest in these particular areas. Through a comprehensive examination of the effects resulting from the variation in keyword quantity within clusters, our aim is to offer valuable insights that can inform the design and optimisation of information retrieval systems.

3.1 | Cluster 1. Focus on digital marketing

This cluster contains 14 keywords, with a main focus on digital marketing. While the average year of publication of articles that include the keyword 'digital marketing' is 2019.59, some authors have argued

that digital marketing, as a whole, appeared around 2010; however, most publications were produced in 2014 (Faruk et al., 2021).

Some authors (Imsagiloiva et al., 2020; Kannan & Li, 2017; Krishen et al., 2021; Nkagawa et al., 2015) have argued that there are three dominant themes in the evolution of digital marketing. First, mobile marketing is a digital marketing strategy that uses smartphones as its main tool for diffusing advertising, and to connect with the customer. The term 'mobile marketing' can be found among the significant keywords of this cluster. It has, indeed, been shown that mobile marketing is a revenue driver used by companies operating in the retail industry as part of their marketing automation strategies (Gwon & Seo, 2021; Nair & Gupta, 2020; Peyravi et al., 2020).

In the realm of social media marketing, these findings take on added significance. As digital marketing expanded in parallel with the growth of the internet and social media, understanding these concepts becomes essential for businesses navigating the intricacies of social media advertising (Bala & Verma, 2018; Cluley et al., 2020; Kim et al., 2021). Within the context of digital marketing, concepts such as e-marketing, e-commerce, and e-word-of-mouth are of particular interest to the e-commerce industry. These terms, prevalent among the keywords in various studies, represent pivotal aspects of modern digital marketing strategies for e-commerce businesses (Ariely, 2000; Qin & Jiang, 2019; Steinhoff et al., 2019).

The overlay visualization shows that new concepts, previously only hinted at, were mainly studied and published around 2021. Some of the concepts were examined even last century (Agrawal & Schorling, 1996), but it was not until around 2021 that researchers started to examine some new concepts, or trends (Dwivedi et al., 2020; Thompson & Brouthers, 2021).

While new technologies can clearly be seen to have had effects on marketing, the basics of the discipline must not be forgotten. It still remains important to develop an effective marketing plan and set communication goals (Faruk et al., 2021; Stone et al., 2020; Van Esch et al., 2021; Vollrath & Villegas, 2022) to achieve the final objective of customer engagement and to ensure that business span across sectors, including retail and e-commerce. Engaging the customer is one of the motives for developing new technologies and applying them in the marketplace.

3.2 | Cluster 2. Advertising engagement: The use of influencers and social media

This cluster contains 10 keywords, all related to the promotion of goods and services. Over the last few years, companies have been increasingly promoting themselves through the use of technological innovations (Haefner et al., 2021). It is evident that social media platforms now wield substantial influence over consumer behaviour, making it essential for fashion and lifestyle brands to harness the power of influencer marketing.

The overlay visualization shows that the average point/year of publication for the keyword term 'social media' was in the second half of 2018, and the terms 'social media' and 'marketing' were trending in 2019. The term/word 'influencer', a significant keyword in this cluster, was trending in 2020 (Abhishek & Srivastava, 2021). The research showed the average year of publication for the term 'influencer', however, was 2021. In conclusion, it can be observed that publications about the use of social media for promotional purposes increased in 2018, and the number is continuing to increase.

Significantly, the term influencer did not appear until recent years, but the reality is quite different. The truth is that the concept/definition of the influencer has long existed. Ultimately, an influencer is simply a person who is well known on communication channels, including social media, through expressing his/her opinions about specific subjects and, thus, wields influence over his/her audience (Alves et al., 2010; Rutter et al., 2021). It was not until recent years, however, that companies began to realize how profitable it might be to invest in those influencers (Varsha et al., 2021). The term, thus, gained attention recently, but the concept has existed for a very long time, particularly in the context of fashion and lifestyle marketing.

The increased visibility of social media influencers has encouraged the development of influencer marketing. The fact that, in less than 3 years, the term 'influencer' has evolved incredibly fast, demonstrates that this domain is evolving. Some authors have described influencers as an emerging market (Abhishek & Srivastava, 2021; Chen, Prentice, et al., 2022; Chen & Wang, 2019; Roy & Jain, 2022; Vieira et al., 2019; Ye et al., 2021). The fashion industry's heavy reliance on influencer marketing necessitates a comprehensive understanding of its impact on customer engagement and brand loyalty.

Influencer marketing, which is measurable by engagement, likes and clicks, has had a great impact on customers. What influencers say and do is significant, but so is what they write; thus, sentiment analysis is a useful approach to analysing content (Abhishek & Srivastava, 2021; Ye et al., 2021). Sentiment analyses of what influencers write can be used to improve customer engagement (Capatina et al., 2020; Maiyar et al., 2019; Mustak et al., 2021). Number of likes, followers and views are fundamental measures of influencer-follower engagement, as are the clickable purchase links or promotion codes that they provide to their followers. Influencers' impacts are ultimately measured by how much influence they have on their audiences in terms of product purchases. Following someone on social media is free for the follower, but the real impact of influencers' is on their followers product/services buying behaviours through links or promotion codes.

In addition, social media have been shown to be an effective means of advertising to increase brand engagement (Yang et al., 2016; Zahay, 2021) and, in general, for promoting advertising engagement and to evaluate the effectiveness of advertising (Calder et al., 2009; Campbell et al., 2022; Ulya & Alversia, 2021). As a result, AI-supported social media have transformed digital advertising into intelligent advertising, which enables personalized promotion (Li, 2019; Nyström & Mickelsson, 2019; Singh et al., 2022). AI and advertising domains help in the measurement of advertising campaign effectiveness, incorporating AI-driven metrics for assessing engagement, conversion rates, and return on investment.

3.3 | Cluster 3. Artificial intelligence in marketing

Cluster 3 could be considered the main cluster due to the presence of the keyword term 'artificial intelligence' (the biggest in the visualization in Figure 4). It contains nine words. Two other terms, 'machine learning' and 'big data', are also important. These three keywords are very close to each other in the map (the average publication year ranges from 2019.91 to 2020.09).

Artificial intelligence, which we discuss in the Introduction and Literature Review sections, is the latest disruptive technology (Quah & Chua, 2019; Verma et al., 2021). AI holds huge marketing potential, as is demonstrated in this study, and has been argued to be so by various authors (De Bruyn et al., 2020; Eriksson et al., 2020; Wirth, 2018; Xi & Hamari, 2021). Hence, the disruptive potential of artificial intelligence in marketing is evident in its ability to automate routine tasks, enhance customer segmentation, and drive cost-effective, data-driven decision-making processes.

AI, robotics and machine learning have had a great effect on marketing, and they continue to evolve. Despite the effects of these emergent technologies, society is not yet in the age of true artificial intelligence; in fact, that is still a few decades away (Ryan & Jones, 2009; Siau & Yang, 2017). It has been argued that artificial intelligence has the forecasting ability to predict how markets will react to certain consumer behaviours (Agrawal & Schorling, 1996; Fernández-Rovira et al., 2021; Hakim et al., 2021; Ma & Sun, 2020; Pantano et al., 2017; Portugal et al., 2018; Shumanov et al., 2022). Furthermore, several studies have examined the capabilities of machine learning in the realm of customer segmentation. Specifically, the works of Brei (2020), Huang and Rust (2021), and Smeureanu et al. (2013) have made notable contributions to this discourse. These authors underscore the imperative for research in the domain of customer segmentation, given the rapid advancements in AI and the potential disparities in customers' comprehension and utilization of AI technologies.

It would represent a negative effect on society if human-like robots and other technological tools replaced employees, mostly salespersons and marketers, in the business field, especially within the service industry, and more specifically, within the financial sector, as trust emerges as a critical factor in the decision-making process when concluding a purchase. Some studies have argued that chatbots are as effective as skilled workers, and four times more effective than employees without work experience, in terms of ability to create customer engagement (Luo et al., 2019; Proserpio et al., 2020; Siau & Yang, et al., 2017). Rajaobelina et al. (2021) argued that deploying chatbots can build customer loyalty. Hence, factors such as age, gender, or background can influence the decision to enhance or diminish engagement through the use of AI.

Academic inquiry into the integration of artificial intelligence with augmented reality (AR) explores how AI algorithms can enhance the real-time perception, recognition, and interpretation of AR-generated content (Devagiri et al., 2022; Rana et al., 2022; Sahu et al., 2021; Steinhoff et al., 2019). Thus, the academic discourse surrounding AI and augmented reality encompasses the development of intelligent AR interfaces that adapt to user preferences and provide personalized, context-aware content.

A keyword that stands out, not because of its importance, but because of its relationship with the main keyword terms, is 'Twitter'. Twitter can serve as a tool to promote AI among the public, almost in an educational sense, as there is a belief that AI may be dangerous, and its uses are often misunderstood (Wu et al., 2022). Hence, AI and its variants have become key elements in the improvement of customer–brand relationships (Varsha et al., 2021).

3.4 | Cluster 4. Basis of customer engagement

This cluster contains nine keywords, generally customer focused, about what, and how, companies can offer their products/services to customers, and the feedback they would like to get back. The studies in this cluster discuss the use of new technologies for improving the customer experience, and service quality, by promoting loyalty, privacy and satisfaction (Ashfaq et al., 2020; Chen, Chan-Olmsted, et al., 2022; Klaus & Zaichkowsky, 2020; Prentice & Nguyen, 2020; Yau et al., 2021).

No keyword stands out in this cluster, the links between them not being strong. The average publication year for most of the keywords in this cluster is 2021, which suggests that most articles that discussed how to use new technologies to improve company–customer relationships were published in recent years.

Artificial intelligence is used as a tool to provide operational efficiency and to improve the customer experience (Prentice et al., 2020; Prentice & Nguyen, 2020). Some studies have shown that consumers have a preference for human interactions with employees when purchasing a service. The goods purchasing process is being updated with the use of technology, for example, some clothing stores have introduced self-service cashiers, as have supermarkets and other retailers (Moi & Cabiddu, 2021; Van Esch et al., 2021; Van Pinxteren et al., 2019).

The purchase of services, such as hotel stays, however, has been demonstrated to be more satisfactory for clients if they are served by human employees, as guaranteed service quality is a key element in the service industry (Pasca et al., 2021). However, the service sector and, more specifically, the health industry, must adapt their systems to attract or maintain their customers (Aamer et al., 2021; Bilan et al., 2022; Díez-Sanmartín et al., 2021; Lin et al., 2018); the application of AI to supply chain management might form better company–customer relationships (Jamwal et al., 2021; Schroeder & Lodemann, 2021; Sharma et al., 2020; Tiwari et al., 2018; Younis et al., 2022).

Another keyword term in this cluster is 'disruptive technology', that is, innovations that cause turmoil in the established market structure and among dominant firms. The disruption is normally caused by new products being cheaper, simpler and more convenient, in general, than those featuring the current dominant technologies. Usually, these disruptive technologies become the dominant technology (Bock et al., 2020; Robertson et al., 2021), but customers' opinions are

important in reaching that point and, therefore, they must be taken into account.

A key factor in the relationship between service experience and customer engagement is the customer's emotional intelligence. Customers' feedback about their experiences helps companies to achieve brand engagement and, eventually, brand loyalty (Prentice & Nguyen, 2020; Robertson et al., 2021); this will be addressed in more depth in the discussion of Cluster 6. The main point is that businesses need to better understand their customers' experiences to improve their experiences.

Finally, concerns have arisen as to whether artificial intelligence drives responsible conduct (Grinbaum, 2018), and how companies might use AI for social-good purposes, such as promoting societal and environmental activities to modify consumption patterns (Di Vaio et al., 2020; Hermann, 2022; Parmentola et al., 2022).

