
ARTIFICIAL INTELLIGENCE IN MARKETING: IMPLICATIONS AND FUTURE RESEARCH DIRECTIONS

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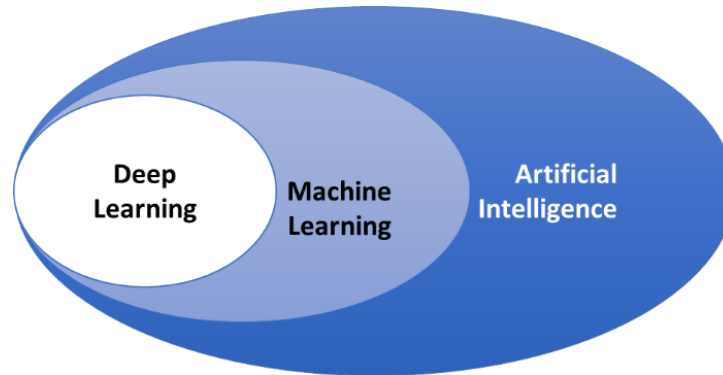
Abstract

AI rapidly changes traditional industries using machine learning, deep learning, and big-data technologies. It helps companies better understand customer needs, develop customized marketing campaigns, find more market opportunities, and establish more effective business goals. AI plays a significant role in many fields including cyber security, education, healthcare, finance, and marketing. This paper focuses on the contribution of AI in the marketing field. It has two main contributions. The first contribution is presenting and analyzing the role and effect of AI in marketing. It reviews the previous work of around 185 manuscripts from 2017, since the real evolution of AI to 2024. It utilizes manual/rule-based clustering to group the work of those researchers to either qualitative or quantitative according to its contribution. It also lists its challenges and limitations and accordingly recommends a set of future directions. The second contribution is utilizing the Louvain algorithm to group the papers in the literature review according to their similarities based on the title of each. This allows a better understanding of the nature of the contribution of each literature review paper and the relationship between them.

Keywords: Artificial Intelligence, Marketing, Louvain Algorithm.

1. Introduction

Artificial Intelligence (AI) is the ability of computers to mimic human beings (Abdulrahman et al. 2020). This term is mainly related to projects that build cognitive processes typically associated with humans, such as reasoning, deriving meaning, generalizing, and learning from a past experience. This field combines many other fields including computer science, mathematics, and databases to enable problem-solving (Al-Surmi et al. 2022). AI is the umbrella that carries machine learning and deep learning as shown in Figure-1.



2. Figure-1: Artificial Intelligence Umbrella

In fact, AI proves its effectiveness not only in machine learning but also in Natural Language Processing, Robotics, Expert Systems and Fuzzy Logic. This is why it has a broad range of domain applications. On top of those applications and what’s of the interest of this paper is (marketing) domain. AI helps marketers create creative marketing campaigns and strategies that boost companies’ revenue. It also helps to track a customer journey to improve their experience and convert those prospects. AI could help in calculating customer lifecycle and their lifetime value in light of their journey as shown in Figure-2 as reported by Smart Insights. According to Salesforce only 29% of the marketers utilized AI in 2018. This percentage is expected to jump to 84% in 2020.

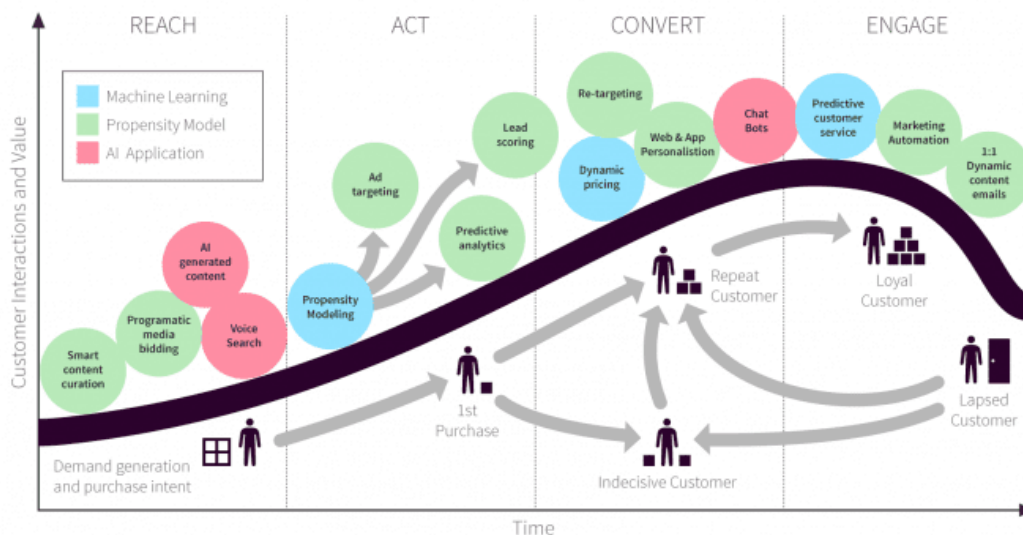


Figure-2: Customer life cycle using AI

There are many use cases of AI in Marketing including Audience targeting, market analysis, personalization, customer behavior analysis, competitor analysis,

search engine optimization, social media listening, email marketing, predictive marketing, and intelligent website audits. AI also helps to build chariots for better, and smarter interaction with the customer.

Recently there are many intelligent tools invented using AI that can support marketing heavily. For instance, the IBM Watson tool has the ability to answer questions, and write songs. Marketers can make use of its ability for better handling customer complaints and customer satisfaction. Also, Google AI tools can accurately read lips. It can also master video games within a few hours. A third example of booming AI tools is MIT's AI that can predict actions in a video in almost two seconds before its beginning. All these examples prove the ability of machines to compete and even beat humans.

On top of the trending topics of AI is ChatGPT. This is simply an intelligent chatbot that was developed by OpenAI corporation using AI. It proves the ability of machines to mimic human behavior. It was invented in June 2020, and a new release was launched in November 2022 on top of ChatGPT-3. The newly released version of ChatGPT with its capabilities went viral and has had a huge impact in many industries, including Education, customer service, and Healthcare. Content creation and business.

Another trending concept that relates AI to marketing is Deep Web Marketing. It helps marketers find out useful content to their customers without any interruption to them, also without selling their data. This marketing strategy empowers the customers with information before buying a firm's products. The role of AI in this marketing strategy is to create algorithms for more customized and targeted marketing with smarter marketing solutions. Also, Acemoglu et al. (2018) presented the possibility of work automation using AI. This is a significant topic that would save effort, time, and cost of work in different industries and different domains, not only marketing. Daugherty et al. (2018) described human-machine interactions as a third wave of business transformation. Meanwhile, implementing this needs to change the mindset of the organizations' stockholders.

