Application of Artificial Intelligence in Marketing: A Narrative Literature Review

1. Nikhil Khajuria 2. Dr. Suresh Kumar Kashyap

1. *Lecturer Udhampur Campus, University of Jammu & Research Scholar Mittal School of Business, Lovely professional University, Phagwara, Punjab.*
2. *Mittal School of Business, Lovely professional University, Phagwara, Punjab.*

Abstract

The evolution of AI has changed the dynamics of businesses. Marketing is one of the areas witnessing the rapid adoption of AI on a very intense scale. Practitioners across the globe are trying to figure out the best fit of a solution for their marketing functions. The current study using Narrative Literature Review (SLR) explores the importance and use of AI in the different operations of marketing. On the basis of prior literature, the study categorizes marketing into four distinct functional themes market search, integrated digital marketing, experimental marketing, and social media. The study conducted a review of 86 qualified peer reviewed journal publications from the most reliable databases such as Scopus and Web of Science (Wos). The study was conducted using an evidence-based approach by categorically evaluating and inspecting academic and scholarly articles and journal publications on the topic of AI and marketing. The findings of the study have implications in academia and industry as it recommends the firms to adopt the application of AI in the different themes of marketing.

Keywords: *Artificial intelligence, Marketing, Market search, Experimental market, Digital marketing.*

I. Introduction

Technological development over the years have revolutionised almost every aspect of human existence, including the ways that any business organization market its goods and services. Along with the established innovations like the internet, mobile applications, and social media, some emerging technologies such as internet of things (IoT), artificial intelligence (AI), big data analytics and robotics are exerting profound effects on the practise of marketing by offering digital solutions for attracting and maintaining customer base (Hoffman and Novak 2018, Mende et al. 2019, Bolton et al., 2018, Davenport 2018). Emerging technologies provide a competitive advantages to firms by facilitating the goods and services offered to the targeted customers (Spring et al., 2017, Balaji & Roy, 2017). The advent of such emerging technologies have paved the way organizations operate their activities. Hence it is quite noticeable that business organizations across different sectors may it be manufacturing, retailing, financial or healthcare keep on increasing its spending on technological advancements in order to achieve different objectives. With the advancement in the field of technology, the world has become a web of interconnected networks and Artificial Intelligence find its applications in different context in today's business scenario. The term "artificial intelligence" (AI) was devised by the computer scientist John McCarthy in 1954 (Cukier, 2019). Artificial intelligence (AI) is a widely used emerging technology that can be defined as "intelligence exhibited by machines" (Siau, 2017). AI is the science and engineering of making intelligent machines that uses sensors to perceive and effectors to react to the external environment (Russell and Norvig 2003). It is related to the use of computer programme to understand human intelligence (Stanford, 2007). Computers with AI are able to learn, recognize speech, plan and solve problems. The term "artificial intelligence" was coined in the year 1954. However, debates on its role in marketing was acceleratedrapidly from 2017 onwards, with more research papers being published in the Journals.Technological advancements over the time have gone along the long side in the evolution of marketing and have strongly established that marketing can work along artificial intelligence (Siau, 2017). AI-powered Advanced and innovative marketing solutions can quickly adapt the ever changing needs of firms and can bring communications and solution packages that are lucrative and critical to the stakeholders (Epstein, 2018). Contemporary marketing is automated, intelligent and increasingly data driven. The highly focussed approach of new-age marketing has had a direct influence on marketing outcomes (Paschen et al., 2019; Kumar et al., 2019).Marketing AI is defined as "the development of artificial agents that, given the information they have about competitors, consumers and the focal company, suggest and/or take marketing actions to achieve the best marketing outcome" (Gijs Overgoor et al. 2019). Van Esch (2018) defines AI as human-computer interaction. AI is affecting almost every functional

areas of marketing such as business decision- making, customer experience, marketing operations (Hildebrand, 2019; Pitt et al., 2018). Artificial Intelligence through the program-based algorithm can automate the business process generate consumer and market insights, and learn insights from past data (Davenport et al 2020). The use of AI helps the organizations in tracking real-time data to analyse and respond swiftly to requirements of the customers(Wirth, 2018). AI track the moves of the customers and redefines the overall experience (Tjepkema, 2019). AI offers the insights on consumer behaviour essential for customer attraction and customer retention. AI tools are beneficial to infer customer expectations and navigate the future path (Shabbir, 2018). Through the program-based algorithm, AI can automate business process, using the past data to learn insights and can also generate consumer and market insights (Davenport et al 2020). In order to avail the potential benefit of artificial intelligence, it has been adopted by the different industries. As the businesses move forward towards Industry 5.0, artificial intelligence and other emerging technologies are being adopted by the business organizations.As the adoption of AI in the domain of marketing is emerging, there is a lack of systematic literature review revealing the in-depth research pattern in the AI-driven consumer market, The emergence of AI in the domain of marketing leads to research questions such as,

RQ1. What are the application of AI-powered marketing?

RQ2. How evolution of AI-powered marketing as a critical enabler of competent business outcomes.