3.5 | Cluster 5. Using robots to attract customers

This cluster contains eight keywords. The cluster could be considered a padding cluster, mainly due to its location in the keyword visualization in Figure 4, where the keywords are situated very close to the centre of the word cloud, mainly around Clusters 4, 6 and 8, but also connecting directly with them. This cluster includes some keywords that appeared in the earlier publication years, between 2011 and 2020.

Focusing now on the keywords themselves, the cluster shows the importance of digital technologies in various areas, such as 'B2B digital marketing' (business-to-business digital marketing) and 'digital consumer engagement'; also featuring are 'robots' and the 'automation' sector, in general. Furthermore, the cluster highlights the role of automation, robotics, and artificial intelligence as part of the machine-age technologies that are reshaping customer–firm interactions. This evolution in technological tools is influencing customer engagement strategies and interactions between customers and companies.

One of the most modern trending subjects is machine-age technologies, which are posited to positively affect customer–company relationships (Donepudi, 2020; Singh et al., 2021). Automation, robotics and artificial intelligence are machine-age technologies and, as the trends identified in this study show, they are profoundly extending the variety of tools available to companies, and are affecting how customers and firms interact (Ameen et al., 2022; Glende et al., 2016; Goel et al., 2022; Hollebeek et al., 2021). This transformation is especially evident in the service industry, where digital tools are expanding the range of options available to companies and influencing customer interactions.

Furthermore, it is essential to assess the effectiveness of robots in information processing and rational decision making, a subject that has been explored by Miller (2008). This inquiry pertains to the extent to which robots can be regarded as equally trustworthy as humans. The financial sector and more specifically, the banking and insurance industry, being highly reliant on customer trust, particularly benefits from these advancements in technology, as trust plays a pivotal role in the completion of financial transactions.

Previous AI-based studies focused strongly on the use of robots, such as search engines and open digital platforms, as a way of attracting consumers (Abbate et al., 2019; Duong et al., 2022; Killoran, 2009). These authors examined how technical communication businesses reach the final consumer by using websites and search engines as intermediaries. Their results showed that this strategy was among the most helpful for directing people to companies' websites and, also, that the better the website, the better the feedback the company received (Killoran, 2009; Suleiman et al., 2021).

In the realm of AI-driven innovations, robots have found relevance in diverse sectors, including the hospitality industry. Recent developments have seen robots being deployed in hotels and resorts to enhance customer experiences (Mariani & Borghi, 2021; Yu, 2020). These autonomous machines can perform various tasks, such as delivering room service, providing concierge assistance, or even serving as guides within the premises. Research has shown that incorporating robotic services into the hospitality sector can lead to improved guest satisfaction and operational efficiency (Alboqami, 2023).

3.6 | Cluster 6. How to attract the customer

The eight keywords in this cluster relate to marketing and how to create attachment with customers. The biggest keyword in the visualization is 'marketing', followed by 'customer engagement'. 'Marketing' averaged in 2018.48, while 'customer engagement' averaged in 2020. This is logical in that marketing, as a concept, has existed, obviously, for longer than customer engagement, which has only relatively recently been recognized as useful for improving company performance.

Other concepts appeared over time, connected with the previously mentioned keywords. For example, the term 'brand engagement', which is based on attachments between consumers and brands, is of importance in this cluster; its average publication year is 2020. This is logical because it is closely related to the term 'customer engagement' and, thus, they may have evolved together.

Engagement leads to attachment, and attachment can transform into loyalty over time (Chen et al., 2021). This trend became evident as time passed, and it makes sense that the average year of publication for the keyword term 'customer loyalty' is 2020.5. For established brands, customer loyalty helps to improve the customer's experience and satisfaction. The average publication year for the term 'customer satisfaction', which is mainly related to engagement and new technologies, was 2021. In conclusion, it can be argued that due to the advent of new technologies, customer and advertising engagement have evolved.

Cheng and Jiang (2021) demonstrated that AI can be used to improve customer–brand relationships. They found that AI-powered chatbots had benefits that improved customer engagement. A strong customer–brand relationship can prompt users to provide positive feedback about their brand preferences, brand loyalty and purchase

intentions (Cheng & Jiang, 2021; Ciuchita et al., 2023; Yau et al., 2021). The application of AI and chatbots in the music industry aligns with the findings of Kumar et al. (2019). AI-driven music recommendation algorithms, chatbots for customer support, and personalized playlists based on user preferences are examples of how technology is leveraged to improve customer engagement in the music sector (e.g., Spotify). These advancements aim to foster a stronger bond between music platforms and listeners and increase music consumption.

Rana et al. (2022) and Awan et al. (2021) proposed a set of steps that explained how to increase customer engagement by progressively increasing the company's knowledge of the customer. This was also demonstrated in a study which found that customer–brand engagement was stronger when brand–consumer relationships were emotional, than when they were functional; this influenced customer loyalty to the brand (Cheng & Jiang, 2021). In this context, the movie industry, similar to the music sector, is deeply impacted by customer engagement and loyalty principles. In recent years, with the growth of streaming services and digital platforms (such as Netflix), studios and distributors have increasingly focused on building emotional connections with moviegoers and enhancing brand loyalty.

3.7 | Cluster 7. Impact of new digital communication tools on B2B markets

There were six keywords in this cluster, the keyword 'B2B marketing' being the most strongly represented, which suggests that the cluster reflects the impact of new digital communication tools on B2B markets. Overall, this cluster is not strongly represented in Figure 4, but is quite close to the main topics, and the relevant terms are situated in the centre, and around the highest strength keywords.

The average publication year obtained in the analysis of the overlay visualization varied between mid-2019 and mid-2020, but the featured concepts have been referenced for many years, indicating that they had been examined for quite some time.

B2B marketing, or business-to-business marketing, is the process through which a company sells its products or services to another company. The impact of new digital tools on this market has been exceptional and, indeed, has facilitated inter-company collaboration, allowing the parties to be more efficient and obtain improved results (Herhausen et al., 2020; Kim & Moon, 2021; Pandey et al., 2020; Yun et al., 2016).

In the financial industry, for example, the adoption of digital tools in B2B marketing has not only revolutionized but also fundamentally reshaped how financial institutions engage with their corporate clients. This profound transformation is characterized by the widespread integration of advanced technologies, such as artificial intelligence and data analytics, which have ushered in a new era of connectivity, communication, and data-driven decision making within the sector (Imsagiloiva et al., 2020; Jiang, 2021). The implications of this digital revolution extend far beyond the traditional paradigms of B2B interactions, impacting the entire landscape of financial services and redefining the way financial institutions understand, serve, and collaborate with their corporate clientele.

Some studies compared digital technologies, mainly AI-based, and examined how they might be used to increase companies' knowledge of their customers and, subsequently, to analyse their impact on B2B markets (Bag et al., 2021; Calvet et al., 2020; Gupta et al., 2022). Today, digital mediation in B2B marketing, through the use of the internet, has been seen to have a positive effect on companies' knowledge of their customers' needs and wants (Durmaz & Efendioglu, 2016; Kumar et al., 2020); maintaining good quality communication channels with other firms, and with the final customer, is imperative (Kim & Moon, 2021).

Digital tools, in this context, go beyond just robots and chatbots, which may be more visible and appealing to customers (Damnjanovic, 2019; Grandinetti, 2020). Other computational tools used by firms to analyse consumer behaviour, such as natural language processing (NLP), are also of significance. NLP is an analytical technique performed using computer software that helps researchers and companies understand human language (Huang & Rust, 2021; Kang et al., 2020). This tool improves the customer experience and, consequently, provides benefits for firms.

The evolution of digital technologies has had a positive effect on the natural language processing field. The biggest impact has been made by smartphones. These tools allow consumers to perform a variety of tasks, such as posting on social media and expressing their emotions through social media apps and online blogs. Essentially, digital technologies shorten the distance between people, and foster an exchange of ideas among strangers (Bratić et al., 2020; Kang et al., 2020; Makhkamova et al., 2020).

3.8 | Cluster 8. Chatbots, new tools for customer service

There are five keywords in this cluster. The main term used is 'chatbots', and the rest of the keywords used are variants on that theme. The average publication year obtained from the overlay visualization varies between 2018, 2019 and 2020, but the term 'chatbots' itself averaged at 2020.45, which demonstrates that chatbot technologies have increased customer engagement which, in turn has improved competitivity in emerging markets (Eren, 2021; Mogaji et al., 2021).

The terms 'artificial intelligence' and 'machine learning' in Cluster 3 are two of the biggest in the visualization; they relate to chatbots, which makes sense, because chatbots are considered a type of artificial intelligence.

Cluster 6 also has a relationship with Cluster 4, which is not only based on one or two keywords, but on several terms, such as customer experience, loyalty, trust and satisfaction. As aforementioned, one of the main reasons companies apply new technologies, such as artificial intelligence, in the customer engagement field, is to improve customer–company relationships. In Cluster 4 the focus is on the feedback that companies want from customers, while in Cluster 6 the focus is on how companies can achieve customer engagement.

It has been shown that the relationships developed between technologies and customers increase customer satisfaction, but also provide benefits for companies, including luxury brands (Chi-Hsien & Nagasawa, 2019; Chung et al., 2020). More and more companies are using chatbots to support visitors (and potential customers) to their websites, essentially using them to provide customer service (Arsenijevic& Jovic, 2019; Jenneboer et al., 2022; Khoa, 2021; Kull et al., 2021; Kushwaha & Kar, 2021; Ngai et al., 2021), to increase brand awareness (Rana et al., 2022) and even for advertising purposes (Van den Broeck et al., 2019). Their ultimate goal is to engage customers with the brand, in the hope that this strategy will create, in the long run, customer loyalty.

Moreover, in the healthcare sector, chatbots have emerged as valuable tools in enhancing patient experiences and healthcare service delivery. These AI-driven virtual assistants can provide patients with information, appointment scheduling, medication reminders, and symptom assessment, thus fostering a deeper level of patient engagement and improving healthcare outcomes (Di Vaio et al., 2020; Garg et al., 2022). In the education industry, chatbots have proven instrumental in facilitating efficient communication and support for students. Academic institutions have deployed chatbots to address student inquiries, offer guidance on course selection, and provide timely academic information. This application of chatbots not only enhances student engagement but also contributes to the overall educational experience (McArthur et al., 2005).

Academic research in the field of chatbots has primarily focused on enhancing their conversational abilities, personalisation, and adaptability to different user contexts (Suhaili et al., 2021). Thus, Cai et al. (2022), Zhou et al. (2022) and Du and Xie (2021) have also delved into the ethical dimensions of chatbots, exploring issues related to privacy, bias, transparency, and the responsible use of artificial intelligence in human–computer interactions.

A potentially significant keyword term is 'emerging markets', in which artificial intelligence is a prominent term. The development and adoption of chatbots have been a challenge in emerging markets (Johanesová et al., 2019; Mogaji et al., 2021); however, chatbots, combined with other digital technologies, have become key elements in brand–consumer engagement in these markets (Kaczorowska-Spychalska, 2019).

3.9 | Cluster 9. Latest tools

There are three keywords in this cluster, all related to the newest technological tools/concepts. The average publication year for the three terms is 2021, which demonstrates that they are quite recent, or new, terms/concepts.

Some authors have suggested there are four emerging technology fields, that is, the 'ABCD innovations': AI, blockchain, the cloud and data analytics (Akter et al., 2022). Two of these are keywords in this cluster, 'blockchain' and 'data analytics'. AI is the main focus of the present study, and the cloud and data analytics are directly related to the keyword term 'artificial intelligence' in the word visualization. Exploring the application of blockchain-based smart contracts in transport agreements and marketing partnerships (Barua et al., 2020) can offer insights into how decentralized, self-executing contracts may optimize operations and reduce disputes.