On the other hand, the Louvain Algorithm is a graph-based clustering algorithm. It is used to extract communities in large networks (Blondel et al. (2008)).

2. LITERATURE REVIEW

This section presents the work that has been done in the literature related to the contribution of AI in marketing. As demonstrated in Figure-3, the papers of the literature review were classified as either quantitative or qualitative, each of which is contributed with either a survey paper or an utilized AI algorithm highlighting the significance of ChatGPT and other emerging trends.

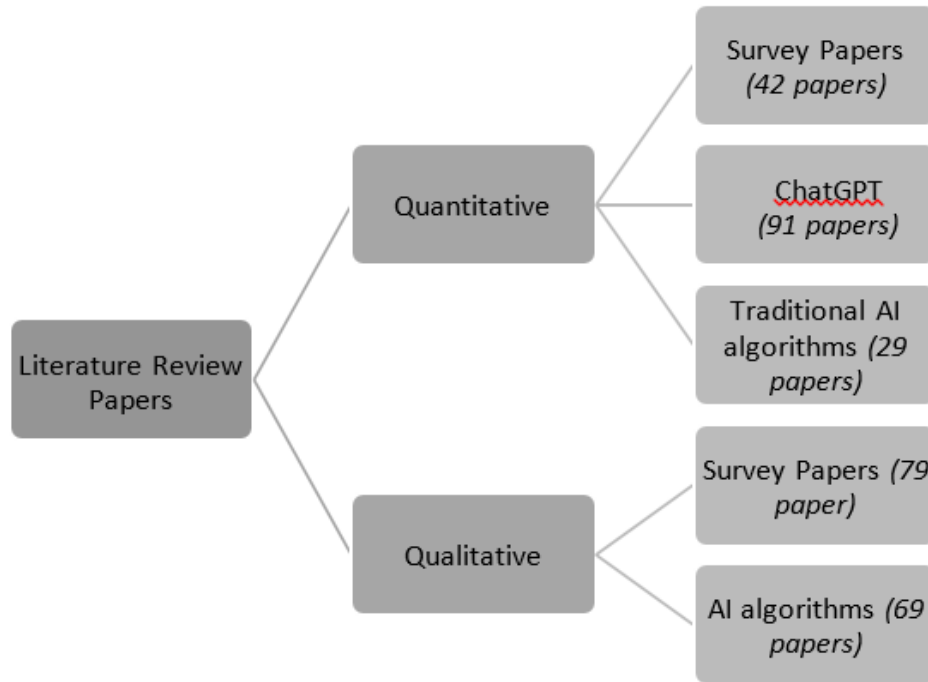


Figure-3: Taxonomy of the literature Review papers

2.1. Quantitative Models

2.1.1. Review Papers about AI in Marketing

Eriksson et al. (2000) stated how AI could contribute to the formulation of marketing strategy. They discussed and proved how AI might be effective in strategic decision management. Yet, the main limitation of their work was the focus only on strategic creation of a firm as a deliberate process. Meanwhile, the strategy is deliberate through only proactively formed strategic decisions' patterns. Capantina et al. (2020) tried to differentiate AI technological solutions from those available in the market. Mi et al. (2020) listed the common machine learning models that have been used in marketing research. They also compared these models with econometric methods traditionally used in marketing research. They proved the efficiency of the machine learning models over the traditional models. ML models could be applied to large-scale, and even unstructured data. This is why they recommended extending those machine learning models for more reliable insights in marketing research. Also, Viacic et al. (2021) considered 164 papers in their literature Review about the contribution of AI in Marketing. They mainly focused on those papers published in World of Science and Scopus. They grouped those papers based on their context using the Multiple Correspondence Analysis (MCA) technique. AI for social-good concept was

illustrated by Erik (2022) on company, customer, social, and environmental levels. Also, Campbell et al. (2020) tackled the importance of AI in marketing and how marketers leverage AI in their work. They mentioned a marketing planning process consisting of nine stages. The strength point of their work is that they applied their mentioned process to a set of applications in marketing to prove its applicability.

Ledro et al. (2022) provided a systematic overview that related AI and machine learning to CRM in a survey containing peer review of 212 articles during the period (1989 – 2020). Those articles were collected from the Scopus database. Actually, this was one of their limitations, as it would be better to rely upon other databases as well. They utilized two main techniques in their work (bibliographic coupling, and keywords co-occurrence). Also, Saura et al. (2021) were interested in this area of research. Meanwhile, they tackled it from a theoretical perspective. They conducted a survey of literature using Multiple Correspondence Analysis (MCA). Their main limitations were the lack of applicability and the work on only the B2B business industry.

Pentina et al. (2023) developed a comprehensive theory that described human-AI relationships. They depended on 37 peer-reviewed human-AI relationships empirical studies from 2018 to 2023. This was different from the work of Mariani et al. (2023) who worked on 1448 articles collected from WOS and Scopus databases to collect the dominant topics in the field and track their evolution over time. They utilized bibliography coupling, and keyword co-occurrences techniques. Their main insights were on the interactions of innovation research and AI. They included technological, social, and economic factors of AI of those firms willing to innovate. One of their limitations was that they worked only on two databases, so many other research outcomes were missing from their study. They might also use another map visualization tool instead of their utilized systematic literature review, or utilize both and compare their results. Furthermore, they worked only on empirical studies and excluded any analytical study.

Liye et al. (2020) discussed the rise of automated AI agents driven by machine learning in business and marketing. They emphasized leveraging digital data to enhance the understanding of firms and consumers and outlined the need to address substantive issues in the field. They recommended focusing on scalable and automated decision-support systems to help businesses adapt to the growing presence of AI.

Marcello et al. (2021) discussed the mapping of the interdisciplinary nature of AI in marketing, consumer research, and psychology. They identified eight major clusters of research, showing the multidisciplinary nature of AI's impact on marketing, machine learning, neural networks, and technology adoption. It also highlighted the need for cross-fertilization between these fields to better understand AI's effects on marketing and consumer behavior. One of their limitations was limited database sources; their reliance on a single database (Scopus) for data extraction might have limited the

comprehensiveness of their systematic literature review. Additionally, casting a wider net might have provided additional insights and more comprehensive research results. Another limitation was ethics, fairness, and privacy; they highlighted the ethical concerns arising from AI's use, including issues related to data privacy, biased decision-making, and broader societal impacts. The need for Corporate Digital Responsibility (CDR) was emphasized to ensure ethical AI use.

