Research Article

Systematic Analysis and Future Research Directions in Artificial Intelligence for Marketing

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Abstract

Disruptive technologies like the internet of things, big data analytics, blockchain, and artificial intelligence have transformed how businesses operate. Artificial intelligence (AI) is the most recent technological disruptor and has enormous marketing transformation potential. Practitioners all over the world are attempting to determine which AI solutions are best suited to their marketing needs. A systematic literature review, on the other hand, can highlight the importance of artificial intelligence (AI) in marketing and point the way for future research. The goal of this study is to provide a comprehensive review of AI in marketing by analysing extant literature published between 1982 and 2020 using bibliometric, conceptual, and intellectual network analysis. The performance of the scientific actors, such as the most relevant authors and sources, was identified through a comprehensive review of 1,584 papers. Furthermore, the conceptual and intellectual network was revealed through co-citation and co-occurrence analysis. The Louvain algorithm was used to cluster data and identify research sub-themes and future research directions in order to expand AI in marketing.

Keywords: Disruptive technologies, Artificial Intelligence, Internet of Things, Big Data Analytics, Blockchain, Bibliometric Analysis, Intellectual structure, Conceptual structure.

Summary Statement of Contribution

Because of its practical importance in current and future business, Artificial Intelligence (AI) in Marketing has gained traction. Because of the broad scope and extensive coverage of research studies on AI in marketing, a meta-synthesis of existing studies is critical for determining future research directions. The systematic literature review has been attempted, but existing reviews are descriptive, and the latent intellectual network structure has remained unexplored. To identify research subthemes, trending topics, and future research directions, researchers used bibliometric analysis, conceptual network analysis, and intellectual network analysis.

1. Introduction

Artificial intelligence (AI), the internet of things (IoT), and Big Data Analytics (BDA) are examples of technological disruptions that have provided digital solutions for attracting and retaining customers (Anshari, Almunawar, Lim, & Al-Mudimigh, 2018; Bolton et al., 2018). By facilitating customers' product and service offerings, emerging technologies provide a competitive advantage (Rouhani et al., 2016; Spring et al., 2017). (Balaji & Roy, 2017; Khanagha et al., 2017; Liao, 2015). Cutthroat competition and technological disruptions have changed the way businesses operate in today's business environment (Gans, 2016). A customer-centric approach that focuses on customer needs at a global level is critical for organisational growth (Vetterli, Uebernickel, Brenner, Petrie, & Stermann, 2016). Artificial intelligence (AI) is a widely used emerging technology that enables businesses to track real-time data in order to analyse and respond to customer needs quickly (Wirth, 2018). AI provides crucial consumer insight into consumer behaviour, which is critical for customer attraction and retention. The customer's next move is prompted by AI, which redefines the overall experience (Tjepkema, 2019). AI tools are useful for determining customer expectations and charting a course for the future (Shabbir, 2015).

Artificial Intelligence is used in a variety of situations in today's business world. Artificial Intelligence, according to practitioners and academics, is the future of our society. The world has become a web of interconnected networks as technology has advanced. Investment in Artificial Intelligence (AI) for big data analytics to generate market intelligence resulted from the technology implementation. Artificial Intelligence applications are not limited to marketing; it is widely used in a variety of fields, including medicine, e-commerce, education, law, and manufacturing. Artificial intelligence (AI) is being used in a variety of industries. Artificial Intelligence and other emerging technologies are evolving in lockstep with organisations' progress toward Industry 4.0. However, due to numerous constraints, AI implementation in all sectors has been impossible; however, scientists are working on systems that cater to the theory of mind and self-awareness of artificially intelligent systems.