Blockchain is basically a system that records cryptocurrency transactions on computers linked in a peer-to-peer network (Akter et al., 2022). The most well-known cryptocurrency, globally, is Bitcoin (Lies, 2019). The advantage of the system is that hacking is almost impossible, which guarantees security and generates trust. It is decentralized and does not use intermediaries, which are normally banks which operate with traditional currencies.

Data analytics entails the collection, analysis, use and interpretation of data (Akter et al., 2022). It has been prominent lately due to the increasing use of big data. The analysis and interpretation of data, among other techniques, helped promote Industry 4.0 or, in other words, the Fourth Industrial Revolution. AI, gene editing and advanced robotics are the main fields of study in this new revolution (Bag et al., 2022; Mišić & Perakis, 2020). In industries such as manufacturing and biotechnology, data analytics plays a pivotal role in optimizing processes and fostering innovation.

3.10 | Cluster 10. Focus on the programming paradigm

There are two keywords in this cluster. Although it is small, and not entirely related to the main topic in question, they are significant due to their location in the keyword visualization. Both terms, 'data-driven' and 'decision support systems', are located in the bottom left part of the Figure 4, quite separated from the main concentration of keyword terms. The average publication year of both word terms is 2020. Their separation is due mainly to their focus on the programming paradigm, while the aim of the present study is to assess the effects of artificial intelligence, and its variants, on customers, not to examine the programming process undertaken to develop the analytical tools (Chen et al., 2019; Kishen et al., 2021). They are, however, of great importance.

Previous research has shown that both terms are related to big data analytics tools and artificial intelligence which, according to some studies, are of great interest in the marketing field, mostly within the domain of customer analytics and decision support systems (Abdel-Karim et al., 2021; Arco et al., 2019; Fan et al., 2015; Fayed, 2021; Gambella et al., 2021); this is due, above all, to the rise of unstructured data, and because the market/society requires new technologies to respond to consumers' new needs, for example, smartphones (Balducci & Marinova, 2018; Mariani & Borghi, 2021; Salminen et al., 2019). This has become particularly relevant in the marketing industry, where understanding consumer sentiments and feedback is crucial for strategic decision making.

A recent study analysed more than one million restaurant reviews in order to develop a prediction model that would show how reviews can help customers make decisions (Lee et al., 2021; Yang, Li, et al., 2021; Yang, Yang, et al., 2021). Big data analytics techniques

were key to performing the study. The results obtained showed that specific attributes, such as review comment, reviewer, restaurant and linguistic content are essential elements of the customer's decision-making process when choosing a restaurant based on online reviews. The restaurant sector is leveraging big data analytics to better understand and cater to customer preferences, ultimately improving the dining experience.

4 | FUTURE RESEARCH AGENDA

A content analysis was performed, using Leximancer software, to identify trends in the literature and to determine the future direction of research into artificial intelligence in the customer and advertising engagement context. Leximancer analyses the proximity values of textual input using the Bayesian method (Han et al., 2021; Hegde & Rokseth, 2020; Kumar et al., 2020). It uses information gathered from different articles as input, and then generates a concept map that identifies themes and inter-theme connections (Smith & Humphreys, 2006).

The analysis is usually performed by dividing number of articles identified by different groups of years, and then analysing the evolution of concepts over a certain period of time. However, in this study this method was not followed; the evolution of the keywords was analysed through the cluster development process. This process was undertaken using VOSviewer, that is, the overlay visualization tool; this provided the average publication dates of the articles. This provided an analysis of the evolution of the various relevant concepts, which helped identify future research directions.

Sixteen articles were used as the basis of a content analysis to identify directions for future research (see Figure 6). The articles were chosen due to their relevance to the central topic of this study. They all included the terms 'customer engagement', 'advertisement engagement' and 'artificial intelligence', in one form or another. As this is a new research area, it is no surprise that the articles chosen were published between 2019 and 2022. Given the fast pace of today's technologically based society, it is logical that articles published before 2019 would have addressed topics that may already have been extensively examined. Articles that did not include these keywords were not included in the project model.

The visualization provided by Leximancer shows how different keywords relate to each other based on the results of the research performed. The keywords can be divided into two groups. First, the main keywords, which are just six in this case, are each represented by a different bubble. The remainder of the terms are connected by lines and dots. It is important to note that the greater the overlaps among the circles, the greater has been the amount of research done into that overlapping area. Therefore, in order to find gaps in the research, the focus should be on the small overlaps, which might help identify future research directions.

The themes 'data', 'media', 'customer' and 'engagement' are the most significant research topics. The biggest overlap is between 'media' and 'engagement', which indicates that a great deal of research has been undertaken into these two themes. The themes 'learning' and 'reality' are not as significant as others; however, they are connected, meaning that more exhaustive research needs to be undertaken into the two themes. More research is required into how AI learns from reality, and how it can create a more personalized customer engagement; comparisons might be made by carrying out the same experiment applying AI, and not applying AI, to help identify its evolution, and its future effectiveness.

Some promising research directions were identified. First, the large size of the theme 'data' clearly shows that it will gain in importance in the near future. Big data has been one of the main tools used in the new data science revolution; it has been applied in various domains, such as marketing (Albayrak et al., 2019; El-Alfy & Mohammed, 2020; Lies, 2019). The size of the themes 'data' and 'customer' suggest that their overlap is not particularly significant; however, the exploration of their relationship is a possible future research direction. Specifically, this might help companies identify how data can transform the customer's mentality and, if necessary, how to redirect their behaviour towards making purchases/positive outcomes. Thus, exploring the ethical dimensions of AI-driven customer data analysis will be a critical focus of future research, addressing concerns related to privacy, transparency, and fairness. In this domain, AI has the potential to serve as an auxiliary tool for service-oriented companies specializing in intangible services, particularly in cases where human judgement significantly influences the ultimate purchase decision.

Moreover, previous research has indicated that users' perceptions of quality are among the theoretical foundations of technology acceptance (Varsha et al., 2021), in this case, good quality services and AI. Future research initiatives could undertake a more comprehensive exploration of the interplay between 'customer' and 'data,' aiming to reveal novel strategies for augmenting customer engagement within the tourism sector. As highlighted by Pantano et al. (2017), there is a discernible requirement to utilize open data for the purpose of predicting tourist response, above all, after COVID-19 (So et al., 2021). More specifically, researchers should also consider the evolving regulatory frameworks governing the use of blockchain, and data analytics, in the transport and marketing sectors, as these frameworks influence industry practices and innovation to improve B2B decisions. In the domain of culture, AI has the potential to reshape the way individuals interact with their heritage, fostering greater appreciation and understanding of cultural traditions and artefacts. Future research might investigate the utilization of AI to preserve and promote cultural heritage, enabling virtual tours of historical sites, multi-sensory experiences of cultural events, and advanced curation and archiving in museums and cultural institutions.

In terms of research approaches, several issues related to the interaction of 'data' and 'media' can be highlighted. Whereas Kietzmann et al. (2018) emphasized the positive side of the use of AI and social media, future studies might assess which technologies are most effective for engaging customers to enhance brand awareness and increase product sales. As AI algorithms continue to evolve,

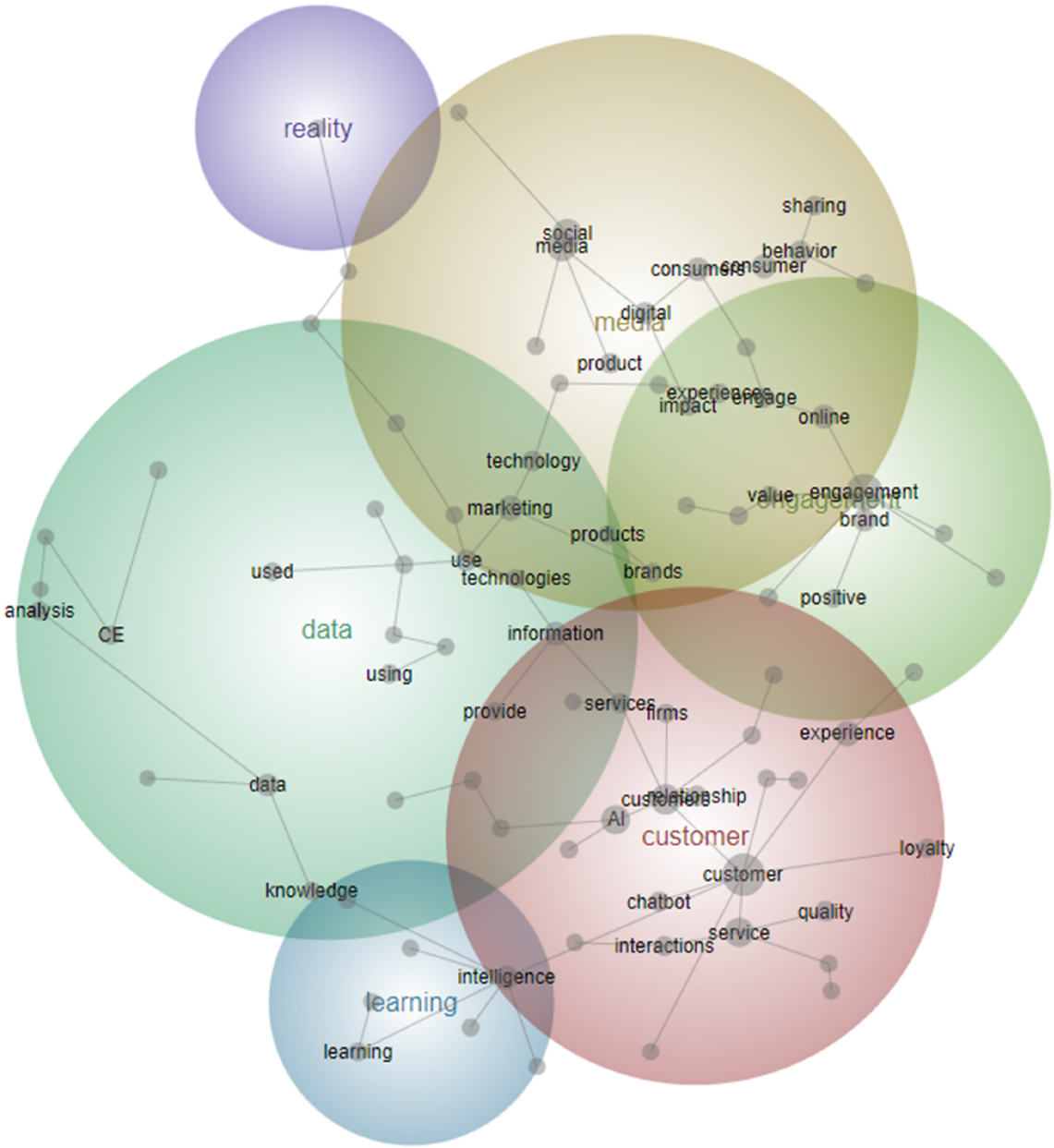

FIGURE 6 Content analysis visualization. *Source*: Leximancer.

future research will likely focus on the development of AI-powered tools that facilitate data-driven decision making for media professionals, optimizing content creation and distribution strategies. In addition to exploring the effectiveness of AI technologies in brand engagement and product sales, future research endeavours could delve into the application of these technologies in the domains of culture and the arts, specifically within the museum and theatre sectors. These cultural institutions have started harnessing data-driven applications to enhance visitor experiences, personalize recommendations, and streamline events (Burgard et al., 1999; Van Esch et al., 2021). Investigations in this context may examine how AI can transform the way customers engage with cultural content and interact with these institutions.

Future works might also examine the connection between 'media' and 'engagement', the impact of media on engagement and if consumers consider that companies might use SM for more than one purpose. Researchers should investigate the mediating and moderating factors that influence the impact of media on engagement using AI, including content relevance, user demographics (age, gender, educational background, …) and the timing of media exposure and furthermore, whether consumers perceive companies as utilizing SM for multifaceted purposes beyond traditional advertising, such as customer service, brand storytelling, or community-building efforts and to emphasize how AI helps to react to customer feedback.