RQ3. How AI technologies can optimally be utilised in marketing for maximizing market share, customer satisfaction and profitability?

RQ4. What are the trending topics and future research directions for the adoption of AI in Marketing?

The current study was an attempt to answer these research questions through a systematic literature review (SLR) on artificial intelligence in the domain of marketing. The subsequent sections of the study includes literature review, research objectives, research design, findings and discussion and conclusion.

II. Literature Review

Ahmed (2015) Demis Hassabis, founder, and CEO of Google's AI company DeepMind simply defines artificial intelligence as the "science of making machine arts". Artificial intelligence is defined as a computerized system which intake data to perform a task as it could have been performed by an intelligent being in way to maximize its chances of success. Kaput (2016) Artificial intelligence is further categorized in to different kinds hence, the term AI could be considered "a portfolio of technologies" as described by Guruduth Banavar, overseer of IBM's research. Artificial intelligence is a technological aspect and field of study which was prevalent from decades but only recently feasible to be implemented in the domain of marketing. Applications of AI already boast impressive efficacy across industries, particularly in marketing. Recent advancement in AI technology and increasing number of use of AI signifies its effectiveness that reaped excitement among marketers. The "AI Marketing Era," necessitates fundamental changes to the manner in which marketers interact with customers, tools they use to achieve their goals, the tactics, the skills they regard highly in the workplace, and the nature of their day-to-day responsibilities. The domain of marketing represents the 6th largest industry adopter of AI technology, and the 4th largest use case of AI concerning resources spent, with around 2.55% of the total industry having invested in it (Naimat, 2016). A report at McKinsey Analytics suggest that around 50% of the enterprises have adopted AI in at least one of their business functions, and 75% of the firms implemented AI in their operations witnessed 10% rise in customer experience (Balakrishnan et al. 2020; Christopher Stancombe, 2017). Xu (2020) suggest that spending on AI by business organizations is expected to rise to US$98 billion globally by 2023, with unprecedented 28.4% cumulative annual growth rates. Paschen et al. (2019) AI has transmuted the business to business (B2B) human-centric sales process and started affecting the B2B sales. Data base has a huge importance in AI and Superior power of AI is its ability to learn from large datasets (Shah and Shay, 2019). Adoption of AI van generate 99% return on investment (ROI) in the next 5years and 187% in the next 10years (Teradata, 2017). AI and ML algorithms enables efficient data processing that allow the firm to formulate the correct decision (Maxwell et al., 2011). Application of AI in the field of marketing assist the management in analysing consumer habits, likings, disliking, purchases, etc. (Chatterjee et al., 2019). Application of AI develops automated chatboat with customers in Natural Language Processing (NLP) that improves the overall customer experience (Nguyen and Sidorova, 2018). Marketing is composed of different components which are described through marketing mix. A marketing mix includes multiple areas of focus as part of a comprehensive marketing plan. E. Jerome McCarthy in 1960 coined marketing mix as 4 P's viz product, price, place, promotion. The application of artificial intelligence is prevalent in all the p's of marketing mix.

2.1 Application of AI in Product Management

A product is what a firm sells, it may be in the form of goods, services, and ideas which provides utility to the customer. Application of artificial intelligence-based marketing analytics tool can measure the customer preference and modify the product design as per the need of the customer resulting in customer satisfaction

(Dekimpe, 2020). Artificial intelligence offers proficiencies to customize offerings to suit to the customer needs (Kumar et al., 2019). Preference weight assigned to product attributes during product search help the marketers to understand product recommender system and align marketing strategies for meaningful product management (Dzyabura& Hauser, 2019). Deep learning can personalize the point of interest recommendation and helps to explore new places (Guo et al., 2018). Topic modelling adds to the system capabilities to service innovation and designs (Antons&Breidbach, 2018).

1.2   Application of AI in Price Management

Pricing is a process in marketing by which businesses determine the value of the products and services. AI has an active role to be played in deciding the prices of the product. AI based multiarmed bandit algorithm can dynamically adjust price in real time scenario (Misra et al., 2019). One of the complexity in deciding the price of the commodity is the real time price variation based on fluctuating demand of the product in the market. AI based algorithm can quickly overcome complexity of real time pricing and quickly adjust the price points to match the competitor's price (Bauer &Jannach, 2018).According to Dekimpe (2020),AI based pricing algorithms compress competitor strategies, customer choices, and supply network to optimize dynamic pricing.

2.3 Application of AI in Place Management

Place in marketing mix refers to the geographical location in which the company sells its products and provides its services. The accessibility and availability of products are essential component of marketing mix towards overall customer satisfaction. Distribution of products heavily relies on networked relationship, supply chain management, warehousing, storage and handling, inventory management which is largely mechanical and repetitive in nature. Huang & Rust (2020). AI based algorithms are the perfect solution to distribution management as it offers IoT for tracking and order refiling, machines for packaging drones for delivery. In context to services, AI offers customer engagement opportunities. Service robots programmed with emotional AI codes are handy in surface acting (Wirtz et al., 2018). Complimented by the human element in the service environment for customer delight**,** Embodied robots greet and engage with customers providing additional opportunity for performance and productivity improvement (Huang & Rust, 2018).