In today's world, people interact with AI in some way on a daily basis. The user, for example, appreciates the automatic e-mail filtering feature. With Siri, Cortana, or Bixby on the smartphone, the user can probably fill out a calendar. While driving, the user of the new vehicle is assisted by a. Through a program-based algorithm, Artificial Intelligence can automate business processes, learn insights from past data, and generate consumer and market insights (Davenport et al 2020). Machine learning (ML), deep learning (DL), and natural language processing (NLP) are examples of technologies that train machines to handle large amounts of data in order to generate market intelligence (Davenport et al 2020). Because AI in marketing is still in its early stages, there is a scarcity of systematic literature reviews displaying the in-depth research pattern in the AI-driven consumer market, which leads to research questions such as

RQ1: What are the applications of AI in Marketing?

RQ2: How marketing can optimally utilize the AI technologies for maximizing customer satisfaction, market share and profitability?

RQ3: What are the trending topics and future research directions for the adoption of AI in Marketing?

Through a systematic review of AI literature in the marketing research domain, this paper aims to fill that research gap. A bibliometric analysis of over 500 articles (published between 1995 and 2020) revealed the performance of scientific actors such as the most relevant authors, sources, and so on. The Louvain algorithm was used to map the research domain's conceptual and intellectual structure through co-citation and co-occurrence analysis.

In the subsequent sections, literature review, research methodology, findings, discussion and conclusion are presented.

2. Literature review

Artificial intelligence (AI) is the intelligence demonstrated by machines, as opposed to human intelligence. Artificial intelligence is represented by a system of intelligent agent machines that perceives the environment in order to achieve its goal. Artificial intelligence, according to Russell and Norvig (2016), refers to machines (computers) that mimic the cognitive and affective functions of the human mind. Artificial intelligence has advanced tremendously in recent decades, and experts have worked tirelessly to advance AI concepts. The work resulted in major breakthroughs such as big data analytics and machine learning applications in a variety of industries and contexts.

People associate the term Artificial Intelligence with automated robots that work for humans because they have only seen human-machine interaction through robots in movies or television shows. Artificial intelligence refers to any machine that must think and act like a human, resulting in continuous learning and problem-solving. These are the characteristics that distinguish AI. People can find a repetitive task boring or dull at times. People, on the other hand, will never have to do a job that is as tedious as this one. An artificially intelligent system is constantly performing repetitive tasks for humans.

In artificial intelligence, data ingestion is a critical feature. Artificially intelligent systems have to deal with a lot of data. The artificial intelligence system collects and analyses large amounts of data based on the requirements. Organizations like Google and Amazon handle a massive amount of data that is impossible for humans to analyse. In addition, an artificially intelligent system stores data from multiple sources about multiple people and machines. All of this appears asynchronously or simultaneously on the system.

Artificial intelligence (AI)-enabled systems are designed to observe and respond to their surroundings. They perceive the environment and act accordingly, keeping in mind the situations that may arise in the near future. For example, AI can predict the breakdown time of a machine using historical data. It has the ability to forewarn us of impending action.

2.1. Advantage of machine learning over other technologies

Many technologies can perform repetitive tasks, but they cannot think for themselves. They are unable to think outside of the box. Machine learning, on the other hand, is a subset of AI that aims to enable machines to learn a task without the need for pre-existing code. Machines are fed a variety of problems and examples in order to learn how to perform specific tasks. Machines learn and adapt their strategy to independently execute the activities as they work through these problems and examples. An image-recognition machine, for example, could be given millions of images to analyse. After countless permutations, the machine learns to recognise patterns, shapes, faces, and other objects.

In the current scenario, the machine is only learning for a single, repeated task, but machines are being trained to learn more than that. Experts in artificial intelligence are working to make the machine capable of applying what it has learned from analysing photographs to other data sets. Data scientists and programmers are developing general-purpose learning algorithms to assist machines in learning more than one task.

2.2. Principle behind working of artificial intelligence.

Artificial intelligence is the ability to transfer human intelligence to machines to perform tasks ranging from simple to complex. The goal of artificial intelligence is for it to learn, reason, and carry out tasks. As technology advances, previous definitions of artificial intelligence become obsolete. Artificial Intelligence is based on three basic concepts. Machine learning, deep learning, and neural networks are the three fundamental concepts. These ideas are leading to more data mining, natural language processing, and driving software development. While AI and machine learning may appear to be synonymous, AI is usually thought of as a broader term, with machine learning and the other two AI concepts being considered subsets of it.