As Choi and Lim (2020) noted, AI technologies used in online advertising help increase target audiences; hence, knowing which

technologies to use, and when and how to use them, might be beneficial for companies. In this line, future research should strive to provide how AI technologies in online advertising campaigns can empower companies to not only reach broader target audiences but also deliver personalized, relevant content that resonates with individual consumers. In particular, within industries like fashion, where consumer purchasing decisions often hinge on online review-based assessments (Maiyar et al., 2019).

The 'learning' theme overlaps only slightly with the themes 'data' and 'customer', indicating there is still much to learn about this field. Companies should use machine learning and big data effectively to improve their knowledge of their customers, which will help them to improve their customer engagement, and this can be a new research avenue. It has been demonstrated that AI empowers brands; however, many companies/brands are still reluctant to embrace the technology, and remain unsure about how AI-powered solutions could improve CE (Lim et al., 2022). Future research may investigate the role of AI in predicting and understanding individual customer learning preferences, enabling more effective curriculum design and adaptive learning pathways, for example, the use of AI-driven chatbots and virtual assistants in the media and creative industries.

On the whole, the marketing landscape is poised to witness a profound AI impact characterized by more sophisticated search algorithms, intelligent advertisement placements, enhanced content delivery mechanisms, extensive utilization of chatbots, robust fraud detection and data security measures, image and voice recognition technologies, predictive customer service enhancements, and precise customer segmentation strategies. All of these domains represent prominent avenues for researchers.

5 | CONCLUSIONS

Research into the application of artificial intelligence in customer and advertising engagement has greatly expanded, to the extent that conducting bibliometric research has become a complex task (Punjani et al., 2019); however, the present study contributes to the marketing field by bridging a gap, that is, by undertaking a bibliometric analysis that examines the effect of AI on customer and advertising engagement.

The cluster-oriented visualization performed with VOSviewer identified 10 clusters, or themes, related to the central topic of the study: (1) Focus on digital marketing; (2) Advertising engagement: use of influencers and social media; (3) Artificial intelligence in marketing; (4) Basis of customer engagement; (5) Using robots to attract customers; (6) How to attract the customer; (7) Impact of new digital communication tools on B2B markets; (8) Chatbots, new tools for customer service; (9) The latest tools; and (10) Focus on the programming paradigm. The study also identified future research directions.

The study results contribute by: (1) answering the research questions posed in the Introduction section of the work; (2) providing increased knowledge of the application of AI in marketing, in general; (3) identifying research production and contributions per year, by country and by academic journal; (4) identifying 10 different research domains related to how AI can be used to create better customer engagement.

To conclude, the information provided and analysed in this research will be of great service to researchers and practitioners interested in the relationship between AI and customer and advertising engagement.

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CONFLICT OF INTEREST STATEMENT

The authors declare no conflicts of interest.

DATA AVAILABILITY STATEMENT

The data that support the findings of this study are available from the corresponding author upon reasonable request.

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REFERENCES

Aamer, A. M., Yani, L. P. E., & Priyatna, I. M. A. (2021). Data analytics in the supply chain management: Review of machine learning applications in demand forecasting. *Operations and Supply Chain Management*, *14*(1), 1–13. https://doi.org/10.31387/oscm0440281

Abbate, T., Codini, A. P., & Aquilani, B. (2019). Knowledge co-creation in open innovation digital platforms: Processes, tools and services. *Journal of Business and Industrial Marketing*, *34*(7), 1434–1447. https://doi.org/10.1108/JBIM-09-2018-0276

Abdel-Karim, B. M., Pfeuffer, N., & Hinz, O. (2021). Machine learning in information systems—A bibliographic review and open research issues. *Electronic Markets*, *31*(3), 643–670. https://doi.org/10.1007/s12525-021-00459-2

Abhishek, & Srivastava, M. (2021). Mapping the influence of influencer marketing: A bibliometric analysis. *Marketing Intelligence and Planning*, *39*(7), 979–1003. https://doi.org/10.1108/MIP-03-2021-0085

Agrawal, D., & Schorling, C. (1996). Market share forecasting: An empirical comparison of artificial neural networks and multinomial logit model. *Journal of Retailing*, *72*(4), 383–407. https://doi.org/10.1016/S0022-4359(96)90020-2

Akbari, M., & Do, T. N. A. (2021). A systematic review of machine learning in logistics and supply chain management: Current trends and future directions. *Benchmarking: An International Journal*, *28*(10), 2977–3005. https://doi.org/10.1108/BIJ-10-2020-0514

Akter, S., Michael, K., Uddin, M. R., McCarthy, G., & Rahman, M. (2022). Transforming business using digital innovations: The application of AI, blockchain, cloud and data analytics. *Annals of Operations Research*, *308*, 7–39. https://doi.org/10.1007/s10479-020-03620-w

Albayrak, N., Ozdemir, A., & Zeydan, E. (2019). An artificial intelligence enabled data analytics platform for digital advertisement. In

Proceedings of the 2019 22nd conference on innovation in clouds, internet and networks and workshops, ICIN 2019 (pp. 239–241). IEEE. https://doi.org/10.1109/ICIN.2019.8685870

Alboqami, H. (2023). Trust me, I'm an influencer!—Causal recipes for customer trust in artificial intelligence influencers in the retail industry. *Journal of Retailing and Consumer Services*, *72*, 103242. https://doi.org/10.1016/j.jretconser.2022.103242

Alves, H., Fernandes, C., & Raposo, M. (2010). Social media marketing: A literature review and implications. *Psychology & Marketing*, *30*(6), 461–469. https://doi.org/10.1002/mar.20936

Ameen, N., Sharma, G. D., Tarba, S., Rao, A., & Chopra, R. (2022). Toward advancing theory on creativity in marketing and artificial intelligence. *Psychology and Marketing*, *39*(9), 1802–1825. https://doi.org/10.1002/mar.21699

Anubha, & Shome, S. (2021). Customer engagement and advertising effectiveness: A moderated mediating analysis. *Journal of Internet Commerce*, *20*(4), 409–449. https://www.tandfonline.com/doi/full/10.1080/15332861.2021.1955324

Arco, M. D., Presti, L. L., Marino, V., & Resciniti, R. (2019). Embracing AI and Big Data in customer journey mapping: From literature review to a theoretical framework. *Innovative Marketing*, *15*(4), 102–115. https://doi.org/10.21511/im.15(4).2019.09

Ariely, D. (2000). Controlling the information flow: Effects on consumers' decision making and preferences. *Journal of Consumer Research*, *27*(2), 233–248. https://doi.org/10.1086/314322

Arsenijevic, U., & Jovic, M. (2019). Artificial intelligence marketing: Chatbots. In *Proceedings—2019 International Conference on Artificial Intelligence: Applications and Innovations, IC-AIAI 2019* (pp. 19–22). IEEE. https://doi.org/10.1109/IC-AIAI48757.2019.00010

Ashfaq, M., Yun, J., Yu, S., & Loureiro, S. M. C. (2020). I, Chatbot: Modeling the determinants of users' satisfaction and continuance intention of AI-powered service agents. *Telematics and Informatics*, *54*, 101473. https://doi.org/10.1016/j.tele.2020.101473

Awan, U., Shamim, S., Khan, Z., Zia, N. U., Shariq, S. M., & Khan, M. N. (2021). Big data analytics capability and decision-making: The role of data-driven insight on circular economy performance. *Technological Forecasting and Social Change*, *168*, 120766. https://doi.org/10.1016/j.techfore.2021.120766

Bag, S., Gupta, S., Kumar, A., & Sivarajah, U. (2021). An integrated artificial intelligence framework for knowledge creation and B2B marketing rational decision making for improving firm performance. *Industrial Marketing Management*, *92*, 178–189. https://doi.org/10.1016/j.indmarman.2020.12.001

Bag, S., Srivastava, G., Bashir, M. M. A., Kumari, S., Giannakis, M., & Chowdhury, A. H. (2022). Journey of customers in this digital era: Understanding the role of artificial intelligence technologies in user engagement and conversion. *Benchmarking: An International Journal*, *29*(7), 2074–2098. https://doi.org/10.1108/BIJ-07-2021-0415

Bala, M., & Verma, D. (2018). A critical review of digital marketing. *International Journal of Management, IT & Engineering*, *8*(10), 321–339.

Balducci, B., & Marinova, D. (2018). Unstructured data in marketing. *Journal of the Academy of Marketing Science*, *46*(4), 557–590. https://doi.org/10.1007/s11747-018-0581-x

Barua, L., Zou, B., & Zhou, Y. (2020). Machine learning for international freight transportation management: A comprehensive review. *Research in Transportation Business and Management*, *34*, 100453. https://doi.org/10.1016/j.rtbm.2020.100453

Bilan, S., Šuleř, P., Skrynnyk, O., Krajňáková, E., & Vasilyeva, T. (2022). Systematic bibliometric review of artificial intelligence technology in organizational management, development, change and culture. *Business: Theory and Practice*, *23*(1), 1–13. https://doi.org/10.3846/btp.2022.13204

Blattberg, R. C., & Deighton, J. (1991). Interactive marketing: Exploiting the age of addressability. *Sloan Management Review*, *33*(1), 5–14.

Bock, D. E., Wolter, J. S., & Ferrell, O. C. (2020). Artificial intelligence: Disrupting what we know about services. *Journal of Services Marketing*, *34*(3), 317–334. https://doi.org/10.1108/JSM-01-2019-0047

Bratić, D., Sacer, S., & Palić, M. (2020). Implications of artificial intelligence in marketing activities on multimedia platforms. In J. Šimurina, I. N. Braje, & I.Pavić (Eds.), *Proceedings of FEB Zagreb 11th International Odyssey Conference on Economics and Business* (Vol. 2(1), pp. 740–750). University of Zagreb.

Brei, V. A. (2020). Machine learning in marketing: Overview, learning strategies, applications, and future developments. *Foundations and Trends in Marketing*, *14*(3), 173–236. https://doi.org/10.1561/1700000065

Burgard, W., Cremers, A. B., Fox, D., Hähnel, D., Lakemeyer, G., Schulz, D., Steiner, W., & Thrun, S. (1999). Experiences with an interactive museum tour-guide robot. *Artificial Intelligence*, *114*(1–2), 3–55. https://doi.org/10.1016/s0004-3702(99)00070-3

Cai, S., Han, D., Li, D., Zheng, Z., & Crespi, N. (2022). An reinforcement learning-based speech censorship chatbot system. *The Journal of Supercomputing*, *78*, 8751–8773. https://doi.org/10.1007/s11227-021-04251-z

Calder, B. J., Malthouse, E. C., & Schaedel, U. (2009). An experimental study of the relationship between online engagement and advertising effectiveness. *Journal of Interactive Marketing*, *23*(4), 321–331. https://doi.org/10.1016/j.intmar.2009.07.002

Calvet, L., De la Torre, R., Goyal, A., Marmol, M., & Juan, A. A. (2020). Modern optimization and simulation methods in managerial and business economics: A review. *Administrative Sciences*, *10*(3), 47. https://doi.org/10.3390/admsci10030047

Campbell, C., Plangger, K., Sands, S., Kietzmann, J., & Bates, K. (2022). How deepfakes and artificial intelligence could reshape the advertising industry the coming reality of ai fakes and their potential impact on consumer behavior. *Journal of Advertising Research*, *62*(3), 241–251. https://doi.org/10.2501/JAR-2022-017

Capatina, A., Kachour, M., Lichy, J., Micu, A. E. A. A. E. A., Micu, A. E. A. A. E. A., & Codignola, F. (2020). Matching the future capabilities of an artificial intelligence-based software for social media marketing with potential users' expectations. *Technological Forecasting and Social Change*, *151*, 119794. https://doi.org/10.1016/j.techfore.2019.119794