2.4   Useof AI in Promotion Management

Promotion in marketing mix refers to the process of communicating the product, service, brand or an activity among the target segment to make audience aware, attract, and induce to buy the product. Promotion management involves media planning, media scheduling, advertising management etc. With the advent of digital marketing, promotional strategies of the business are shifting from conventional to digital platform, the most commonly used technique of promotion is through social media. In digital campaigning, customer decide the content, place and timing. Artificial intelligence offers customization and personalization of messages as per the customer profile and likings (Huang & Rust, 2019). With the use emotive AI based algorithms customer liking and disliking can be traced in real time. Content analytics can optimize value and message effectiveness. Netnography on social media content offers new avenues for marketers to align their marketing strategies as per the customer likings (Verma, 2018; Verma & Yadav, 2020).

III.   Research Objectives

The study analyses the impact of AI on marketing focusing the application of AI across different functional themes of marketing. Artificial intelligence has many applications, the topic of AI in marketing itself is vast enough, in order to summarize the evolution of artificial intelligence in the domain of marketing, the current study using SLR summarizes the application and use cases of AI across functional themes of marketing as shown in the Figure.1
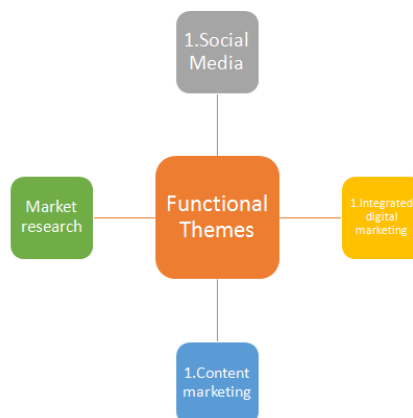

Figure 1. Functional themes of marketing

IV.   Methodology

The methodology undertaken in the current study in order to attain a holistic perspective on artificial intelligence in marketing is multi-layered. It focused primarily on the secondary data base. The current study employed systematic literature review (SLR) of the past literature relevant to AI marketing. Jilani & Mackworth-Young, (2015) defines SLR as a process of identifying underlying trends by analysing and exploring a large amount of published data. SLR must be comprehensive in order to ensure that it collects, reviews, and assesses previous findings while also utilizing standardized and pre-specified research techniques (Štrukelj, 2018).Rowley and Slack's (2004) guidelines were used in the current study for conducting systematic literature review (SLR). Methodologically, the literature review used a multifaceted process described in the subsequent section of Research design.

V.   Research Deign

The use of systematic literature review (SLR) follows a multifaceted process.

At the first step, it required selection of bibliometric databases. Scopus, Web of Science, Google Scholar, Springer, Emerald, Sage are the most commonly used database. Web of Science (WoS) and Scopus (WoS) are the two most reputed and commonly used bibliometric databases. The current study explored both Web of Science (WoS), Emerald, and Scopus databases to search the relevant literature. Scopous has wider coverage and includes more than 20,000 peer-reviewed journals from different publishers (Fahimnia et al., 2015).

At the second step, it required forming a search strategy. The study used name string search across the database. The search string included words like "Artificial intelligence", "Marketing", and "Artificial Intelligence in Marketing". Also, some synonyms for the term artificial intelligence were used such as machine learning, natural language processing, deep learning, etc. in order to make the article reflect recent, only the most recent peer-reviewed studies with greater scientific accuracy were considered. In order to achive research objectives, the search results limits only to articles published in journals (RamosRodríguez and Ruiz-Navarro, 2004).

At the third step, it required applying Inclusion and exclusion criteria to the search results. The SLR must identify and understand the objectives and define the criteria for inclusion and exclusion (Štrukelj, 2018). Inclusion and exclusion criteria helped in extraction of the most relevant articles for the literature review. The inclusion criteria for the current study included use of keywords "Artificial intelligence", "Marketing", and "Artificial Intelligence in Marketing". It also included literature published in the recent times in English language and should be published in journals and scholarly articles. Whereas, Exclusion criteria for the current study included duplicates found using digital object identifier, non-English articles, and conference paper and book chapters.

Data Source

The current study used the methodology of systematic literature review (SLR). This study was conducted using an evidence-based approach by categorically evaluating and inspecting academic and scholarly articles and journal publications on the topic of AI and marketing. In order to collect the data, the current study used thethe most commonly used database such as Scopus, Web of Science, Google Scholar, Springer, Emerald, Sage are. Only peer-reviewed, journal publications and scholarly articles were taken into consideration 36 qualified, peer-reviewed, journal publications were studied for the research and the findings were tabulated as per the following fields: author, publication year, title, sector, context, study measures, study focus, journal, first author's country, and quantitative (Q)-score. However, Conference papers, book chapters, commentaries, erratum etc., were excluded from the search results.

VI.   Findings and Discussion

In order to summarize the evolution of artificial intelligence in the domain of marketing the synthesized research data have helped formalize, disseminate, and connect the research evidence using SLR summarizes the application and use cases of AI across functional themes.