Ming-Hui et al. (2020) discussed a strategic framework for integrating AI into marketing strategies. They emphasized that AI could replace and improve human cognitive tasks, aiding in personalizing marketing campaigns and increasing marketing impact. One of their limitations was non-contextual data; mechanical AI often collected non-contextual data, especially for emotional information. This could lead to an incomplete understanding of consumer behavior, affecting modeling and response accuracy. Another limitation was machine-to-machine interactions; increasing automation could result in the loss of customer intimacy, as interactions became more routine and less personalized.

Another limitation was AI bias and transparency; thinking AI might not have been transparent, resulting in biased recommendations or outcomes. Opaque AI could lead to unintended consequences, including discriminatory practices and accountability issues. Another limitation was technology unreadiness; current AI technologies might not have been sophisticated enough for complex emotional interactions, leading to customer disengagement. This limitation indicated that relying on lower-intelligence AI for high-touch functions might have resulted in poor customer experiences. Additionally, regarding customer unreadiness, consumers might not have been ready to interact with AI, especially when feeling AI. This could have led to discomfort, reduced engagement, or fear of AI replacing human jobs.

Sanjeev et al. (2021) discussed a bibliometric analysis showing that AI was the latest technological disruptor in marketing. They emphasized AI's role in big data analytics to meet customer expectations and improve customer experiences. They utilized the Louvain algorithm to visually correlate literature review papers. One of their limitations was exploring semantic knowledge and machine learning in marketing, suggesting a variety of AI-related techniques for deeper consumer insights. However, it relied on existing theories and frameworks without significant empirical validation. The methodological approach seemed focused on potential applications rather than providing robust evidence from case studies or real-world experiments. The research conclusions were derived from prior work and hypothetical outcomes, lacking concrete data-driven evidence. Another limitation delved into AI's role in consumer behavior prediction and sentiment analysis, mentioning the importance of privacy but not extensively addressing the ethical concerns. While suggesting potential future research avenues, they did not thoroughly explore how AI could raise ethical and privacy issues

in marketing. It provided limited discussion on how these ethical considerations could impact AI adoption and trust among consumers.

Mahmoud et al. (2023) focused on customer profiling and segmentation using AI. They identified distinct customer clusters through clustering algorithms and recommended tailored business strategies for each segment. One of their limitations was that more advanced methods like weighted random forests and hybrid models could improve customer churn prediction. The emphasis on hybrid models hinted at the need for more complex approaches to handle unstructured data, suggesting the limitations of the current methods in terms of accuracy and data handling. Pandey et al. (2019) investigated the ability of digital marketing and AI to influence a consumer's buying intention. They also related the customer buying intention to the sales boosting. Based on the response of 74 respondents, they utilized structural equation modeling based on a partial least squares method. They proved the positive effect of consumer buying intention on boosting the firm's sales.

2.1.2. Artificial Intelligence Techniques

Puntoni et al. (2021) built an approach that had two benefits. First, they acknowledged the value of AI's technologies and services to enhance consumers' behavior. Then they examined the consumer's experience during their interactions with AI. They categorized this interaction to four types (I.e., Data capture, classification, delegation, and social). By this way, they were able to determine the ways consumers might fail to experience value in a firm's investments in AI.

Grewal et al. (2020) listed 6 main factors that shaped the future of technology in the marketing field. These technologies were Health technology, AI and Robotics, Dark web and chatbots, Mobile and social, In-store technology, and legacy technology. These factors are essential and effective in marketing but need to be confirmed through a real-life use-case. Rust et al. (2020) analyzed the future of marketing in light of the internet, AI, and big data concepts. They compared AI to human intelligence (HI) and how those concepts would affect the future of marketing. They focused on the impact of this change on marketing managers, academic research, and Marketing education.

Davenport et al. (2020) in their framework, stated the effect of AI on both customer behavior, and marketing strategies. Their framework consisted of three dimensions (AI intelligence levels, its types, and if AI means only that one embedded in a robot). Finally, they suggested that AI would be more effective in case it augmented human managers. Their work was well structured, but it lacks the applicability. On the other hand, Eriksson et al. (2020) explored how AI contributed to marketing strategy formulation through their qualitative research. They interviewed some industry experts who worked on AI tools. Those researchers confirmed the future potential of using AI. Meanwhile, their conclusion still needs an applicability.

Although AI has many advantages when being applied to marketing, it also has a set of pitfalls that marketers should be aware of. Bruyn et al. (2020) mentioned a sample of those pitfalls. On top of those pitfalls was the danger of badly defined objective functions that might be done by the marketing managers. Also, they should be aware of unrealistic or unsafe learning environments, be careful of biased AI, controllable AI, and explainable AI. They expected a fall of AI in case these pitfalls are not solved. A creative idea of Verma et al. (2021) was to cluster the research papers in the literature review via Louvain algorithm. It easily helped to identify the research sub-themes. It also helped to list future research directions of AI in marketing. They worked on around one thousand and five hundred eighty papers within the period (1982 – 2020).

Huang et al. (2004) contributed practically in this area of research. They proved the superiority of AI over the traditional statistical methods. This was done through utilizing the support vector machine method in building a well-explained machine learning model. They compared their model with neural networks in two different markets (the United States, and Taiwan). It would be better to also include experts' opinions and compare those opinions to the results obtained from their AI model. A bit similar to their work, was the work of Nagendran et al. (2020) who compared the results of their AI deep learning model to the clinic's. They found that the AI's results were either at least or better than those of clinicians. A more generic contribution was that of Huang et al. (2018), who studied the replacement of AI to humans in the service generically. They decided the service tasks into four types (empathetic, intuitive, analytical, and mechanical). Hagendorff et al. (2020) listed 22 guidelines that might be considered as ethics of AI. Meanwhile, it would be better for them to apply those ethics in real marketing situations. While, bugging et al. (2017) stated the number of investments in the development of AI in business. Also, Brynjolfsson et al. (2018) compared the performance of humans to AI algorithms and demonstrated this comparison with a nice graph. They showed that the recognized error rate occurred from both. The algorithm's error rate is stable over time, while humans have a decreasing error rate due to their learning rate. Meanwhile, the error rate of an AI algorithm was already less than that of humans by far, due to their training phase.

Phoebe et al. (2023) examined discrepancies in the marketing of AI/ML-enabled medical devices in relation to their FDA 510(k) summaries. They highlighted the need for more uniform marketing guidelines to ensure consumer safety. One of their limitations was facing challenges due to the inconsistency in how device applications were formatted for FDA approval. This inconsistency made it difficult to establish a standardized approach for data analysis. Claudio et al. (2023) proposed a risk assessment model for the AI Act, aiming to enhance enforcement and develop sustainable risk management measures for AI-related products. They emphasized the importance of addressing AI risks to protect EU values. Phil et al. (2022) discussed the

impact of voice AI on shopping and how businesses should consider adopting voice commerce in their branding strategies. They emphasized the need for omnichannel approaches and suggested that brands must plant their identity in consumers' minds for seamless customer journeys. One of their limitations was that the framework proposed in the research had not yet been empirically tested. This suggested a need for practical validation and analysis.