The principle of artificial neural networks underpins Deep Learning's mechanism. It's made to look like neurons or brain cells. Artificial neural networks were inspired by biological phenomena. The neural net models mimic human brain processes using math and computer science principles, allowing for more learning and command to act. An artificial neural network (ANN) integrates the processes of densely interconnected brain cells, but these neurons, or nodes, are made of human-made code rather than biology.

Neural networks contain three layers: an input layer, a hidden layer, and an output layer. These layers contain thousands, sometimes million nodes. AI imitates human minds through the concepts of neural networks. It thinks the way a human thinks & acts accordingly to solve the problems. This is the uniqueness of AI. AI imitates human brain to interpret the environment & act accordingly.

2.3. Use of artificial intelligence in marketing.

The authors conducted a literature review to determine the scope of research on using AI to improve customer experiences. The implementation challenges of autonomous customer experience management were described by Gacanin and Wagner (2019). (CEM). The paper also explained how AI and machine learning were used to create an intelligence network and a critical business value driver. Natural Language Processing (NLP) and AI-driven chatbots improved customer experience (Nguyen and Sidorova, 2018). AI and machine learning algorithms enabled efficient data processing, allowing us to make the best decision possible (Maxwell et al., 2011). To analyse customer habits, purchases, likes, dislikes, and other factors, AI must be used (Chatterjee et al., 2019). Artificial Intelligence User Interface (AIUI) helped Customer Relationship Management (CRM) functions (Seranmadevi & Kumar, 2019). Traditional retail stores became smart retail stores as a result of AI and IoT. Smart retail stores improved customer experience and shopping convenience, as well as supply chain efficiency (Sujata et al., 2019). AI also guides online businesses in addition to brick-and-mortar stores. Sha and Rajeswari (2019) discussed AI progress and demonstrated an AI-assisted machine that can track humans' five senses (sight, hearing, taste, smell, and touch). In the e-commerce business, the results showed a better consumer-brand association and product-brand association. Table 1 shows a summary of some of the more interesting research studies:

Table 1

A literature review on artificial intelligence in marketing.

S.No	Author(s)	Study based on	Findings
1	Gacanic and Wagner (2019)	Autonomous CEM	Establishment of critical business drivers through AI and ML
2	Nguyen and Sidorova (2018)	Enhancement of customer experience through AI	Customer experience enhanced through AI-driven chatbot
3	Maxwell et al. (2011)	Data processing through AI and ML algorithm	Correct the marketing decision made through AI and ML algorithm-based data processing.
4	Chatterjee et al. (2019)	Application of AI in marketing	Based on the AI application analysis of customer habits, purchases
5	Seranmadevi & Kumar (2019)	AIUI in CRM	CRM functions evolution through AIUI
6	Sujata et al., (2019)	Smart Retail stores	Customer experience enhancement, world-class SCM through a smart retail store
7	Sha and Rajeswari (2019)	Advanced AI in e-commerce	Advanced AI-enabled machine could be able to track five human senses and improved e-commerce business

2.3.1. Use of artificial intelligence in strategy and planning

Artificial intelligence can assist marketers in developing marketing strategies and planning activities by assisting with segmentation, targeting, and positioning (STP). Aside from STP, AI can assist marketers in determining a company's strategic direction (Huang & Rust, 2017). Text mining and machine learning algorithms can be used to identify profitable customer segments in industries such as banking and finance, art marketing, retail, and tourism (Dekimpe, 2020; Netzer et al., 2019; Pitt et al., 2020; Valls et al., 2018). Customers can be narrowed down using a combination of data optimization techniques, machine learning, and causal forests (Chen et al., 2020; Simester et al., 2020).