Market research

The field of market research have predominantly being focused on understanding consumer behaviour (Davenport et al., 2020; Overgoor et al., 2019). Wirth (2018) in a study illustrated how artificial intelligence has its applicability in the field of market research and customer segmentation. Eriksson et al. (2020) illustrated the impact of AI on strategic marketing by focusing on five critical antecedents of strategic marketing and suggested the use of AI in the context of strategic marketing relates not only to rationale but also creative possibility perspectives The adoption of AI-enabled technological systems have already started replacing some sales and marketing jobs. Davenport et al. (2020) demonstrated how AI-enabled technological systems can be

more effective when it supplements (rather than replacing) human managers. Various other studies have illustrated the application of AI in the evaluation of marketing strategies (Rekha et al., 2016). Paschen et al. (2019) explored the application of AI in conducting market research in B2B markets. Gkikas and Theodoridis (2019) projected an AI model for digital marketing in the context of Academia. Huang and Rust (2020) projected a three-pronged approach for market research by categorising the current adoption of AI in marketing into three classes based on the feeling AI, nature of their operation, and application in the overall marketing process, specifically, mechanical, thinking. The adoption of AI in marketing research and sales marketing has left only fewer task that only human can perform (Siau, 2017). AI-enabled technological systems uses open-access toolboxes and technologies in the process of decision making that can simply overpower humans in marketing research (Wirth, 2018). Hadi et al. (2019) illustrated the use AI algorithm model to study consumer behaviour in the context of digital advertising. Huang and Rust (2020) tried to categorize AI based on its functionalities as mechanical, thinking, and feeling AI. From a standpoint of thinking, AI creates optimal segmenting, targeting, and positioning insights by analysing the multi-dimensional data, showing correlations between data- and theory driven market analysis for better outcomes.

Integrated digital marketing

An unparalleled future in the world of marketing has been created with number of new application of AI in marketing (Krsteva, 2016; Siau, 2017). Thiraviyam (2018) suggested indicative measures to improve digital marketing strategies. Murgai (2018) studied the application of AI in the different areas of digital marketing and how AI has transformed the landscape of digital marketing. Khokhar and Chitsimran (2019) tried to discover the factors that lead to the adoption of AI in marketing. Capatina et al. (2020) predicted the potential application of AI-based software in programmatic advertising. In context to Academia, (Gkikas and Theodoridis 2019) proposed a machine learning model for digital marketing. TĂNASE (2018) illustrated the impact of programmatic advertising. Various recent studies have tried to explore the influence of AI on digital marketing from a specific research context such as, marketing academics ((Elhajjar et al., 2020) and customer experience (Chandra, 2020). Mogaji et al. (2020) conducted an exclusive study and evaluated the impact of AI-enabled digital marketing programs on financially vulnerable customers. It suggested the importance of human connection to ensure optimal customer engagement and experience. The study also proposes a model towards finding connection between financial vulnerable customers and financial service market.

Experiential marketing

Experimental marketing also known as engagement marketing, is a marketing technique that deeply engages the customers with the product. Recent research has mainly focussed on virtual reality/transformation (Grandinetti, 2020; De Bruyn et al., 2020), voice (Hildebrand, 2019; Jarek& Mazurek, 2019; Dumitriu& Popescu, 2020), implication for image recognition (Shah & Shay, 2019; Xi &Siau, 2020; Jarek& Mazurek, 2019) and chatbots (Jahan, 2020; Kaczorowska, 2019; Devang et al., 2019). Grandinetti (2020) illustrated the priorities of a marketer in context of AI-powered experiential marketing and satisfaction of customer needs. MartínezLópez and Casillas (2013) offered a complete review of deployment of artificial intelligence in industrial marketing e.g. in segmenting and pricing from 1970s to 2013. Continuing from that Syam and Sharma (2018) provide a detailed overview impacts of machine learning (ML). Dr Misbah Jahan's (2020) conducted a research which stated the use of AI in the marketing domain and also illustrated the different industries and sectors that were the early adopters of AI. Kaczorowska (2019) illustrated the process of identifying opportunities related to application of chatbots in marketing. On the other hand, Dumitriu& Popescu (2020) illustrated the use of advanced intelligent search mechanisms. Xi & Siau (2020) in a study illustrated the value-focused marketing facilitated by AI. Whereas, (Grandinetti, 2020) Stated the relevance of AI marketing in market-theory based implications. A sectoral study on the pharmaceutical industry by Khanna et al. (2020) analysed the application of AI and advanced analytics in the area of commercial pharmaceutical marketing. Shah and Shay (2019) presented a framework to summarize different uses of marketing that can employ transformative technologies and the corresponding implications. Various research in the recent past has analysed the impact of customer trust on acceptance and adoption and the ethical implications and security requirements of AI agents (Marinchak et al., 2018).