Chen, G., Xie, P., Dong, J., & Wang, T. (2019). Understanding programmatic creative: The role of AI. *Journal of Advertising*, *48*(4), 347–355. https://doi.org/10.1080/00913367.2019.1654421

Chen, H., Chan-Olmsted, S., Kim, J., & Mayor Sanabria, I. (2022). Consumers' perception on artificial intelligence applications in marketing communication. *Qualitative Market Research*, *25*(1), 125–142. https://doi.org/10.1108/QMR-03-2021-0040

Chen, J.-S., Le, T.-T.-Y., & Florence, D. (2021). Usability and responsiveness of artificial intelligence chatbot on online customer experience in e-retailing. *International Journal of Retail and Distribution Management*, *49*(11), 1512–1531. https://doi.org/10.1108/IJRDM-08-2020-0312

Chen, L., Jiang, M., Jia, F., & Liu, G. (2022). Artificial intelligence adoption in business-to-business marketing: Toward a conceptual framework. *Journal of Business and Industrial Marketing*, *37*(5), 1025–1044. https://doi.org/10.1108/JBIM-09-2020-0448

Chen, T. F., Tan, T.-F., & Ko, C.-H. (2016). Application of artificial intelligence to cross-screen marketing: A case study of AI technology company. In *2nd International Conference on Artificial Intelligence and Industrial Engineering (AIIE2016)* (Vol. 133, pp. 517–519). Atlantic Press. https://doi.org/10.2991/aiie-16.2016.120

Chen, Y., Prentice, C., Weaven, S., & Hsiao, A. (2022). A systematic literature review of AI in the sharing economy. *Journal of Global Scholars of Marketing Science*, *32*(3), 434–451. https://doi.org/10.1080/21639159.2020.1808850

Chen, Y., & Wang, L. (2019). Commentary: Marketing and the sharing economy: Digital economy and emerging market challenges. *Journal of*

Marketing, *83*(5), 28–31. https://doi.org/10.1177/0022242919868470

Cheng, Y., & Jiang, H. (2021). Customer–brand relationship in the era of artificial intelligence: Understanding the role of chatbot marketing efforts. *Journal of Product and Brand Management*, *2*, 252–264. https://doi.org/10.1108/JPBM-05-2020-2907

Chi-Hsien, K., & Nagasawa, S. (2019). Applying machine learning to market analysis: Knowing your luxury consumer. *Journal of Management Analytics*, *6*(4), 404–419. https://doi.org/10.1080/23270012.2019.1692254

Chintalapati, S., & Pandey, S. K. (2021). Artificial intelligence in marketing: A systematic literature review. *International Journal of Market Research*, *64*(1), 38–68. https://doi.org/10.1177/14707853211018428

Choi, J. A., & Lim, K. (2020). Identifying machine learning techniques for classification of target advertising. *ICT Express*, *6*(3), 175–180. https://doi.org/10.1016/j.icte.2020.04.012

Chung, M., Ko, E., Joung, H., & Kim, S. J. (2020). Chatbot e-service and customer satisfaction regarding luxury brands. *Journal of Business Research*, *117*, 587–595. https://doi.org/10.1016/j.jbusres.2018.10.004

Ciuchita, R., Gummerus, J. K., Holmlund, M., & Linhart, E. L. (2023). Programmatic advertising in online retailing: Consumer perceptions and future avenues. *Journal of Service Management*, *34*(2), 231–255. https://doi.org/10.1108/JOSM-06-2021-0238

Cluley, R., Green, W., & Owen, R. (2020). The changing role of the marketing researcher in the age of digital technology: Practitioner perspectives on the digitization of marketing research. *International Journal of Market Research*, *62*(1), 27–42. https://doi.org/10.1177/1470785319865129

Damnjanovic, V. (2019). Entry market strategy for weaver chatbot using the digital B2B model. In *Proceedings—2019 International Conference on Artificial Intelligence: Applications and Innovations, IC-AIAI* (pp. 40–43). IEEE. https://doi.org/10.1109/IC-AIAI48757.2019.00014

Davenport, T., Abhijit, G., Dhruv, G., & Bressgott, T. (2020). How artificial intelligence will change the future of bullion production. *Journal of the Academy of Marketing Science*, *48*, 24–42. https://doi.org/10.1007/s11747-019-00696-0

De Bruyn, A., Viswanathan, V., Beh, Y. S., Brock, J. K. U., & Von Wangenheim, F. (2020). Artificial intelligence and marketing: Pitfalls and opportunities. *Journal of Interactive Marketing*, *51*, 91–105. https://doi.org/10.1016/j.intmar.2020.04.007

Devagiri, J. S., Paheding, S., Niyaz, Q., Yang, X., & Smith, S. (2022). Augmented reality and artificial intelligence in industry: Trends, tools, and future challenges. *Expert Systems with Applications*, *207*, 118002. https://doi.org/10.1016/j.eswa.2022.118002

Di Vaio, A., Palladino, R., Hassan, R., & Escobar, O. (2020). Artificial intelligence and business models in the sustainable development goals perspective: A systematic literature review. *Journal of Business Research*, *121*, 283–314. https://doi.org/10.1016/j.jbusres.2020.08.019

Díez-Sanmartín, C., Sarasa-Cabezuelo, A., & Andrés Belmonte, A. (2021). The impact of artificial intelligence and big data on end-stage kidney disease treatments. *Expert Systems with Applications*, *180*, 115076. https://doi.org/10.1016/j.eswa.2021.115076

Dimitrieska, S., Stankovska, A., & Efremova, T. (2018). Artificial intelligence and marketing. *Entrepreneur*, *6*(2), 298–304.

Donepudi, P. K. (2020). Robots in retail opportunity marketing: A timely opportunity. *Global Disclosure of Economics and Business*, *9*(2), 97–106.

Du, S., & Xie, C. (2021). Paradoxes of artificial intelligence in consumer markets: Ethical challenges and opportunities. *Journal of Business Research*, *129*, 961–974. https://doi.org/10.1016/j.jbusres.2020.08.024

Duong, Q. H., Zhou, L., Meng, M., Van Nguyen, T., Ieromonachou, P., & Nguyen, D. T. (2022). Understanding product returns: A systematic literature review using machine learning and bibliometric analysis. *International Journal of Production Economics*, *243*, 108340. https://doi.org/10.1016/j.ijpe.2021.108340

Durmaz, Y., & Efendioglu, I. H. (2016). Travel from traditional marketing to digital marketing. *Global Journal of Management and Business Research: E-Marketing*, *16*(2), 35–40. https://doi.org/10.34257/GJMBREVOL22IS2PG35

Dwivedi, Y. K., Ismagilova, E., Hughes, D. L., Carlson, J., Filieri, R., Jacobson, J., Jain, V., Karjaluoto, H., Kefi, H., Krishen, A. S., Kumar, V., Rahman, M. M., Raman, R., Rauschnabel, P. A., Rowley, J., Salo, J., Tran, G. A., & Wang, Y. (2021). Setting the future of digital and social media marketing research: Perspectives and research propositions. *International Journal of Information Management*, *59*, 102168. https://doi.org/10.1016/j.ijinfomgt.2020.102168

Dwivedi, Y. K., Rana, N. P., Slade, E. L., Singh, N., & Kizgin, H. (2020). Editorial introduction: Advances in theory and practice of digital marketing. *Journal of Retailing and Consumer Services*, *53*, 2018–2021. https://doi.org/10.1016/j.jretconser.2019.101909

El-Alfy, E.-S. M., & Mohammed, S. A. (2020). A review of machine learning for big data analytics: Bibliometric approach. *Technology Analysis and Strategic Management*, *32*(8), 984–1005. https://doi.org/10.1080/09537325.2020.1732912

Eren, B. A. (2021). Determinants of customer satisfaction in chatbot use: Evidence from a banking application in Turkey. *International Journal of Bank Marketing*, *39*(2), 294–311. https://doi.org/10.1108/IJBM-02-2020-0056

Eriksson, T., Bigi, A., & Bonera, M. (2020). Think with me, or think for me? On the future role of artificial intelligence in marketing strategy formulation. *TQM Journal*, *32*(4), 795–814. https://doi.org/10.1108/TQM-12-2019-0303

Fan, S., Lau, R. Y. K., & Zhao, J. L. (2015). Demystifying big data analytics for business intelligence through the lens of marketing mix. *Big Data Research*, *2*(1), 28–32. https://doi.org/10.1016/j.bdr.2015.02.006

Faruk, M., Rahman, M., & Hasan, S. (2021). How digital marketing evolved over time: A bibliometric analysis on Scopus database. *Heliyon*, *7*(12), e08603. https://doi.org/10.1016/j.heliyon.2021.e08603

Fayed, A. E. (2021). Artificial intelligence for marketing plan: The case for e-marketing companies. *Marketing and Management of Innovations*, *1*, 81–95. https://doi.org/10.21272/mmi.2021.1-07

Feng, Y., Zhu, Q., & Lai, K. H. (2017). Corporate social responsibility for supply chain management: A literature review and bibliometric analysis. *Journal of Cleaner Production*, *158*, 296–307. https://doi.org/10.1016/j.jclepro.2017.05.018

Fernández-Rovira, C., Álvarez Valdés, J., Molleví, G., & Nicolas-Sans, R. (2021). The digital transformation of business. Towards the datafication of the relationship with customers. *Technological Forecasting and Social Change*, *162*, 120339. https://doi.org/10.1016/j.techfore.2020.120339

Gambella, C., Ghaddar, B., & Naoum-Sawaya, J. (2021). Optimization problems for machine learning: A survey. *European Journal of Operational Research*, *290*(3), 807–828. https://doi.org/10.1016/j.ejor.2020.08.045

Gambetti, R. C., & Graffigna, G. (2010). The concept of engagement: A systematic analysis of the ongoing marketing debate. *International Journal of Market Research*, *52*(6), 801–826. https://doi.org/10.2501/s147078531020166

Garg, S., Sinha, S., Kar, A. K., & Mani, M. (2022). A review of machine learning applications in human resource management. *International Journal of Productivity and Performance Management*, *71*(5), 1590–1610. https://doi.org/10.1108/IJPPM-08-2020-0427

Gavilanes, J. M., Flatten, T. C., & Brettel, M. (2018). Content strategies for digital consumer engagement in social networks: Why advertising is an antecedent of engagement. *Journal of Advertising*, *47*(1), 4–23. https://doi.org/10.1080/00913367.2017.1405751

Glende, S., Conrad, I., Krezdorn, L., Klemcke, S., & Krätzel, C. (2016). Increasing the acceptance of assistive robots for older people through

marketing strategies based on stakeholder needs. *International Journal of Social Robotics*, *8*(3), 355–369. https://doi.org/10.1007/s12369-015-0328-5

Goel, P., Kaushik, N., Sivathanu, B., Pillai, R., & Vikas, J. (2022). Consumers' adoption of artificial intelligence and robotics in hospitality and tourism sector: Literature review and future research agenda. *Tourism Review*, *77*(4), 1081–1096. https://doi.org/10.1108/TR-03-2021-0138

Grandinetti, R. (2020). How artificial intelligence can change the core of marketing theory. *Innovative Marketing*, *16*(2), 91–103. https://doi.org/10.21511/IM.16(2).2020.08

Grinbaum, A. (2018). Chance as a value for artificial intelligence. *Journal of Responsible Innovation*, *5*(3), 353–360. https://doi.org/10.1080/23299460.2018.1495032

Guo, F., Ye, G., Hudders, L., Lv, W., Li, M., & Duffy, V. G. (2019). Product placement in mass media: A review and bibliometric analysis. *Journal of Advertising*, *48*(2), 215–231. https://doi.org/10.1080/00913367.2019.1567409