2.3.2. Use of artificial intelligence in product management

A marketing analytics tool based on artificial intelligence can assess the suitability of product design to customer needs and, as a result, customer satisfaction (Dekimpe, 2020). Topic modelling enhances the system's ability to innovate and design services (Antons & Breidbach, 2018). During product search, preference weights assigned to product attributes assist marketers in better understanding the product recommender system and aligning marketing strategies for effective product management (Dzyabura & Hauser, 2019). Deep learning can help you discover new places by personalising point of interest recommendations (Guo et al., 2018). Artificial intelligence has the ability to customise offerings to meet the needs of customers (Kumar et al., 2019).

2.3.3. Use of artificial intelligence in pricing management

Pricing is a calculation-intensive job that involves factoring in a variety of factors in order to arrive at a final price. The complexity of the pricing task is increased by real-time price variation based on fluctuating demand. In a real-time scenario, a multiarmed bandit algorithm based on artificial intelligence can dynamically adjust price (Misra et al., 2019). In a scenario where pricing changes frequently, such as an e-commerce portal, Bayesian inference in a machine learning algorithm can quickly adjust price points

to match the price of a competitor (Bauer & Jannach, 2018). Best response pricing algorithms, according to Dekimpe (2020), incorporate customer preferences, competitor strategies, and the supply network to optimise dynamic pricing.

2.3.4. Use of artificial intelligence in place management

For increased customer satisfaction, product access and availability are critical components of the marketing mix. Product distribution is largely mechanical and repetitive in nature, relying on networked relationships, logistics, inventory management, warehousing, and transportation issues. Cobots for packaging, drones for delivery, and IoT for order tracking and order refilling make artificial intelligence the ideal solution for place management (Huang & Rust, 2020). Both suppliers and customers benefit from the standardisation and automation of the distribution process. Aside from its utility in distribution management, AI also provides opportunities for customer engagement in the service context. In surface acting, service robots programmed with emotional AI codes are useful (Wirtz et al., 2018). Customers are greeted and engaged by embodied robots, but human elements must complement the service environment in order for customers to be delighted. AI-assisted service process automation provides additional opportunities for performance and productivity gains (Huang & Rust, 2018).

2.3.5 Use of artificial intelligence in promotion management

Media planning, media scheduling, advertising campaign management, and search engine optimization are all examples of promotion management. The physical to phygital transformation of pro motion tactics is underway. Due to global digital transformation, digital marketing and social media campaigns have gained traction. Customers determine the content, location, and timing in today's technological world. AI allows for message personalization and customization based on the customer's profile and preferences (Huang & Rust, 2020). Content analytics can help you improve the value and effectiveness of your messages. Emotional AI algorithms can track customer likes and dislikes in real time. Netnography on social media content provides marketers with new ways to tailor their marketing strategies to the preferences of their customers (Tripathi & Verma, 2018; Verma, 2014; Verma & Yadav, 2020).

3. Methodology

We used Rowley and Slack's (2004) guidelines for conducting the literature review. Methodologically, the literature review used a five-stage process described in the following sections. Comprehensive review protocols helped in the identification of research themes and future research directions.

3.1. Selection of bibliometric databases

Scopus and Web of Science (WoS) are the two most reputed bibliometric databases. We explored both Scopus and Web of Science (WoS) databases to search the relevant literature. According to Yong-Hak (2013), Scopus had broader coverage, and it includes more than 20,000 peer-reviewed journalsfrom different publishers (Fahimnia et al., 2015). Due to its wider coverage, we preferred Scopus for data collection. Scopus offered advanced search filters and data analysis grids for better data management.

3.2. Defining keywords (search strategy)

The initial search string included words like "marketing" and "artificial intelligence." Synonyms used for artificial intelligence like machine learning, deep learning, natural language processing, etc., are used with boolean operators like "OR" to get the universal set of papers. Boolean operator "AND" is used to get the intersection set of paper covering marketing and artificial intelligence.