Social Media

Hanaysha (2018) studies have found that social media marketing plays an important role in customer retention and also on purchase intention in the context of luxury fashion brands (Morra et al. 2018), Universities (Wong et al. 2018) and hotels (Alansari et al. 2020). Social media marketing can have potential benefit on a company's brand. This can take the form of aspects such as: brand equity (Stojanovic et al. 2018; Mishra, 2019), brand sustainability (Ahmed et al. 2019), brand meaning (Tarnovskaya and Biedenbach, 2018), and brand loyalty (Shanahan et al. 2019). Social media marketing has demonstrated critical transformation with the application of AI based technological tools (Gkikas& Theodoridis, 2019). Numerous studies in the recent past

have explored the correlations between experience and level of knowledge of the applicability of artificial intelligence in social media marketing (Micu et al. 2018). Mouncey (2018) has explored the application of supervised machine learning to Twitter data. Tous et al. (2018) illustrated the use of AI by by companies for automated curation of brand-related social media images. Various other research have illustrated the application of AI in different activities such as to propose personalized incentives for users on social media (Ballestar et al. 2019), to identify more effective sales promotional targets (Takahashi, 2019), and to identify relevant communication through social media (Vermeer et al. 2019). Nearly every business organization uses different tools for analysing and capturing data from social media. However, most of these companies still lack sufficient knowledge on technological evolution like artificial intelligence and utilization of machine learning analytical tools (Duan et al., 2019; Gil-González et al., 2019; Miklosik et al. 2019).

VII. Conclusion

Business organizations which provides greater satisfaction to the customer will be the market leader in the modern times. Numerous studies in the recent past has stated that the application of AI may impact the future of marketing strategies bank customer behavior across different businesses and industry. The era of AI marketing is rapidly growing and carries with it far reaching implications. AI offers immense benefits to marketers customers and society at large as it potentially facilitates marketer's ability to create and distribute value to the targeted customer at the right time in the right way.

The current study was an attempt to explain and understand the application of artificial intelligence in the different functional themes of marketing. The study employed systematic literature review of the past literature relevant to AI marketing. The findings of the study emphasized on the continuous evolution of AI to become more intelligent and smarter to augment human thinking. In the modern times, marketing operations are data driven and application of AI in the different themes of marketing has the ability to continuously learn and interpret the customers buying intents and emotion that help in the future marketing efforts which leads to extreme automation and personalization.

The findings of the study has its implication in academia and industry as it recommends the firms to adopt the application of AI in the different themes of marketing. The study has a limitation that its scope was restricted only to few functional themes of marketing which included market search, integrated digital marketing, experimental marketing and social media. However, there are various other functional themes which remained uncovered in the objective of this paper. Future studies on this topic may include more functional themes.

References

[1]. Ahmed, A., Elkatatny, S., Ali, A., &Abdulraheem, A. (2019). Comparative analysis of artificial intelligence techniques for formation pressure prediction while drilling. Arabian Journal of Geosciences, 12(18), 1-13.
[2]. Antons, D., &Breidbach, C. F. (2018). Big data, big insights? Advancing service innovation and design with machine learning. Journal of Service Research, 21(1), 17-39.
[3]. Balaji, M. S., & Roy, S. K. (2017). Value co-creation with Internet of things technology in the retail industry. Journal of Marketing Management, 33(1-2), 7-31.
[4]. Balakrishnan, J., Dwivedi, Y. K., Hughes, L., & Boy, F. (2021). Enablers and inhibitors of AI-powered voice assistants: a dual-factor approach by integrating the status quo bias and technology acceptance model. Information Systems Frontiers, 1-22.
[5]. Ballester, P. J., & Carmona, J. (2021). Artificial intelligence for the next generation of precision oncology. NPJ Precision Oncology, 5(1), 1-3
[6]. Bauer, J., &Jannach, D. (2018). Optimal pricing in e-commerce based on sparse and noisy data. Decision Support Systems, 106, 53-63.
[7]. Bolton, R. N., McColl-Kennedy, J. R., Cheung, L., Gallan, A., Orsingher, C., Witell, L., &Zaki, M. (2018). Customer experience challenges: bringing together digital, physical and social realms. Journal of Service Management.
[8]. Bringsjord, S., &Schimanski, B. (2003, August). What is artificial intelligence? Psychometric AI as an answer. In IJCAI (pp. 887-893).
[9]. Capatina, A., Kachour, M., Lichy, J., Micu, A., Micu, A. E., &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.
[10]. Chandra, G., Gupta, R., & Agarwal, N. (2020). Role of artificial intelligence in transforming the justice delivery system in covid-19 pandemic. Chandra, G., Gupta, R. and Agarwal, (2020), 344-350.
[11]. Chatterjee, S., Ghosh, S. K., Chaudhuri, R., & Nguyen, B. (2019). Are CRM systems ready for AI integration? A conceptual framework of organizational readiness for effective AI-CRM integration. The Bottom Line.
[12]. Davenport, T., Guha, A., Grewal, D., &Bressgott, T. (2020). How artificial intelligence will change the future of marketing. Journal of the Academy of Marketing Science, 48(1), 24-42.
[13]. Davenport, T. H., &Ronanki, R. (2018). Artificial intelligence for the real world. Harvard business review, 96(1), 108-116.
[14]. 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.
[15]. Dekimpe, M. G. (2020). Retailing and retailing research in the age of big data analytics. International Journal of Research in Marketing, 37(1), 3-14.
[16]. Devang, V., Chintan, S., Gunjan, T., & Krupa, R. (2019). Applications of artificial intelligence in marketing. Annals of the University Dunarea de Jos of Galati: Fascicle: XVII, Medicine, 25(1), 28-36.