Sami et al. (2022) explored the role of digital tools, especially AI-driven capabilities, in assisting B2B companies with managing the customer journey. They outlined four key management activities: analysis, design, engagement, guidance, and discussed 16 categories of digital tools that could enhance these activities. One of their limitations was that they only considered publicly available AI tools in the B2B sector, omitting company-developed AI functionalities. This could have limited insights into the specific AI applications used by various B2B companies.

2.1.3. ChatGPT and Other Emerging Trends

Renana et al. (2023) discussed the implications of generative AI, such as ChatGPT, for research, teaching, and business practices. They suggested research questions and projects to better understand the impact of generative AI. One of their limitations was discussing the widespread impact of generative AI on marketing. Given the broad focus on various applications, the research might have lacked a detailed exploration of each application, leading to a generalized understanding without sufficient context-specific depth. Another limitation was relying on secondary data and references to other studies without much primary data collection. This could have led to a reliance on third-party data that might have had inherent biases or limitations. In addition, theoretical limitations including generative AI's influence on marketing is a recent phenomenon, and the rapid pace of technology might have led to the obsolescence of the findings. They relied on current examples and might not have considered longer-term trends or effects. The discussion on generative AI's impact on marketing was comprehensive but might have lacked a strong theoretical foundation. The lack of a clear theoretical framework could have hindered the development of future research agendas.

Pablo et al. (2023) explored the potential of ChatGPT in marketing while addressing ethical concerns such as privacy, bias, and job displacement. They outlined the benefits of ChatGPT in creating marketing content, conducting customer service, and personalizing communications. They stressed the need for ethical guidelines and human oversight to ensure the responsible implementation of AI in marketing. One of their limitations was acknowledging the ethical risks and limitations associated with AI in marketing. They noted that AI tools like ChatGPT could perpetuate societal biases, threaten data privacy, and increase the risk of job losses through automation. They also highlighted the importance of human oversight and transparency in AI-based marketing

applications. Nir Kshetri et al. (2024) explored the applications of generative AI in marketing, focusing on three key areas: customization, generating insights, and content development. They underscored that generative AI could lead to novel marketing insights and discussed the challenges and opportunities presented by this technology. They proposed a research agenda to guide further exploration in this field.

Ali et al. (2023) examined the impact of generative AI like ChatGPT on the labor market, focusing on the potential for job displacement and new employment opportunities. It identified the percentage of occupations that might face full, partial, or no impact due to AI technologies and discussed the need for reskilling and upskilling to adapt to these changes. One of their limitations was that the findings were based on potential implications rather than observed labor market effects, indicating a need for longitudinal studies to track the actual impact of AI on employment.

2.2. Qualitative Models

This section concludes the previous contribution that mainly utilized quantitative models in marketing. Wirth et al. (2018) introduced a definition of AI in its different forms (i.e., Narrow, Strong, and Hybrid AI). They asked an open-ended question of whether AI could help in marketing with a set of insights, solutions, and recommendations or not. Learning from industry experts through interviews was one of the most effective techniques that attracted many researchers. For instance, Eriksson et al. (2020) conducted those interviews with a group of experts who were working with AI tools. They highlighted the importance of AI in strategic decision management. They also spotted the light on how to make use of AI in rational and creative thinking. Their findings were built using the Gartner analytics ascendancy model, meanwhile, it still needs to be practically applied to a real-life dataset. Vlačić et al. (2021) also highlighted the importance of AI in their review paper. They illustrated the increasing number of publications in this research area. Meanwhile, they proved that most of the previous work was theoretical and was not applied to any real-life dataset.

Yang et al. (2021) mentioned how AI changed the way of marketing activities. How it also posts customers' purchases by utilizing customers' data to analyze their behavior. They also highlighted that AI could be used to strengthen marketers-consumers' relationships. This research track also attracted Chintalapati et al. (2022) who categorized marketing into five main functional themes and around 19 sub-themes. They presented the included publications in a very organized way, accordingly, for academia, and industry practitioners to make use of them. Verma et al. (2021) presented a comprehensive review about AI in Marketing. They worked on a stock of papers from 1982 to 2020. Mariani et al. (2021) provided an overview of the top eight emerging intellectual structures research in AI. Although their manuscript was comprehensive and well structured, they still had many limitations. On top of its

limitations was the dependency on Scopus over Google Scholar's sources. This prevented them from having additional insights from the missing sources.

Mistakes et al. (2021) analyzed the contribution of many researchers from 1960 to 2019 in AI, and how they applied AI in the marketing domain. They categorized the previous work collected from WoS database according to its diversity, domain topics, dynamics of the stated knowledge, and evolution of this work over time. Although they closed their article with an agenda for any further research, they could use other databases instead of only depending on the WoS database.

A nice MIT's article published by Ransbotham et al. (2017) about the applicability of AI in business. They tried to close the gap between ambition about AI and real actionable capabilities of it. Abid et al. (2022) discussed that AI enabled marketers to create personalized brand experiences and improve user engagement through various tools such as chatbots, email marketing, and data analysis. They highlighted AI's role in analyzing data for actionable marketing insights. One of their limitations was data volume and complexity. Although AI could process large amounts of consumer data to optimize marketing, the sheer volume and complexity of data were overwhelming, leading to challenges in extracting meaningful insights and ensuring data quality.

Jose et al. (2021) explored the application of AI-based CRMs in B2B digital marketing. They emphasized the importance of analytical CRMs for developing B2B digital marketing strategies. One of their limitations was related to the small number of studies included in their systematic review. The interpretation of results visually through a MAC process could also have been considered a limitation, indicating potential issues with data visualization and analysis techniques. Another limitation was given the rapidly changing nature of AI-based CRMs; the research acknowledged that the technology's evolution might outpace the research conclusions. This indicated a limitation in the research scope, which might not have accounted for future developments in the technology landscape.

Ming-Hui et al. (2020) discussed a strategic framework for determining when to use AI versus human intelligence (HI) in service. They differentiated between mechanical, thinking, and feeling AI, and suggested that mechanical AI should handle routine tasks while thinking and feeling AI had more complex roles. One of their limitations was that the framework outlined for using AI in service included managerial and research implications but acknowledged societal concerns, such as the displacement of unskilled workers, privacy concerns, and the potential dominance of AI over humans. These limitations reflected broader social and ethical considerations that might have limited AI adoption in service-oriented industries. They examined the potential impact of AI on retailing and the short-to-medium-term effects, which might not have been as significant as anticipated in popular media. However, AI's impact could be profitable, highlighting the need for tempered public expectations. Another

limitation was not addressing non-customer-facing applications or the value they bring. This could have been seen as a limitation in the theoretical framework, which might have overlooked other significant aspects of AI implementation in retailing.