Table 2
Descriptive statistics.

Main information	Description	Results
Articles	Documents	1580
Sources (Journals, Books, etc.)	The frequency distribution of Sources	710
Keywords Plus (ID)	Keywords Plus (ID)	5780
Author's Keywords (DE)	Total number of Keywords (DE)	5062
Average citations per documents	The average number of citations in each document	12.42
Authors	Total number of Authors	3991
Author Appearances	Author Appearances	4631
Multi-authored	Authors of multi-authored documents	3779
Single-authored documents	Single-authored documents	224
Documents per Author	Documents per Author	0.396
Authors per Document	Number of authors per Document	2.53
Co-Authors	Co-Authors per Documents	2.93
Collaboration Index	Collaboration Index number	2.79

Table 3
Most Relevant sources.

Source	No. of papers pub.	H-index	G-index	Total no. of citations
Expert Systems with Applications	87	27	48	2574
Journal of Business Research	27	12	20	445
Knowledge-Based Systems	20	12	20	610
Industrial Marketing Management	17	10	17	324
European Journal of Operational Research	16	11	16	421
Information Sciences	16	8	16	305

3.3. Refining the initial results (Inclusion and exclusion criteria)

Inclusion and exclusion criteria are applied to the search results. With the help of inclusion and exclusion criteria, delimitation helped in the extraction of the most relevant articles for the literature review. To achieve the research objective, the search results limits to only articles published in journals as they represent "certified knowledge" (RamosRodríguez and Ruiz-Navarro, 2004). Conference papers, book chapters, commentaries, erratum etc., were excluded from the search results.

3.4. Data analysis plan

The bibliometric analysis of data was carried out using R-software for performance analysis of scientific actors like most relevant authors and most relevant sources. The content analysis and performance analysis of each scientific actor offered the intellectual structure of the research domain. Two researchers analyzed the Scopus data for inter-rater validity.

Data analysis is structured in three stages. Stage 1 data analysis focused on scientific actors' performance like most relevant sources and most relevant authors in the research domain. Bibliometric analysis based on total citations and citation index helped in the performance evaluation of scientific actors. Stage 2 analysis used co-occurrence and co-citation analysis for conceptual and intellectual network analysis. According to Chen et al. (2010), research papers'

co-citation network indicates the intellectual structure, concepts co-citation network indicates conceptual structure, and the authors' co-citation network indicates the social structure of the research domain. Stage 3 analysis focused on emerging trends and future research directions of AI in Marketing.

3.5. Identification of research gaps and future research directions

The articles relating to artificial intelligence in marketing were reviewed to understand the theoretical evolution, methodological evolution, and emerging research themes. Thematic coding is used for the qualitative analysis of data. Thematic coding is a form of qualitative analysis that involves recording or identifying passages of text or images linked by a common theme or idea, allowing data to index into categories for the development of the thematic framework (Gibbs, 2007). An in-depth review of research papers in each theme offered research gap insights and helped chart future research directions. Research gaps are translated into research questions that future researchers can embark on to solve.

4. Findings

4.1. Descriptive statistics of bibliographic collection

A total of 1580 documents (1523 articles and 57 reviews) have been published to date on this specific topic in 710 numbers of prominent journals. 5780 number of keywords have been used to date in this topic, and authors have used 5062 keywords to date. Table 2 presents the descriptive statistics of extant research done on artificial intelligence in marketing. The research data has displayed that the average engagement of authors for each paper is 2.79 (collaboration Index)

4.2. Performance of scientific actors

4.2.1. Most relevant sources

Table 3 present the five most relevant sources based on the maximum number of articles published in different journals. Most of the papers on artificial intelligence in Marketing have been published in Expert System with Application. The number of articles published in the next two most relevant journals viz. Journal of Business Research and Knowledge-Based Systems, are far behind from Expert System with Application. Further, to understand the most influential source, the top five most relevant sources were compared on H-index and G-index. Once again, an expert system with applications topped the chart with both the highest H-Index and G-Index. Even the total number of citations is maximum for an expert system with an application. In terms of all indicators, the expert system with applications is the most relevant source.