[17]. Duan, Y., Edwards, J. S., & Dwivedi, Y. K. (2019). Artificial intelligence for decision making in the era of Big Data–evolution, challenges and research agenda. International Journal of Information Management, 48, 63-71.

[18]. Dumitriu, D., & Popescu, M. A. M. (2020). Artificial intelligence solutions for digital marketing. Procedia Manufacturing, 46, 630-636.

[19]. Dzyabura, D., & Hauser, J. R. (2011). Active machine learning for consideration heuristics. Marketing Science, 30(5), 801-819.

[20]. El Hajjar, A., & Rey, J. F. (2020). Artificial intelligence in gastrointestinal endoscopy: general overview. Chinese medical journal, 133(3), 326.

[21]. Fahimnia, B., Sarkis, J., &Davarzani, H. (2015). Green supply chain management: A review and bibliometric analysis. International Journal of Production Economics, 162, 101-114.

[22]. Garnelo, M., & Shanahan, M. (2019). Reconciling deep learning with symbolic artificial intelligence: representing objects and relations. Current Opinion in Behavioral Sciences, 29, 17-23.

[23]. Geru, M., Micu, A. E., Capatina, A., &Micu, A. (2018). Using artificial Intelligence on social media's user generated content for disruptive marketing strategies in eCommerce. Economics and Applied Informatics, 24(3), 5-11.

[24]. Gkikas, D. C., & Theodoridis, P. K. (2019). Artificial Intelligence (AI) Impact on Digital Marketing Research. In Strategic Innovative Marketing and Tourism (pp. 1251-1259). Springer, Cham.

[25]. González, E. G., & De Hert, P. (2019, April). Understanding the legal provisions that allow processing and profiling of personal data—an analysis of GDPR provisions and principles. In Era Forum (Vol. 19, No. 4, pp. 597-621). Springer Berlin Heidelberg

[26]. Grandinetti, R. (2020). How artificial intelligence can change the core of marketing theory. Innovative marketing, 16(2), 91-103.

[27]. Guo, J., & Li, B. (2018). The application of medical artificial intelligence technology in rural areas of developing countries. Health equity, 2(1), 174-181.

[28]. Hadi, S., Prabowo, W., Murdiono, A., Hidayat, R., &Rahayu, W. P. (2019). Digital marketing optimization in artificial intelligence era by applying consumer behavior algorithm. Asian Journal of Entrepreneurship and Family Business, 3(1), 41–48.

[29]. Hanaysha, J. R. (2021). An examination of social media advertising features, brand engagement and purchase intention in the fast food industry. British Food Journal.

[30]. Hildebrand, C. (2019). The Machine Age of Marketing: How Artificial Intelligence Changes the Way People Think, Act, and Decide. NIM Marketing Intelligence Review, 11(2), 11-10.

[31]. Hildebrand, C., & Bergner, A. (2019). Ai-driven sales automation: Using chatbots to boost sales. NIM Marketing Intelligence Review, 11(2), 36-41.

[32]. Hoffman, D. L., & Novak, T. P. (2018). Consumer and object experience in the internet of things: An assemblage theory approach. Journal of Consumer Research, 44(6), 1178-1204.

[33]. Huang, M. H., & Rust, R. T. (2018). Artificial intelligence in service. Journal of Service Research, 21(2), 155-172.

[34]. Huang, M. H., & Rust, R. T. (2021). A strategic framework for artificial intelligence in marketing. Journal of the Academy of Marketing Science, 49(1), 30-50.

[35]. Jahan, N., Ghani, T., Ridoy, S. H., Khan, M. S., & Khan, M. M. (2020, November). Design and Feasibility Analysis of an Artificial Intelligence Based Mobile App for Maintaining Kinship in an Affinity Group. In 2020 Second International Sustainability and Resilience Conference: Technology and Innovation in Building Designs (51154) (pp. 1-5). IEEE.

[36]. Jarek, K., & Mazurek, G. (2019). MARKETING AND ARTIFICIAL INTELLIGENCE. Central European Business Review, 8(2).

[37]. Jilani, A. A., & Mackworth-Young, C. (2015). The role of citrullinated protein antibodies in predicting erosive disease in rheumatoid arthritis: a systematic literature review and meta-analysis. International journal of rheumatology, 2015.

[38]. Kaput, M. (2016). The Marketer's Guide to Artificial Intelligence Terminology. Retrieved January, 17, 2018.