Gupta, S., Modgil, S., Bhattacharyya, S., & Bose, I. (2022). Artificial intelligence for decision support systems in the field of operations research: Review and future scope of research. *Annals of Operations Research*, *308*(1–2), 215–274. https://doi.org/10.1007/s10479-020-03856-6

Gwon, H. M., & Seo, Y. S. (2021). Towards a redundant response avoidance for intelligent chatbot. *Journal of Information Processing Systems*, *17*(2), 318–333. https://doi.org/10.3745/JIPS.04.0213

Haefner, N., Wincent, J., Parida, V., & Gassmann, O. (2021). Artificial intelligence and innovation management: A review, framework, and research agenda. *Technological Forecasting and Social Change*, *162*, 120392. https://doi.org/10.1016/j.techfore.2020.120392

Hagen, L., Uetake, K., Yang, N., Bollinger, B., Chaney, A. J. B., Dzyabura, D., Etkin, J., Goldfarb, A., Liu, L., Sudhir, K., Wang, Y., Wright, J. R., & Zhu, Y. (2020). How can machine learning aid behavioral marketing research? *Marketing Letters*, *31*(4), 361–370. https://doi.org/10.1007/s11002-020-09535-7

Hakim, A., Klorfeld, S., Sela, T., Friedman, D., Shabat-Simon, M., & Levy, D. J. (2021). Machines learn neuromarketing: Improving preference prediction from self-reports using multiple EEG measures and machine learning. *International Journal of Research in Marketing*, *38*(3), 770–791. https://doi.org/10.1016/j.ijresmar.2020.10.005

Han, R., Lam, H. K. S. S., Zhan, Y., Wang, Y., Dwivedi, Y. K., & Tan, K. H. (2021). Artificial intelligence in business-to-business marketing: A bibliometric analysis of current research status, development and future directions. *Industrial Management and Data Systems*, *121*(12), 2467–2497. https://doi.org/10.1108/IMDS-05-2021-0300

Hegde, J., & Rokseth, B. (2020). Applications of machine learning methods for engineering risk assessment—A review. *Safety Science*, *122*, 104492. https://doi.org/10.1016/j.ssci.2019.09.015

Hentzen, J. K., Hoffmann, A., Dolan, R., & Pala, E. (2022). Artificial intelligence in customer-facing financial services: A systematic literature review and agenda for future research. *International Journal of Bank Marketing*, *40*(6), 1299–1336. https://doi.org/10.1108/IJBM-09-2021-0417

Herce-Zelaya, J., Porcel, C., Bernabé-Moreno, J., Tejeda-Lorente, A., & Herrera-Viedma, E. (2020). New technique to alleviate the cold start problem in recommender systems using information from social media and random decision forests. *Information Sciences*, *536*, 156–170. https://doi.org/10.1016/j.ins.2020.05.071

Herhausen, D., Miočević, D., Morgan, R. E., & Kleijnen, M. H. P. (2020). The digital marketing capabilities gap. *Industrial Marketing Management*, *90*, 276–290. https://doi.org/10.1016/j.indmarman.2020.07.022

Hermann, E. (2022). Leveraging artificial intelligence in marketing for social good—An ethical perspective. *Journal of Business Ethics*, *179*, 43–61. https://doi.org/10.1007/s10551-021-04843-y

Hollebeek, L. D., Sharma, T. G., Pandey, R., Sanyal, P., & Clark, M. K. (2022). Fifteen years of customer engagement research: A bibliometric and network analysis. *Journal of Product and Brand Management*, *31*(2), 209–309. https://doi.org/10.1108/JPBM-01-2021-3301

Hollebeek, L. D., Sprott, D. E., & Brady, M. K. (2021). Rise of the machines? Customer engagement in automated service interactions. *Journal of Service Research*, *24*(1), 3–8. https://doi.org/10.1177/1094670520975110

Huang, M.-H., & Rust, R. T. (2021). A strategic framework for collaborative artificial intelligence in marketing. *Journal of the Academy of Marketing Science*, *49*, 30–50. https://doi.org/10.1016/j.jretai.2021.03.001

Imsagiloiva, E., Dwivedi, Y., & Rana, N. (2020). Visualising the knowledge domain of artificial intelligence in marketing: A bibliometric analysis. In M. Erne, Z. Jiang, & V. Liu (Eds.), *Re-imagining diffusion and adoption of information technology and systems: A continuing conversation* (Vol. 617, pp. 43–53). Springer. https://doi.org/10.1007/978-3-030-64849-7_18

Jamwal, A., Agrawal, R., Sharma, M., Kumar, A., Kumar, V., & Garza-Reyes, J. A. A. (2021). Machine learning applications for sustainable manufacturing: A bibliometric-based review for future research. *Journal of Enterprise Information Management*, *35*(2), 566–596. https://doi.org/10.1108/JEIM-09-2020-0361

Jarek, K., & Mazurek, G. (2019). Marketing and artificial intelligence. *Central European Business Review*, *8*(2), 46–55. https://doi.org/10.18267/j.cebr.213

Jenneboer, L., Herrando, C., & Constantinides, E. (2022). The impact of chatbots on customer loyalty: A systematic literature review. *Journal of Theoretical and Applied Electronic Commerce Research*, *17*(1), 212–229. https://doi.org/10.3390/jtaer17010011

Jiang, W. (2021). Applications of deep learning in stock market prediction: Recent progress. *Expert Systems with Applications*, *184*, 115537. https://doi.org/10.1016/j.eswa.2021.115537

Johanesová, V., Husovič, R., & Vaňová, J. (2019). Trends and proposal for marketing communication tools in customer service. *Marketing Identity*, *1*, 604–615.

Kaczorowska-Spychalska, D. (2019). How chatbots influence marketing. *Management*, *23*(1), 251–270. https://doi.org/10.2478/manment-2019-0015

Kang, Y., Cai, Z., Tan, C. W., Huang, Q., & Liu, H. (2020). Natural language processing (NLP) in management research: A literature review. *Journal of Management Analytics*, *7*(2), 139–172. https://doi.org/10.1080/23270012.2020.1756939

Kannan, P. K., & Li, H. "Alice". (2017). Digital marketing: A framework, review and research agenda. *International Journal of Research in Marketing*, *34*(1), 22–45. https://doi.org/10.1016/j.ijresmar.2016.11.006

Khoa, B. T. (2021). The impact of chatbots on the relationship between integrated marketing communication and online purchasing behavior in the frontier market. *Jurnal The Messenger*, *13*(1), 19–32. https://doi.org/10.26623/themessenger.v13i1.2439

Kietzmann, J., Paschen, J., & Treen, E. (2018). Artificial intelligence in advertising: How marketers can leverage artificial intelligence along the consumer journey. *Journal of Advertising Research*, *58*(3), 263–267. https://doi.org/10.2501/JAR-2018-035

Killoran, J. B. (2009). Targeting an audience of robots: Search engines and the marketing of technical communication business websites. *IEEE Transactions on Professional Communication*, *52*(3), 254–271. https://doi.org/10.1109/TPC.2009.2025309

Kim, J., Kang, S., & Lee, K. H. (2021). Evolution of digital marketing communication: Bibliometric analysis and network visualization from key articles. *Journal of Business Research*, *130*, 552–563. https://doi.org/10.1016/j.jbusres.2019.09.043

Kim, K. H., & Moon, H. (2021). Innovative digital marketing management in B2B markets. *Industrial Marketing Management*, *95*, 1–4. https://doi.org/10.1016/j.indmarman.2021.01.016

Kishen, R., Upadhyay, S., Jaimon, F., Suresh, S., Kozlova, N., Bozhuk, S., Mottaeva, A., Barykin, S., & Matchinov, V. (2021). Prospects for artificial intelligence implementation to design personalized customer engagement strategies. *Journal of Legal, Ethical and Regulatory Issues*, *24*(6), 1–18.

Klaus, P., & Zaichkowsky, J. (2020). AI voice bots: A services marketing research agenda. *Journal of Services Marketing*, *34*(3), 389–398. https://doi.org/10.1108/JSM-01-2019-0043

Krishen, A. S., Dwivedi, Y. K., Bindu, N., & Kumar, K. S. (2021). A broad overview of interactive digital marketing: A bibliometric network analysis. *Journal of Business Research*, *131*, 183–195. https://doi.org/10.1016/j.jbusres.2021.03.061

Kull, A. J., Romero, M., & Monahan, L. (2021). How may I help you? Driving brand engagement through the warmth of an initial chatbot message. *Journal of Business Research*, *135*, 840–850. https://doi.org/10.1016/j.jbusres.2021.03.005

Kumar, B., Sharma, A., Vatavwala, S., & Kumar, P. (2020). Digital mediation in business-to-business marketing: A bibliometric analysis. *Industrial Marketing Management*, *85*, 126–140. https://doi.org/10.1016/j.indmarman.2019.10.002

Kumar, V., Rajan, B., Venkatesan, R., & Lecinski, J. (2019). Understanding the role of artificial intelligence in personalized engagement marketing. *California Management Review*, *61*(4), 135–155. https://doi.org/10.1177/0008125619859317

Kushwaha, A. K., & Kar, A. K. (2021). MarkBot—A language model-driven chatbot for interactive marketing in post-modern world. *Information Systems Frontiers*. https://doi.org/10.1007/s10796-021-10184-y

Lee, M., Kwon, W., & Back, K. J. (2021). Artificial intelligence for hospitality big data analytics: Developing a prediction model of restaurant review helpfulness for customer decision-making. *International Journal of Contemporary Hospitality Management*, *33*(6), 2117–2136. https://doi.org/10.1108/IJCHM-06-2020-0587

León-Castro, M., Rodríguez-Insuasti, H., Montalván-Burbano, N., & Victor, J. A. (2021). Bibliometrics and science mapping of digital marketing. In Á. Rocha, M. K. Peter, R. Cayolla, S. Loureiro, & Z. Bogdanoiv (Eds.), *Marketing and smart technologies. Smart innovation, systems and technologies* (Vol. 205, pp. 95–107). Springer. https://doi.org/10.1007/978-981-33-4183-8_9

Li, H. (2019). Special section introduction: Artificial intelligence and advertising. *Journal of Advertising*, *48*(4), 333–337. https://doi.org/10.1080/00913367.2019.1654947

Liberati, A., Altman, D. G., Tetzlaff, J., Mulrow, C., Gøtzsche, P. C., Ioannidis, J. P. A., Clarke, M., Devereaux, P. J., Kleijnen, J., & Moher, D. (2009). The PRISMA statement for reporting systematic reviews and meta-analyses of studies that evaluate health care interventions: Explanation and elaboration. *PLoS Medicine*, *6*(7), e1000100. https://doi.org/10.1371/journal.pmed.100010

Lies, J. (2019). Marketing intelligence and big data: Digital marketing techniques on their way to becoming social engineering techniques in marketing. *International Journal of Interactive Multimedia and Artificial Intelligence*, *5*(5), 134–144. https://doi.org/10.9781/ijimai.2019.05.002

Lim, W. M., Rasul, T., Kumar, S., & Ala, M. (2022). Past, present, and future of customer engagement. *Journal of Business Research*, *140*, 439–458. https://doi.org/10.1016/j.jbusres.2021.11.014

Lin, S., Yang, S., Ma, M., & Huang, J. (2018). Value co-creation on social media: Examining the relationship between brand engagement and display advertising effectiveness for Chinese hotels. *International Journal of Contemporary Hospitality Management*, *30*(4), 2153–2174. https://doi.org/10.1108/IJCHM-08-2016-0484

Luo, X., Tong, S., Fang, Z., & Qu, Z. (2019). Frontiers: Machines vs. humans: The impact of artificial intelligence chatbot disclosure on customer purchases. *Marketing Science*, *38*(6), 937–947. https://doi.org/10.1287/mksc.2019.1192

Ma, L., & Sun, B. (2020). Machine learning and AI in marketing—Connecting computing power to human insights. *International Journal of Research in Marketing*, *37*(3), 481–504. https://doi.org/10.1016/j.ijresmar.2020.04.005

Maiyar, L. M., Cho, S. J., Tiwari, M. K., Thoben, K. D., & Kiritsis, D. (2019). Optimising online review inspired product attribute classification using the self-learning particle swarm-based Bayesian learning approach. *International Journal of Production Research*, *57*(10), 3099–3120. https://doi.org/10.1080/00207543.2018.1535724

Makhkamova, O., Lee, K. H., Do, K., & Kim, D. (2020). Deep learning-based multi-chatbot broker for Q&A improvement of video tutoring assistant. In *Proceedings—2020 IEEE International Conference on Big Data and Smart Computing, BigComp 2020* (pp. 221–224). IEEE. https://doi.org/10.1109/BigComp48618.2020.00-71

Mariani, M., & Borghi, M. (2021). Customers' evaluation of mechanical artificial intelligence in hospitality services: A study using online reviews analytics. *International Journal of Contemporary Hospitality Management*, *33*(11), 3956–3976. https://doi.org/10.1108/IJCHM-06-2020-0622

Mariani, M. M., Perez-Vega, R., & Wirtz, J. (2022). AI in marketing, consumer research and psychology: A systematic literature review and research agenda. *Psychology and Marketing*, *39*, 755–776. https://doi.org/10.1002/mar.21619

McArthur, D., Lewis, M., & Bishary, M. (2005). The roles of artificial intelligence in education: Current progress and future prospects. *Journal of Educational Technology*, *1*(4), 42–80.