4.2.2. Most relevant author

Table 4 presents the five most relevant authors identified based on the maximum number of articles published, total citations and citation indexes (H-Index and G-Index). Liu Y has secured the top rank among all the researchers with 9 article publications. The other two researchers Chen Y and Liu J have also shown their interest in the uses of AI technology in the marketing domain. Further, the author impact is assessed with the help of total citations (TC), number of articles published (NP), publishing years (PY_start) and citation indexes (g and h indexes). Liu Y has an h-index 5 with TC as 97 whereas, Casillas J has an h-index 7 with 203 TC. Casillas J has more citation records than Liu Y.

It is evident from Table 4 that the citation record and h-impact both are independent. Research on a specific topic or a specific sector could impact more, whereas research work might get less citation.

Table 4
Most Relevant authors.

Author	h_index	g_index	TC	NP	PY_start
Liu Y	5	9	97	9	2010
Chen Y	5	8	100	8	2010
Liu J	4	8	307	8	2013
Casillas J	7	7	203	7	2009
Chen G	5	7	158	7	2009
Li S	3	7	51	7	2010
Zhang C	4	6	40	7	2014

4.3. Intellectual structure

Co-citation analysis offered the intellectual structure of the research domain. The research domain is classified in different clusters with the help of between centrality index computation. Fig. 1 presents the cocitation network analysis. The cluster was prepared based on the strong relationships among articles. Due to many papers in a cluster, the authors have selected only a few with the most citation. The author has selected a total of five clusters. In each cluster, the number of papers varied from two to five. They then studied and discussed the research focus & the suggestions of each cluster.

In cluster one, authors mainly focused on the trust factor that directly impacts selling and distribution in both manufacturing and service organizations. The authors discussed that trust leads to long-term relationships between buyer & supplier, leading to counter-market uncertainty. The authors propose here to continue the relationship & trust between buyer & supplier irrespective of the industry segment to get a competitive advantage. The authors suggest that the research be done in making a marketing model considering the relationship in the future.

In cluster two, the authors discussed the linkages between market orientation & business performance. The author has also discussed how the market is evolving towards customer-centricity. The focus is also shifting to intangible areas such as skills, knowledge & interactions. The author has given future research directions to address the effects of additional factors on market orientation & the relation between market orientation & market share.

In cluster three, the author describes the value creation for the customer. To make long term value to customers get a competitive advantage, the organization prepares structural equation models based on theoretical-methodological & statistical analysis. There is a tremendous opportunity to apply those concepts to add more value, especially in the retail sector areas.

In cluster four, the authors discussed the benefits of data science in various fields such as finance, marketing, consumer research, and management. The authors also deliberated about the role of typological theory on cause-effect relationships. The authors suggested future research work on

predictive validity, not just on the fit validity, to address the changing business environment issues.

Cluster five discusses consumer sentiment & word of mouth in online platforms. The data captured through online platforms can be used for dynamic analysis of an organization. This data will lead the organizations to take measures to get a competitive advantage in the market. The studies propose a framework to capture user-generated data. The authors propose to use the data not only from product reviews but also from textual communications.

4.4. Future research directions

Semantic knowledge and machine learning for deeper consumer insights will offer future researchers new strategic imperatives (Camberia, 2016). Psychologically driven and brain-inspired reasoning algorithms would further improve the predictability of consumer behavior. Psychological theories addressing the cognitive and affective needs of consumers ensembled with engineering tools will help design intelligent sentiment mining systems. Hybrid machine learning techniques will help in better sentiment classification in the future (Tripathy et al., 2016). Optimization models based on existing marketing theories will boost the applicability of AI in marketing (Zhang et al., 2016).