[39]. Karmani, P., Chandio, A. A., Korejo, I. A., & Chandio, M. S. (2018, October). A Review of Machine Learning for Healthcare Informatics Specifically Tuberculosis Disease Diagnostics. In International Conference on Intelligent Technologies and Applications (pp. 50-61). Springer, Singapore.

[40]. Khokhar, P. (2019). Evolution Of Artificial Intelligence In Marketing, Comparison With Traditional Marketing. Our Heritage, 67(5), 375-389.

[41]. Krsteva, M. S. T. ARTIFICIAL INTELLIGENCE IN MARKETING AND ADVERTISING. International Journal of Science and Arts, 85.

[42]. 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.

[43]. Li, L., Qin, L., Xu, Z., Yin, Y., Wang, X., Kong, B., ... & Xia, J. (2020). Artificial intelligence distinguishes COVID-19 from community acquired pneumonia on chest CT. Radiology.

[44]. Malik, A., Kumar, A., Kim, S., Kashani, M. H., Karimi, V., Sharafati, A., ... & Chau, K. W. (2020). Modeling monthly pan evaporation process over the Indian central Himalayas: application of multiple learning artificial intelligence model. Engineering Applications of Computational Fluid Mechanics, 14(1), 323-338.

[45]. Marinchak, C. M., Forrest, E., &Hoanca, B. (2018). Artificial intelligence: redefining marketing management and the customer experience. International Journal of E-Entrepreneurship and Innovation (IJEEI), 8(2), 14-24.

[46]. Martínez-López, F. J., & Casillas, J. (2013). Artificial intelligence-based systems applied in industrial marketing: An historical overview, current and future insights. Industrial Marketing Management, 42(4), 489-495.

[47]. Maxwell, D., Meyer, S., &Bolch, C. (2021). DataStory™: an interactive sequential art approach for data science and artificial intelligence learning experiences. Innovation and Education, 3(1), 1-13.

[48]. Mende, M., Scott, M. L., van Doorn, J., Grewal, D., & Shanks, I. (2019). Service robots rising: How humanoid robots influence service experiences and elicit compensatory consumer responses. Journal of Marketing Research, 56(4), 535-556.

[49]. Miklosik, A., Kuchta, M., Evans, N., & Zak, S. (2019). Towards the adoption of machine learning-based analytical tools in digital marketing. IEEE Access, 7, 85705-85718.

[50]. Misra, N. N., Dixit, Y., Al-Mallahi, A., Bhullar, M. S., Upadhyay, R., &Martynenko, A. (2020). IoT, big data and artificial intelligence in agriculture and food industry. IEEE Internet of Things Journal.

[51]. Mishra, R. (2019, February). Usage of Data Analytics and Artificial Intelligence in Ensuring Quality Assurance at Higher Education Institutions. In 2019 Amity International Conference on Artificial Intelligence (AICAI) (pp. 1022-1025). IEEE.

[52]. Mogaji, E., Soetan, T. O., &Kieu, T. A. (2020). The implications of artificial intelligence on the digital marketing of financial services to vulnerable customers. Australasian Marketing Journal, j-ausmj.

[53]. Mouncey, P. (2018). Gaining insights without questions; Political Polling; Democracy Awards and IJMR Executive Editorial Board. International Journal of Market Research, 60(5), 425-434.

[54]. Murgai, A. (2018). Transforming digital marketing with artificial intelligence. International Journal of Latest Technology in Engineering, Management & Applied Science, 7(4), 259-262.