Björn et al. (2021) investigated the integration of AI into products to improve environmental sustainability and how it influenced consumer purchasing behavior. They found that AI-based sustainability could attract a broader range of consumers, particularly female consumers, but might not have been well-received in certain contexts, like products for children. One of their limitations was AI's potential to enhance environmental sustainability and the limitations surrounding its use, focusing on four product types. They suggested that these findings might not have been widely applicable to other product categories or industries, pointing to contextual constraints.

Ayushman et al. (2023) examined the application of AI in remote patient monitoring (RPM), highlighting its limited use compared to other AI applications like imaging. They suggested the need for increased AI/ML interoperability and transparency in RPM devices. One of their limitations was that data about the use of AI/ML in FDA approval documents was scarce, and the information was often non-specific or absent. This lack of data complicated the thorough analysis and validation of AI applications in healthcare. Another limitation was the lack of transparency and information about the AI-based algorithms implemented in remote patient monitoring systems. The research authors noted the difficulty in obtaining specific technical details due to privacy or intellectual property rights concerns.

Arun et al. (2020) discussed advances in explainable AI (XAI) that aimed to unmask AI black-box models. They examined how explainability could increase trustworthiness and mitigate risks related to AI. One of their limitations was the focus on explainable AI (XAI) and its potential to address black-box models. However, the conclusion indicated that more research was needed to explore the balance between explainability and prediction accuracy across various marketing applications. This suggested a theoretical limitation in understanding how these elements could be optimized together.

3. WORK METHODOLOGY

This paper was constructed based on a created database that contains around one thousand six hundred papers. Those papers are the most significant papers that focused on the contribution of AI in marketing from 2017 to 2024. Those papers were selected mainly as their main focus was to highlight the effect of AI in the marketing field. Either by providing a comprehensive literature review or building an AI model for this purpose. Around 70 papers only reviewed the literature in this area. Meanwhile, 80 of those papers focused on the contribution of machine learning and AI algorithms in this area of research. The most significant contribution went to those who discussed the

effect of ChatGPT in marketing. Figure-3 lists the number of those publications per year. It demonstrates the jump of this number during the last four years due to the awareness of the effect of AI in marketing.

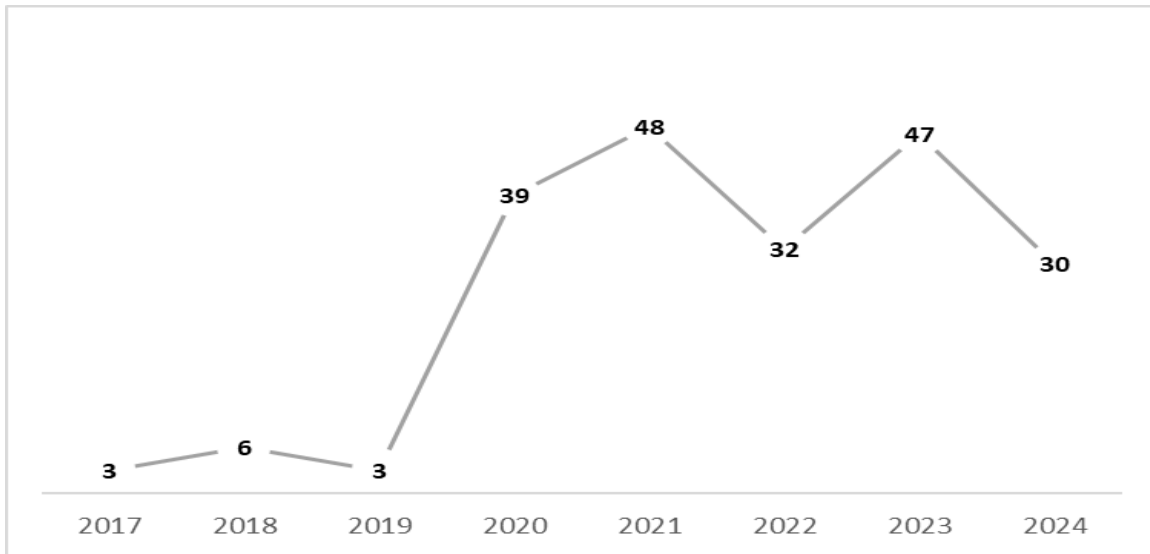


Figure-3: Number of publications per year

Table-1 lists the number of papers based on their limitations. It's observed that this number of papers exceeds the total number of papers mentioned in the literature review as it is a non-unique count. This means that the same paper could be counted many times if it had many limitations.

Table 1

Number of papers based on their limitations

Limitation Type	Number of Publications
Data Limitations	60
Ethical and Social Implications	40
Technological Limitations	39
User Acceptance and Adoption	29
Methodological Limitations	22
Organizational and Managerial Challenges	20
Interpretability and Transparency	18
Research Gaps	15
Interdisciplinary Collaboration Issues	10

Table 2 presents the most common algorithms that have been used in the literature. The majority of papers utilized generative models and chatbots algorithms as significant algorithms, followed by NLP algorithms. It is expected to have many publications utilizing machine learning, especially NN algorithms, due to its effectiveness in many business domains, especially in marketing. In Table-3, all the industries that were mentioned in the previous work were listed and the number of publications of each industry was counted. It is observed that the maximum number of publications goes to the business management industry with 90 publications. Followed by what's of interest in this paper that is AI in marketing. This proves the importance of this research topic that is of interest to many researchers.

Table 2

Number of Publications per Algorithm

Algorithm Type	Number of Publications
Generative Models & Chatbots	64
Natural Language Processing (NLP)	34
Machine Learning (General)	28
Neural Networks (NN) and Deep Learning	26
Decision Trees and Ensemble Methods	14
Reinforcement Learning (RL)	10
Support Vector Machines (SVM)	9

Table 3

Number of Publications per Domain/Industry

Domain/Industry	Number of Publications
Business Management and B2B Marketing	90
Marketing and Consumer Research (AI in Marketing)	86
Generative AI and ChatGPT Applications	69
Education and Training (AI in Academia and Research)	40
Healthcare and Medical Applications of AI	33
Ethics, Policy, and Responsible AI	31
Retail, E-Commerce, and Consumer Behavior	16

Figure 4 demonstrates the number of publications per marketing type. As expected, the majority of publications contribute to the business-to-consumer (B2C) marketing type. Followed by B2B marketing type.