Overt and covert use of emotional expressions on social media adds to predicted behavior's complexity and accuracy. Linguistic patterns for deep learning may help to detect the sarcasm and may improve the sentiment predictability. Development of micro text and anaphora resolution for solving dynamic sentiment analysis would further enhance future researchers' capabilities (Poria et al., 2015). Co-creation of knowledge based systems improves market acceptability, and future researchers should try to create collaborative market intelligence (Wunderlich et al., 2015). Future researchers should work on high inflection languages and consider emotional lexicons for big data sentiment analysis like Twitter datasets (Giatsoglou et al., 2017).

5. Conclusion

It is no longer debatable that in the Fourth Industrial Revolution, where intelligence will reign supreme, companies that provide excellent customer experiences will win. The Fourth Industrial Revolution has been envisioned as a company with integrated data about customers and products across all channels and products, with that data being used to better understand the end customer experience and visibility across all functional areas. In this context, AI and machine learning have played a critical role in big data analytics, anticipating and delivering guided experiences that meet customer expectations. The authors presented a comprehensive view of using AI to improve customer experience in this study. The key to providing customer experiences that build advocacy and customers for life is to use AI and predictive analytics. The future is event-based architectures combined with AI and predictive analytics. There is no end state, but as we enter the Fourth Industrial Revolution, all businesses must embark on this journey.

Internet of things, big data analytics, blockchain, and artificial intelligence are examples of disruptive technologies that have changed the way businesses operate. Artificial intelligence (AI) is the most recent disruptive technology, and it has enormous potential in manufacturing, pharmaceuticals, healthcare, agriculture, logistics, and digital marketing. Many practitioners and academics around the world are attempting to identify the best AI solutions for their organisations. However, bibliometric reporting that shows the detailed research pattern of AI in marketing is lacking. As a result, the goal of this study is to use bibliometric analysis and co-citation analysis to compile a list of research studies on AI in marketing.

This study followed Costa et al. (2017)'s five-step methodology for conducting a systematic literature review. Initially, research terms and Boolean operators were defined scientifically, and then a detailed search procedure was drafted. The information was gathered from the SCOPUS database and saved in BibTeX and.csv formats for further analysis. The descriptive analysis of the most relevant authors, the most frequently used keywords, and the most relevant research papers were all subjected to bibliometric analysis. Co-citation analysis was used to synthesise the intellectual structure. The information was gathered from the SCOPUS database and saved in BibTeX and.csv formats for further analysis. The descriptive analysis of the most relevant authors, the most frequently used keywords, and the most relevant research papers were all subjected to bibliometric analysis. Co-citation analysis was used to synthesise the intellectual structure.

With the help of trend topics analysis and document analysis, a conceptual network analysis was completed. With an average of 34 citations per year, Day's (2011) paper on closing the marketing gap with artificial intelligence received the most citations (302). However, some papers published later in the process perform better than those at the top of the list. Camberia's (2016) paper on affective computing and sentiment analysis, for example, has already received 292 citations in just three years, an average of 73 per year. There were three stages to the trending topics. The first phase of the project was devoted to gaining a basic understanding of the research topic. It progressed through the second phase, which focused on applications in various contexts, and the third phase, which focused on emerging technologies for better predictive analytics, such as Big data, Neural Networks, and Machine learning.

To better understand the intellectual structure of the research domain, co-citation analysis was performed. With the help of the between centrality index, the research domain is divided into different clusters. Authors in cluster one primarily focused on the trust factor, which had a direct impact on the organization's performance, and emphasised the relationship-based marketing model. Researchers in cluster two discussed the relationship between market orientation and business performance. In cluster three, the author investigated value co-creation with customers using structural equation models based on a theoretical methodology. The authors discussed the benefits of data science in a variety of fields, including finance, marketing, consumer research, and management, in cluster four. The authors also discussed how typological theory affects cause-and-effect relationships. Consumer sentiment for consumer insight and dynamic analysis of an organisation were the focus of Cluster 5, which focused on emerging technologies and techniques. The research proposes a framework for capturing user-generated information.

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