Miao, F., Kozlenkova, I. V., Wang, H., Xie, T., & Palmatier, R. W. (2022). An emerging theory of avatar marketing. *Journal of Marketing*, *86*(1), 67–90. https://doi.org/10.1177/0022242921996646

Miller, R. M. (2008). Don't let your robots grow up to be traders: Artificial intelligence, human intelligence, and asset-market bubbles. *Journal of Economic Behavior and Organization*, *68*(1), 153–166. https://doi.org/10.1016/j.jebo.2007.08.010

Mišić, V. V., & Perakis, G. (2020). Data analytics in operations management: A review. *Manufacturing and Service Operations Management*, *22*(1), 158–169. https://doi.org/10.1287/msom.2019.0805

Mogaji, E., Balakrishnan, J., Nwoba, A. C., & Nguyen, N. P. (2021). Emerging-market consumers' interactions with banking chatbots. *Telematics and Informatics*, *65*, 101711. https://doi.org/10.1016/j.tele.2021.101711

Moi, L., & Cabiddu, F. (2021). Leading digital transformation through an agile marketing capability: The case of Spotahome. *Journal of Management and Governance*, *25*(4), 1145–1177. https://doi.org/10.1007/s10997-020-09534-w

Mustak, M., Salminen, J., Plé, L., & Wirtz, J. (2021). Artificial intelligence in marketing: Topic modeling, scientometric analysis, and research agenda. *Journal of Business Research*, *124*, 389–404. https://doi.org/10.1016/j.jbusres.2020.10.044

Nair, K., & Gupta, R. (2020). Application of AI technology in modern digital marketing environment. *World Journal of Entrepreneurship, Management and Sustainable Development*, *17*(3), 318–328. https://doi.org/10.1108/WJEMSD-08-2020-0099

Ngai, E. W. T., Lee, M. C. M., Luo, M., Chan, P. S. L., & Liang, T. (2021). An intelligent knowledge-based chatbot for customer service. *Electronic Commerce Research and Applications*, *50*, 101098. https://doi.org/10.1016/j.elerap.2021.101098

Nkagawa, D., Akutsu, H., Furuta, N., Yasuda, K., & Takahashi, K. (2015). Marketing system utilizing a robot and smartphone. In *IEEE/SICE International Symposium on System Integration (SII)* (pp. 662–667). IEEE.

Nyström, A. G., & Mickelsson, K. J. (2019). Digital advertising as service: Introducing contextually embedded selling. *Journal of Services Marketing*, *33*(4), 396–406. https://doi.org/10.1108/JSM-01-2018-0043

Overgoor, G., Chica, M., Rand, W., & Weishampel, A. (2019). Letting the computers take over: Using AI to solve marketing problems. *California*

Management Review, *61*(4), 156–185. https://doi.org/10.1177/0008125619859318

Pandey, N., Nayal, P., & Rathore, A. S. (2020). Digital marketing for B2B organizations: Structured literature review and future research directions. *Journal of Business and Industrial Marketing*, *35*(7), 1191–1204. https://doi.org/10.1108/JBIM-06-2019-0283

Pantano, E., Priporas, C. V., & Stylos, N. (2017). 'You will like it!' Using open data to predict tourists' response to a tourist attraction. *Tourism Management*, *60*, 430–438. https://doi.org/10.1016/j.tourman.2016.12.020

Parmentola, A., Petrillo, A., Tutore, I., & De Felice, F. (2022). Is blockchain able to enhance environmental sustainability? A systematic review and research agenda from the perspective of sustainable development goals (SDGs). *Business Strategy and the Environment*, *31*(1), 194–217. https://doi.org/10.1002/bse.2882

Pasca, M. G., Renzi, M. F., Di Pietro, L., & Guglielmetti Mugion, R. (2021). Gamification in tourism and hospitality research in the era of digital platforms: A systematic literature review. *Journal of Service Theory and Practice*, *31*(5), 691–737. https://doi.org/10.1108/JSTP-05-2020-0094

Paschen, J., Kietzmann, J., & Kietzmann, T. C. (2019). Artificial intelligence (AI) and its implications for market knowledge in B2B marketing. *Journal of Business and Industrial Marketing*, *34*(7), 1410–1419. https://doi.org/10.1108/JBIM-10-2018-0295

Paul, J., & Menzies, J. (2023). Developing classic systematic literature reviews to advance knowledge: Dos and don'ts. *European Management Journal*, *41*(6), 815–820. https://doi.org/10.1016/j.emj.2023.11.006

Perez-Vega, R., Kaartemo, V., Lages, C. R., Borghei Razavi, N., & Männistö, J. (2021). Reshaping the contexts of online customer engagement behavior via artificial intelligence: A conceptual framework. *Journal of Business Research*, *129*, 902–910. https://doi.org/10.1016/j.jbusres.2020.11.002

Peyravi, B., Nekrošienė, J., & Lobanova, L. (2020). Revolutionised technologies for marketing: Theoretical review with focus on artificial intelligence. *Business: Theory and Practice*, *21*(2), 827–834. https://doi.org/10.3846/btp.2020.12313

Portugal, I., Alencar, P., & Cowan, D. (2018). The use of machine learning algorithms in recommender systems: A systematic review. *Expert Systems with Applications*, *97*, 205–227. https://doi.org/10.1016/j.eswa.2017.12.020

Prentice, C., & Nguyen, M. (2020). Engaging and retaining customers with AI and employee service. *Journal of Retailing and Consumer Services*, *56*, 102186. https://doi.org/10.1016/j.jretconser.2020.102186

Prentice, C., Weaven, S., & Wong, I. K. A. (2020). Linking AI quality performance and customer engagement: The moderating effect of AI preference. *International Journal of Hospitality Management*, *90*, 102629. https://doi.org/10.1016/j.ijhm.2020.102629

Proserpio, D., Hauser, J. R., Liu, X., Amano, T., Burnap, A., Guo, T., Lee, D. (Dk), Lewis, R., Misra, K., Schwarz, E., Timoshenko, A., Xu, L., & Yoganarasimhan, H. (2020). Soul and machine (learning). *Marketing Letters*, *31*(4), 393–404. https://doi.org/10.1007/s11002-020-09538-4

Punjani, K. K., Ravi Kumar, V. V., & Kadam, S. (2019). Trends of puffery in advertising—A bibliometric analysis. *Benchmarking: An International Journal*, *26*(8), 2468–2485. https://doi.org/10.1108/BIJ-01-2019-0022

Qin, X., & Jiang, Z. (2019). The impact of AI on the advertising process: The Chinese experience. *Journal of Advertising*, *48*(4), 338–346. https://doi.org/10.1080/00913367.2019.1652122

Quah, J. T. S., & Chua, Y. W. (2019). Chatbot assisted marketing in financial service industry. In J. E. Ferreira, A. Musaev, & L.-J. Zhang (Eds.), *16th International Conference Held as Part of the Service Conference Federation, SCF 2019* (pp. 107–114). Springer. https://doi.org/10.1007/978-3-030-23554-3

Rajaobelina, L., Prom Tep, S., Arcand, M., & Ricard, L. (2021). Creepiness: Its antecedents and impact on loyalty when interacting with a chatbot. *Psychology and Marketing*, *38*(12), 2339–2356. https://doi.org/10.1002/mar.21548

Rana, J., Gaur, L., Singh, G., Awan, U., & Rasheed, M. I. (2022). Reinforcing customer journey through artificial intelligence: A review and research agenda. *International Journal of Emerging Markets*, *17*(7), 1738–1758. https://doi.org/10.1108/IJOEM-08-2021-1214

Randhawa, K., Wilden, R., & Hohberger, J. (2016). A bibliometric review of open innovation: Setting a research agenda. *Journal of Product Innovation Management*, *33*(6), 750–772. https://doi.org/10.1111/jpim.12312

Robertson, J., Ferreira, C., & Paschen, J. (2021). Reading between the lines: Understanding customer experience with disruptive technology through online reviews. *Australasian Marketing Journal*, *29*(3), 215–224. https://doi.org/10.1177/1839334921999487

Roy, G., & Jain, V. (2022). Role of artificial intelligence in gamification for the emerging markets. In N. Chemma, M. El Amine Abdelli, A. Awasthi, & E. Mogaji (Eds.), *Management and information technology in the digital era* (Advanced Series in Management, Vol. 29, pp. 9–25). Emerald Publishing. https://doi.org/10.1108/S1877-636120220000029002

Rutter, R. N., Barnes, S. J., Roper, S., Nadeau, J., & Lettice, F. (2021). Social media influencers, product placement and network engagement: Using AI image analysis to empirically test relationships. *Industrial Management and Data Systems*, *121*(12), 2387–2410. https://doi.org/10.1108/IMDS-02-2021-0093

Ryan, D., & Jones, C. (2009). *Understanding digital marketing: Marketing strategies for engaging the digital generation*. Kogan Page.

Sahu, C. K., Young, C., & Rai, R. (2021). Artificial intelligence (AI) in augmented reality (AR)-assisted manufacturing applications: A review. *International Journal of Production Research*, *59*(16), 4903–4959. https://doi.org/10.1080/00207543.2020.1859636

Salminen, J., Yoganathan, V., Corporan, J., Jansen, B. J., & Jung, S. G. (2019). Machine learning approach to auto-tagging online content for content marketing efficiency: A comparative analysis between methods and content type. *Journal of Business Research*, *101*, 203–217. https://doi.org/10.1016/j.jbusres.2019.04.018

Sands, S., Campbell, C. L., Plangger, K., & Ferraro, C. (2022). Unreal influence: Leveraging AI in influencer marketing. *European Journal of Marketing*, *56*(6), 1721–1747. https://doi.org/10.1108/EJM-12-2019-0949

Sarsam, S. M., Al-Samarraie, H., Alzahrani, A. I., & Wright, B. (2020). Sarcasm detection using machine learning algorithms in twitter: A systematic review. *International Journal of Market Research*, *62*(5), 578–598. https://doi.org/10.1177/1470785320921779

Saura, J. R., Ribeiro-Soriano, D., & Palacios-Marqués, D. (2021). Setting B2B digital marketing in artificial intelligence-based CRMs: A review and directions for future research. *Industrial Marketing Management*, *98*, 161–178. https://doi.org/10.1016/j.indmarman.2021.08.006

Schroeder, M., & Lodemann, S. (2021). A systematic investigation of the integration of machine learning into supply chain risk management. *Logistics*, *5*(3), 62. https://doi.org/10.3390/logistics5030062

Sharma, R., Kamble, S. S., Gunasekaran, A., Kumar, V., & Kumar, A. (2020). A systematic literature review on machine learning applications for sustainable agriculture supply chain performance. *Computers and Operations Research*, *119*, 104926. https://doi.org/10.1016/j.cor.2020.104926

Shumanov, M., Cooper, H., & Ewing, M. (2022). Using AI predicted personality to enhance advertising effectiveness. *European Journal of Marketing*, *56*(6), 1590–1609. https://doi.org/10.1108/EJM-12-2019-0941

Siau, K. L., & Yang, Y. (2017). Impact of artificial intelligence, robotics, and machine learning on sales and marketing. In *Proceedings of the Twelfth Midwest Association for Information Systems Conference* (Vol. 48). Midwest (MWAIS).