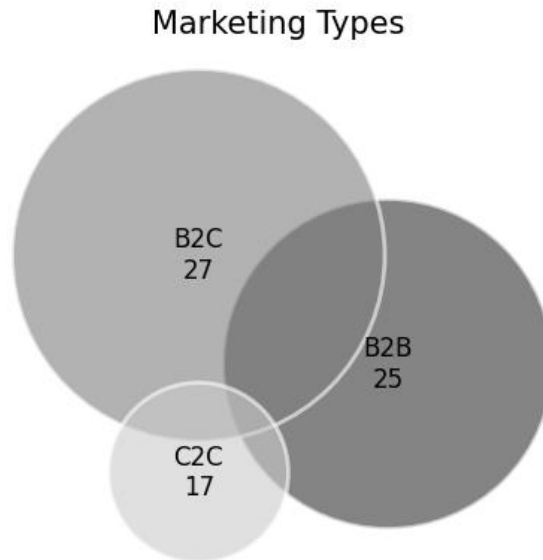


Figure 4: Number of Publications per marketing type.

Table 4 and Figure 5 present the results of the Louvain algorithm. Table-4 demonstrates grouping the papers in the literature review according to their domains. The grouping was done based on 6 dimensions (Manual/Rule based, text based, Citation/Network based, Topic modeling approach, Machine learning/Embedding based, and Hybrid approaches). Most of the papers in the literature review contributed in building conceptual models, while only 2 papers contributed in the field of retailing and consumer insights. There are 11 papers contributed in the area of ChatGPT and Generative AI in marketing. This proves the interest of the researchers in this area of research. Figure-5 presents the clustering results of utilizing the Louvain algorithm to group the papers in the literature review according to their contributions' similarities. The clustering was done based on the title of each paper. Each paper is represented by a circle. The number inside the circle represents its reference number. The similar papers are close to each other. For instance, papers number 59, 16, and 36 have similar contributions based on their titles, that is far from the contribution of paper number 71. The Louvain algorithm was implemented using the Python programming language.

Table 4

Louvain Algorithm clustering results

Papers' Contribution Domains	Number of Papers
AI Frameworks and Conceptual Models	18
AI and Consumer Behavior/Experience	15
AI in Marketing Technologies (Machine Learning/Automation)	12
ChatGPT and Generative AI in Marketing	11
AI for Business/Organizational Impact	10
Ethical/Responsible AI in Marketing	8
AI Applications in Specific Industries (e.g., healthcare)	8
Future of AI in Marketing	6
Marketing Strategy with AI	5
AI in Customer Relationships and Personalization	4
Machine Learning in B2B Marketing	3
AI in Retailing and Consumer Insights	2

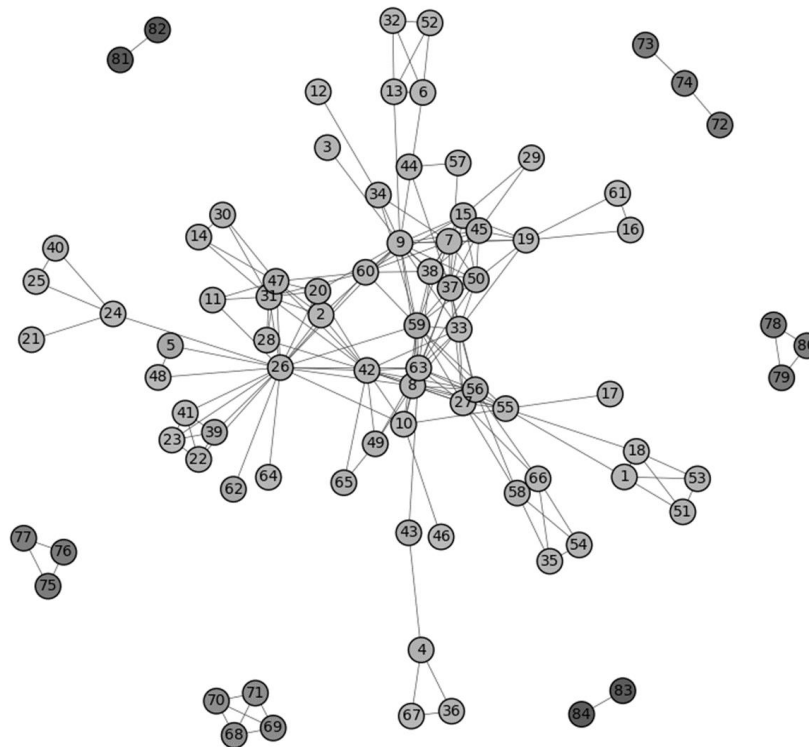


Figure 5: Louvain graph with Similarity-based clustering.

4. LIMITATIONS

Although AI revolutionized customers' marketing experience, it also has some limitations. Those limitations might rarely happen, but are worth mentioning. In general, some people have unrealistic expectations of the potential of AI. This section lists most of the common limitations. First, the capability of AI depends mainly on the richness of the input data. So, the quality and quantity of the available data, and its reliability directly affect AI's output. Second limitation of AI is the uncertainty of its predictions and analysis. Besides, the lack of interoperability of some AI algorithms. Those algorithms are considered as black boxes. This raises an issue of mistrust and lack of confidence between business stakeholders and AI's output. Fourth, the usage of AI in marketing raises some ethical and privacy concerns, and needs data protection regulations. Fifth, AI solutions might have cost and implementation challenges including investments in the company's technology infrastructure, storage of data, and hiring of talents. These implantation challenges limit the applicability of AI in many small and medium-sized businesses. In the end, AI is not human enough to deal with the subjective attitude of the customers (I.e., their feelings and emotions). It's hard for AI to deal with those feelings and translate them into emotional connections.

5. FUTURE RESEARCH DIRECTIONS

Although this area of research is of interest to many researchers who performed marvelous efforts in it, there is a big room for enhancement and research Directions that might be done. For instance, Wiesetri et al. (2021) suggested focusing on machine learning and systematic knowledge as a research direction, for generating deeper consumer insights. They recommended the usage of brain-inspired algorithms in general and hybrid machine learning techniques in specific that would improve the predictability of customer's behavior. Furthermore, they mentioned that the optimization models built on the existing marketing theories would enhance the integration and effectiveness of AI in marketing. Also, optimizing the machine learning algorithms play an important role in enhancing their results and their applicability in marketing. Another research direction is optimizing the marketing workflows themselves. Through utilizing AI for more effective customer profiling, predicting market shifts, and discovering emerging opportunities.

Furthermore, utilizing machine learning and trending AI algorithms to better understand customer behavior is a significant future direction. Building AI models that focus on consumers' emotional triggers on social media is another research direction. Understanding the emotional expressions of the consumers would help in predicting their behaviors and needs. Eman et studied how to boost customer engagement through boosting the four pillars of engagement (i.e., Customer lifetime value, customer influence value, customer referral value, and customer knowledge value). AI can help enhance all those four pillars, thus increasing the overall customer

engagement. For instance, AI would help in better understanding customer journey and how customers move through the marketing funnel. AI can also help companies identify the right influencers to approach through effectively analyzing their content performance, and audiences. AI could also help in building and maintaining customer trust, and loyalty programs.