[55]. Naimat, A. (2016). The New Artificial Intelligence Market: A Data-driven Study of Industries and Companies Adopting AI. O'Reilly Media.
[56]. Nguyen, Q. N., & Sidorova, A. (2018). Understanding user interactions with a chatbot: A self-determination theory approach.
[57]. Nilsson, H., Williamson, H., Bergman, S., Stenberg Wieser, G., Wieser, M., Behar, E., ... & Goetz, C. (2020). Average cometary ion flow pattern in the vicinity of comet 67P from moment data. Monthly Notices of the Royal Astronomical Society, 498(4), 5263-5272.
[58]. 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.
[59]. Paschen, J., Kietzmann, J., &Kietzmann, T. C. (2019). Artificial intelligence (AI) and its implications for market knowledge in B2B marketing. Journal of Business & Industrial Marketing.
[60]. Paschen, U., Pitt, C., &Kietzmann, J. (2020). Artificial intelligence: Building blocks and an innovation typology. Business Horizons, 63(2), 147-155.
[61]. Ramos-Rodríguez, A. R., &Ruíz-Navarro, J. (2004). Changes in the intellectual structure of strategic management research: A bibliometric study of the Strategic Management Journal, 1980–2000. Strategic management journal, 25(10), 981-1004.
[62]. Rekha, A. G., Abdulla, M. S., &Asharaf, S. (2016). Artificial Intelligence Marketing: An application of a novel Lightly Trained Support Vector Data Description. Journal of Information and Optimization Sciences, 37(5), 681-691.
[63]. Rossi, R., & Ahmed, N. (2015, March). The network data repository with interactive graph analytics and visualization. In Twenty-Ninth AAAI Conference on Artificial Intelligence.
[64]. Rowley, J., & Slack, F. (2004). Conducting a literature review. Management research news.
[65]. Rust, R. T. (2020). The future of marketing. International Journal of Research in Marketing, 37(1), 15-26.
[66]. Shabbir, J., &Anwer, T. (2018). Artificial intelligence and its role in near future. arXiv preprint arXiv:1804.01396.
[67]. Shah, D., & Shay, E. (2019). How and why artificial intelligence, mixed reality and blockchain technologies will change marketing we know today. Handbook of Advances in Marketing in an Era of Disruptions: Essays in Honour of Jagdish N. Sheth, 377-387.
[68]. Siau, K. (2017, August). Impact of artificial intelligence, robotics, and automation on higher education. In Twenty-third Americas Conference on Information Systems (pp. 10-12).
[69]. Stancombe, C., Tolido, R., Thieullent, A. L., Buvat, J., KVJ, S., Khadikar, A., &Chandna, A. (2017). Turning AI into concrete value: The successful implementers' toolkit. The Digital Transformation Institute.
[70]. Stojanović, B., Vencl, A., Bobić, I., Miladinović, S., &Skerlić, J. (2018). Experimental optimisation of the tribological behaviour of Al/SiC/Gr hybrid composites based on Taguchi's method and artificial neural network. Journal of the Brazilian Society of Mechanical Sciences and Engineering, 40(6), 1-14.
[71]. Strukelj, A., &Niehorster, D. C. (2018). One page of text: Eye movements during regular and thorough reading, skimming, and spell checking. Journal of Eye Movement Research, 11(1).
[72]. Syam, N., & Sharma, A. (2018). Waiting for a sales renaissance in the fourth industrial revolution: Machine learning and artificial intelligence in sales research and practice. Industrial marketing management, 69, 135-146.
[73]. Takahashi, H., Iwata, T., Yamanaka, Y., Yamada, M., & Yagi, S. (2019, July). Variational autoencoder with implicit optimal priors. In Proceedings of the AAAI Conference on Artificial Intelligence (Vol. 33, No. 01, pp. 5066-5073).
[74]. Tanase, G. C. (2018). Artificial intelligence: optimizing the experience of digital marketing. Romanian Distribution Committee Magazine, 9(1), 24-28.
[75]. Teradata. (2017). State of Artificial Intelligence For Enterprises. Retrieved from Teradata https://site.teradata.com/Microsite/AI_Research_Study/LP/.ashx
[76]. Theodoridis, P. K., &Gkikas, D. C. (2019). How artificial intelligence affects digital marketing. In Strategic Innovative Marketing and Tourism (pp. 1319-1327). Springer, Cham.
[77]. Thiraviyam, T. (2018). Artificial intelligence marketing.
[78]. Tokovarov, M., Plechawska-Wójcik, M., & Kaczorowska, M. (2019, June). Multi-class classification of EEG spectral data for artifact detection. In International Conference on Artificial Intelligence and Soft Computing (pp. 305-316). Springer, Cham.
[79]. Tous, R., Gomez, M., Poveda, J., Cruz, L., Wust, O., Makni, M., &Ayguadé, E. (2018). Automated curation of brand-related social media images with deep learning. Multimedia Tools and Applications, 77(20), 27123-27142.
[80]. Van Esch, P., Black, J. S., &Ferolie, J. (2019). Marketing AI recruitment: The next phase in job application and selection. Computers in Human Behavior, 90, 215-222.
[81]. Verma, A., Yadav, S., Arora, A., & Singh, K. (2020, June). Comparison of Maximum Power Tracking using Artificial Intelligence based optimization controller in Photovoltaic Systems. In 2020 International Conference for Emerging Technology (INCET) (pp. 1-6). IEEE.
[82]. Verma, M. (2018). Artificial intelligence and its scope in different areas with special reference to the field of education. Online Submission, 3(1), 5-10.
[83]. Vermeer, S. A., Araujo, T., Bernritter, S. F., & van Noort, G. (2019). Seeing the wood for the trees: How machine learning can help firms in identifying relevant electronic word-of-mouth in social media. International Journal of Research in Marketing, 36(3), 492-508.
[84]. Wirtz, J., Patterson, P. G., Kunz, W. H., Gruber, T., Lu, V. N., Paluch, S., & Martins, A. (2018). Brave new world: service robots in the frontline. Journal of Service Management.
[85]. Wirth, N. (2018). Hello marketing, what can artificial intelligence help you with?. International Journal of Market Research, 60(5), 435-438.
[86]. Wong, S. H., Al-Hasani, H., Alam, Z., &Alam, A. (2019). Artificial intelligence in radiology: how will we be affected?. European radiology, 29(1), 141-143.
[87]. Xi, Y., & Siau, K. (2020). Values of Artificial Intelligence in Marketing.
[88]. Zeng, D., Yuan, X., & Roundy, J. K. (2019). Effect of teleconnected land–atmosphere coupling on Northeast China persistent drought in spring–summer of 2017. Journal of Climate, 32(21), 7403-7420.