Singh, J., Nambisan, S., Bridge, R. G., & Brock, J. K. U. (2021). One-voice strategy for customer engagement. *Journal of Service Research*, *24*(1), 42–65. https://doi.org/10.1177/1094670520910267

Singh, V., Nanavati, B., Kar, A. K., & Gupta, A. (2022). How to maximize clicks for display advertisement in digital marketing? A reinforcement learning approach. *Information Systems Frontiers*, *25*, 1621–1638. https://doi.org/10.1007/s10796-022-10314-0

Smeureanu, I., Ruxanda, G., & Badea, L. M. (2013). Customer segmentation in private banking sector using machine learning techniques. *Journal of Business Economics and Management*, *14*(5), 923–939. https://doi.org/10.3846/16111699.2012.749807

Smith, A. E., & Humphreys, M. S. (2006). Evaluation of unsupervised semantic mapping of natural language with Leximancer concept mapping. *Behavior Research Methods*, *38*(2), 262–279. https://doi.org/10.3758/BF03192778

So, K. K. F., Kim, H., & King, C. (2021). The thematic evolution of customer engagement research: A comparative systematic review and bibliometric analysis. *International Journal of Contemporary Hospitality Management*, *33*(10), 3585–3609. https://doi.org/10.1108/IJCHM-04-2021-0470

Srivastava, M., & Sivaramakrishnan, S. (2021). Mapping the themes and intellectual structure of customer engagement: A bibliometric analysis. *Marketing Intelligence and Planning*, *39*(5), 702–727. https://doi.org/10.1108/MIP-11-2020-0483

Steinhoff, L., Arli, D., Weaven, S., & Kozlenkova, I. V. (2019). Online relationship marketing. *Journal of the Academy of Marketing Science*, *47*(3), 369–393. https://doi.org/10.1007/s11747-018-0621-6

Stone, M., Aravopoulou, E., Ekinci, Y., Evans, G., Hobbs, M., Labib, A., Laughlin, P., Machtynger, J., & Machtynger, L. (2020). Artificial intelligence (AI) in strategic marketing decision-making: A research agenda. *The Bottom Line*, *33*(2), 183–200. https://doi.org/10.1108/BL-03-2020-0022

Suhaili, S. M., Salim, N., & Jambli, M. N. (2021). Service chatbots: A systematic review. *Expert Systems with Applications*, *184*, 115461. https://doi.org/10.1016/j.eswa.2021.115461

Suleiman, D. A., Awan, T. M., & Javed, M. (2021). Enhancing digital marketing performance through usage intention of AI-powered websites. *IAES International Journal of Artificial Intelligence*, *10*(4), 810–817. https://doi.org/10.11591/ijai.v10.i4.pp810-817

Sung, E., Bae, S., Han, D.-I. D., & Kwon, O. (2021). Consumer engagement via interactive artificial intelligence and mixed reality. *International Journal of Information Management*, *60*, 102382. https://doi.org/10.1016/j.ijinfomgt.2021.102382

Thompson, F. M., & Brouthers, K. D. (2021). Digital consumer engagement: National cultural differences and cultural tightness. *Journal of International Marketing*, *29*(4), 22–44. https://doi.org/10.1177/1069031X211005729

Tiwari, S., Wee, H. M., & Daryanto, Y. (2018). Big data analytics in supply chain management between 2010 and 2016: Insights to industries. *Computers and Industrial Engineering*, *115*, 319–330. https://doi.org/10.1016/j.cie.2017.11.017

Trunfio, M., & Rossi, S. (2021). Conceptualising and measuring social media engagement: A systematic literature review. *Italian Journal of Marketing*, *2021*(3), 267–292. https://doi.org/10.1007/s43039-021-00035-8

Ulya, H., & Alversia, Y. (2021). The impact of consumer engagement with social media and social media advertising on advertising evaluation and purchase intention. In *35th International-Business-Information-Management-Association Conference (IBIMA)*. https://ibima.org/accepted-paper/the-impact-of-consumer-engagement-with-social-media-and-social-media-advertising-on-advertising-evaluation-and-purchase-intention/

Van den Broeck, E., Zarouali, B., & Poels, K. (2019). Chatbot advertising effectiveness: When does the message get through? *Computers in Human Behavior*, *98*, 150–157. https://doi.org/10.1016/j.chb.2019.04.009

Van Eck, N. J., & Waltman, L. (2010). Software survey: VOSviewer, a computer program for bibliometric mapping. *Scientometrics*, *84*(2), 523–538. https://doi.org/10.1007/s11192-009-0146-3

Van Esch, P., & Black, J. S. (2021). Artificial intelligence (AI): Revolutionizing digital marketing. *Australasian Marketing Journal*, *29*(3), 199–203. https://doi.org/10.1177/18393349211037684

Van Esch, P., Cui, Y., & Jain, S. P. (2021). Stimulating or intimidating: The effect of AI-enabled in-store communication on consumer patronage likelihood. *Journal of Advertising*, *50*(1), 63–80. https://doi.org/10.1080/00913367.2020.1832939

Van Pinxteren, M. M. E., Wetzels, R. W. H., Rüger, J., Pluymaekers, M., & Wetzels, M. (2019). Trust in humanoid robots: Implications for services marketing. *Journal of Services Marketing*, *33*(4), 507–518. https://doi.org/10.1108/JSM-01-2018-0045

Varsha, P. S., Akter, S., Kumar, A., Gochhait, S., & Patagundi, B. (2021). The impact of artificial intelligence on branding: A bibliometric analysis (1982–2019). *Journal of Global Information Management*, *29*(4), 221–246. https://doi.org/10.4018/JGIM.20210701.oa10

Verma, S., Sharma, R., Deb, S., & Maitra, D. (2021). Artificial intelligence in marketing: Systematic review and future research direction. *International Journal of Information Management Data Insights*, *1*(1), 100002. https://doi.org/10.1016/j.jjimei.2020.100002

Vieira, V. A., Severp De Almeida, M. I., Agnihotri, R., De Arruda, S., Corrêa da Silva, N., Arunachalam, S., de Almeida, M. I. S., Agnihotri, R., da Silva, N. S. D. A. C., & Arunachalam, S. (2019). In pursuit of an effective B2B digital marketing strategy in an emerging market. *Journal of the Academy of Marketing Science*, *47*(6), 1085–1108. https://doi.org/10.1007/s11747-019-00687-1

Vlačić, B., Corbo, L., Costa e Silva, S., & Dabić, M. (2021). The evolving role of artificial intelligence in marketing: A review and research agenda. *Journal of Business Research*, *128*, 187–203. https://doi.org/10.1016/j.jbusres.2021.01.055

Vollrath, M. D., & Villegas, S. G. (2022). Avoiding digital marketing analytics myopia: Revisiting the customer decision journey as a strategic marketing framework. *Journal of Marketing Analytics*, *10*, 106–113. https://doi.org/10.1057/s41270-020-00098-0

Voorveld, H. A. M., Van Noort, G., Muntinga, D. G., & Bronner, F. (2018). Engagement with social media and social media advertising: The differentiating role of platform type. *Journal of Advertising*, *47*(1), 38–54. https://doi.org/10.1080/00913367.2017.1405754

Wirth, N. (2018). Hello marketing, what can artificial intelligence help you with? *International Journal of Market Research*, *60*(5), 435–438. https://doi.org/10.1177/1470785318776841

Wu, L., Dodoo, N. A., Wen, T. J., & Ke, L. (2022). Understanding twitter conversations about artificial intelligence in advertising based on natural language processing. *International Journal of Advertising*, *41*(4), 685–702. https://doi.org/10.1080/02650487.2021.1920218

Xi, N., & Hamari, J. (2021). Shopping in virtual reality: A literature review and future agenda. *Journal of Business Research*, *134*, 37–58. https://doi.org/10.1016/j.jbusres.2021.04.075

Yang, P., Li, K., & Ji, C. (2023). How customers respond to social media advertising. *Marketing Intelligence and Planning*, *41*(2), 229–243. https://doi.org/10.1108/MIP-09-2022-0397

Yang, S., Lin, S., Carlson, J. R., & Ross, W. T. (2016). Brand engagement on social media: Will firms' social media efforts influence search engine advertising effectiveness? *Journal of Marketing Management*, *32*(5–6), 526–557. https://doi.org/10.1080/0267257X.2016.1143863

Yang, X., Li, H., Ni, L., & Li, T. (2021). Application of artificial intelligence in precision marketing. *Journal of Organizational and End User Computing*, *33*(4), 1–27. https://doi.org/10.4018/JOEUC.20210701.oa10

Yang, X., Yang, G., Wu, J., Dang, Y., & Fan, W. (2021). Modeling relationships between retail prices and consumer reviews: A machine discovery approach and comprehensive evaluations. *Decision Support Systems*, *145*, 113536. https://doi.org/10.1016/j.dss.2021.113536

Yau, K. L. A., Saad, N. M., & Chong, Y. W. (2021). Artificial intelligence marketing (AIM) for enhancing customer relationships. *Applied Sciences*, *11*(18), 8562. https://doi.org/10.3390/app11188562

Ye, G., Hudders, L., De Jans, S., & De Veirman, M. (2021). The value of influencer marketing for business: A bibliometric analysis and managerial implications. *Journal of Advertising*, *50*(2), 160–178. https://doi.org/10.1080/00913367.2020.1857888

Youn, S., & Jin, S. V. (2021). "In A.I. we trust?" the effects of parasocial interaction and technopian versus luddite ideological views on chatbot-based customer relationship management in the emerging "feeling economy". *Computers in Human Behavior*, *119*, 106721. https://doi.org/10.1016/j.chb.2021.106721

Younis, H., Sundarakani, B., & Alsharairi, M. (2022). Applications of artificial intelligence and machine learning within supply chains: Systematic review and future research directions. *Journal of Modelling in Management*, *17*(3), 916–940. https://doi.org/10.1108/JM2-12-2020-0322

Yu, C. E. (2020). Humanlike robots as employees in the hotel industry: Thematic content analysis of online reviews. *Journal of Hospitality Marketing and Management*, *29*(1), 22–38. https://doi.org/10.1080/19368623.2019.1592733

Yun, J. H. J., Won, D. K., Jeong, E. S., Park, K. B., Yang, J. H., & Park, J. Y. (2016). The relationship between technology, business model, and market in autonomous car and intelligent robot industries. *Technological Forecasting and Social Change*, *103*, 142–155. https://doi.org/10.1016/j.techfore.2015.11.016

Zahay, D. (2021). Advancing research in digital and social media marketing. *Journal of Marketing Theory and Practice*, *29*(1), 125–139. https://doi.org/10.1080/10696679.2021.1882865

Zhou, Y., Fei, Z., He, Y., & Yang, Z. (2022). How human–chatbot interaction impairs charitable giving: The role of moral judgment. *Journal of Business Ethics*, *178*(3), 849–865. https://doi.org/10.1007/s10551-022-05045-w

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