It is crucial to mention the effectiveness of AI in ethical marketing and customer data transparency. Future research would implement AI models that enhance customer loyalty and trust through personalized campaigns while keeping the transparency in data collection.

6. CONCLUSION

In conclusion, AI is a powerful force that can reshape the relationship between companies and their customers. Through the tools of AI, especially ChatGPT and predictive analytics, companies can boost the loyalty and engagement of their customers. AI could achieve this with less cost compared to traditional marketing techniques (i.e., TV, radio ads, and printed ads). So, it saves many costs, especially for small and medium businesses.

This paper had two main contributions. At first, it presented the most significant previous contributions of AI in the marketing field. It presented about one thousand eighty five hundred manuscripts from 2017 to 2024. It categorized those papers into two categories, either quantitative, or qualitative, according to the research contribution and work methodology of each. It summarized their contributions, limitations, and ways of enhancement. It gives a special focus on the effect of ChatGPT as a booming AI solution in marketing. It presented the interest of marketers to utilize ChatGPT for better marketing campaigns. It also presented the contribution of ChatGPT in building interactive and personalized chatbots. It can also help in building customer support and engagement models, customer segmentation, and target marketing strategies.

The second contribution of this paper was utilizing the Louvain algorithm in two tasks. The first task is to group the papers in the literature review into 12 groups. These groups were according to a set of 6 dimensions (Manual/Rule based, text based, Citation/Network based, Topic modeling approach, Machine learning/Embedding based, and Hybrid approaches). The second task of the Louvain algorithm is to visually present the similarities between the papers in the literature review according to their titles. So, it facilitates literature review papers to easily spotlight the interest of the researchers. The paper also proposed a set of future research directions for boosting the capabilities of AI in marketing.

REFERENCES

1. Abdalla, Alaa Amin, et al. "Exploring ChatGPT Adoption among Business and Management Students through the Lens of Diffusion of Innovation Theory." *Computers and Education: Artificial Intelligence* (2024): 100257.
2. Abdelkader, Osama Ahmed. "ChatGPT's influence on customer experience in digital marketing: Investigating the moderating roles." *Heliyon* 9.8 (2023).
3. Abdulrahman Al-Surmi, Mahdi Bashiri, Ioannis Koliouisis (2020). AI based decision making: combining strategies to improve operational performance.
4. Abhijit Guha, Dhruv Grewal, Praveen K. Kopalle, Michael Haenlein, Matthew J. Schneider, Hyunseok Jung, Rida Moustafa, Dinesh R. Hegde, Gary Hawkins (2021). How artificial intelligence will affect the future of retailing.
5. Abid Haleem, Mohd Javaid, Mohd Asim Qadri, Ravi Pratap Singh, Rajiv Suman (2022). Artificial intelligence (AI) applications for marketing: A literature-based study.
6. Acar, Oguz A. "Commentary: Reimagining marketing education in the age of generative AI." *International Journal of Research in Marketing* (2024).
7. Acemoglu, Daron, and Pascual Restrepo. "Artificial intelligence, automation, and work." *The economics of artificial intelligence: An agenda*. University of Chicago Press, 2018. 197-236.
8. Al-Surmi, Abdulrahman, Mahdi Bashiri, and Ioannis Koliouisis. "AI based decision making: combining strategies to improve operational performance." *International Journal of Production Research* 60.14 (2022): 4464-4486.
9. Albayati, Hayder. "Investigating undergraduate students' perceptions and awareness of using ChatGPT as a regular assistance tool: A user acceptance perspective study." *Computers and Education: Artificial Intelligence* 6 (2024): 100203.
10. Alekseeva, Liudmila, et al. "The demand for AI skills in the labor market." *Labour economics* 71 (2021): 102002.
11. Ali Zarifhonarvar (2023). Economics of ChatGPT: a labor market view on the occupational impact of artificial intelligence.
12. Aljamaan, Fadi, et al. "ChatGPT-3.5 System Usability Scale early assessment among Healthcare Workers: Horizons of adoption in medical practice." *Heliyon* 10.7 (2024).
13. Almulhim, Tarifa, and Igor Barahona. "Renewable energies and circular economies: A systematic literature review before the ChatGPT boom." *Energy Reports* 11 (2024): 2656-2669.
14. Almulla, Mohammed Abdullatif. "Investigating Influencing Factors of Learning Satisfaction in AI ChatGPT for Research: University Students Perspective." *Heliyon* (2024).
15. Amado, Alexandra, et al. "Research trends on Big Data in Marketing: A text mining and topic modeling based literature analysis." *European Research on Management and Business Economics* 24.1 (2018): 1-7.

16. Ameen, Nisreen, et al. "Toward advancing theory on creativity in marketing and artificial intelligence." *Psychology & marketing* 39.9 (2022): 1802-1825.
17. André, Quentin, et al. "Consumer choice and autonomy in the age of artificial intelligence and big data." *Customer needs and solutions* 5 (2018): 28-37.
18. Anil, A., et al. "Are paid tools worth the cost? A prospective cross-over study to find the right tool for plagiarism detection." *Heliyon*, 9 (9), e19194." (2023).
19. Arun Rai (2020). Explainable AI: from black box to glass box.
20. Ayushmaan Dubey, Anuj Tiwari (2023). Artificial intelligence and remote patient monitoring in US healthcare market: a literature review.
21. Bag, Surajit, et al. "An integrated artificial intelligence framework for knowledge creation and B2B marketing rational decision making for improving firm performance." *Industrial marketing management* 92 (2021): 178-189.
22. Baig, Maria Ijaz, and Elaheh Yadegaridehkordi. "ChatGPT in the higher education: A systematic literature review and research challenges." *International Journal of Educational Research* 127 (2024): 102411.
23. Balakrishnan, Janarthanan, and Yogesh K. Dwivedi. "Conversational commerce: entering the next stage of AI-powered digital assistants." *Annals of Operations Research* 333.2 (2024): 653-687.
24. Benaddi, Lamy, et al. "A Systematic Review of Chatbots: Classification, Development, and their Impact on Tourism." *IEEE Access* (2024).
25. Bin-Nashwan, Saeed Awadh, Mouad Sadallah, and Mohamed Bouteraa. "Use of ChatGPT in academia: Academic integrity hangs in the balance." *Technology in Society* 75 (2023): 102370.
26. Björn Frank (2021). Artificial intelligence-enabled environmental sustainability of products: Marketing benefits and their variation by consumer, location, and product types.
27. Blut, Markus, et al. "Understanding anthropomorphism in service provision: a meta-analysis of physical robots, chatbots, and other AI." *Journal of the Academy of Marketing Science* 49 (2021): 632-658.
28. Brittany, Ho, Mayberry Ta'Rhonda, and K. N. Linh. "ChatReview: A ChatGPT-enabled natural language processing framework to study domain-specific user reviews." *Machine Learning with Applications*, 15, 1 122 (2024).
29. Brynjolfsson, Erik, Daniel Rock, and Chad Syverson. "Artificial intelligence and the modern productivity paradox: A clash of expectations and statistics." *The economics of artificial intelligence: An agenda*. University of Chicago Press, 2018. 23-57.
30. Bughin, Jacques, et al. "Artificial intelligence the next digital frontier." (2017).
31. Bulchand-Gidumal, Jacques, et al. "Artificial intelligence's impact on hospitality and tourism marketing: exploring key themes and addressing challenges." *Current Issues in Tourism* (2023): 1-18.
32. Camilleri, Mark Anthony. "Factors affecting performance expectancy and intentions to use ChatGPT: Using SmartPLS to advance an information technology acceptance framework." *Technological Forecasting and Social Change* 201 (2024): 123247.

33. Campbell, Colin, et al. "From data to action: How marketers can leverage AI." *Business horizons* 63.2 (2020): 227-243.
34. Capatina, Alexandru, et al. "Matching the future capabilities of an artificial intelligence-based software for social media marketing with potential users' expectations." *Technological Forecasting and Social Change* 151 (2020): 119794.
35. Castillo, Maria Jimenez, and Hamed Taherdoost. "The impact of AI technologies on e-business." *Encyclopedia* 3.1 (2023): 107-121.
36. Chairote Yaiprasert, Achmad Nizar Hidayanto (2023). AI-driven ensemble three machine learning to enhance digital marketing strategies in the food delivery business.
37. Chen, Jing, et al. "The state of artificial intelligence in marketing with directions for future research." *International Journal of Business Intelligence Research (IJBIR)* 12.2 (2021): 1-26.
38. Chervenak, Joseph, et al. "The promise and peril of using a large language model to obtain clinical information: ChatGPT performs strongly as a fertility counseling tool with limitations." *Fertility and sterility* 120.3 (2023): 575-583.
39. Chintalapati, Srikrishna, and Shivendra Kumar Pandey. "Artificial intelligence in marketing: A systematic literature review." *International Journal of Market Research* 64.1 (2022): 38-68.
40. Clark, Phoebe, Jayne Kim, and Yindalon Aphinyanaphongs. "Marketing and US Food and Drug Administration clearance of artificial intelligence and machine learning enabled software in and as medical devices: a systematic review." *JAMA Network Open* 6.7 (2023): e2321792-e2321792.
41. Claudio Novelli, Federico Casolari, Antonino Rotolo, Mariarosaria Taddeo, Luciano Floridi (2023). Taking AI risks seriously: a new assessment model for the AI Act.
42. Daugherty, Paul R., and H. James Wilson. *Human+ machine: Reimagining work in the age of AI*. Harvard Business Press, 2018.
43. Davenport, Thomas, et al. "How artificial intelligence will change the future of marketing." *Journal of the Academy of Marketing Science* 48 (2020): 24-42.
44. De Bruyn, Arnaud, et al. "Artificial intelligence and marketing: Pitfalls and opportunities." *Journal of Interactive Marketing* 51.1 (2020): 91-105
45. De Mauro, Andrea, Andrea Sestino, and Andrea Bacconi. "Machine learning and artificial intelligence use in marketing: a general taxonomy." *Italian Journal of Marketing* 2022.4 (2022): 439-457.
46. Dellaert, Benedict GC, et al. "Consumer decisions with artificially intelligent voice assistants." *Marketing Letters* 31 (2020): 335-347.
47. Dubey, Ayushmaan, and Anuj Tiwari. "Artificial intelligence and remote patient monitoring in US healthcare market: a literature review." *Journal of Market Access & Health Policy* 11.1 (2023): 2205618.
48. Duong, Cong Doanh. "Modeling the determinants of HEI students' continuance intention to use ChatGPT for learning: a stimulus-organism-response approach." *Journal of Research in Innovative Teaching & Learning* (2024).

49. Dwivedi, Yogesh K., et al. "Artificial Intelligence (AI): Multidisciplinary perspectives on emerging challenges, opportunities, and agenda for research, practice and policy." *International Journal of Information Management* 57 (2021): 101994.
50. Eric W.T. Ngai a, Yuanyuan Wu (2022). Machine learning in marketing: A literature review, conceptual framework, and research agenda.
51. Erik Hermann (2021). Leveraging Artificial Intelligence in Marketing for Social Good—An Ethical Perspective.
52. Eriksson, Theresa, Alessandro Bigi, and Michelle Bonera. "Think with me, or think for me? On the future role of artificial intelligence in marketing strategy formulation." *The TQM Journal* 32.4 (2020): 795-814.
53. Esmaeilzadeh, Pouyan. "Use of AI-based tools for healthcare purposes: a survey study from consumers' perspectives." *BMC medical informatics and decision making* 20 (2020): 1-19.
54. Frank, Björn. "Artificial intelligence-enabled environmental sustainability of products: Marketing benefits and their variation by consumer, location, and product types." *Journal of Cleaner Production* 285 (2021): 125242.
55. Gill, Sukhpal Singh, and Rupinder Kaur. "ChatGPT: Vision and challenges." *Internet of Things and Cyber-Physical Systems* 3 (2023): 262-271.
56. Gioia Volkmar, Peter M. Fischer, Sven Reinecke (2022). Artificial Intelligence and Machine Learning: Exploring drivers, barriers, and future developments in marketing management.
57. Grewal, Dhruv, et al. "The future of technology and marketing: A multidisciplinary perspective." *Journal of the Academy of Marketing Science* 48 (2020): 1-8.
58. Guha, Abhijit, et al. "How artificial intelligence will affect the future of retailing." *Journal of Retailing* 97.1 (2021): 28-41.
59. Guler, Nazmiye, Samuel N. Kirshner, and Richard Vidgen. "A literature review of artificial intelligence research in business and management using machine learning and ChatGPT." *Data and Information Management* (2024): 100076.
60. Gupta, Varun. "Factors influencing librarian adoption of ChatGPT technology for entrepreneurial support: A study protocol." *Journal of Economy and Technology* 2 (2024): 166-173.
61. Hagendorff, Thilo. "The ethics of AI ethics: An evaluation of guidelines." *Minds and machines* 30.1 (2020): 99-120.
62. Haleem, Abid, et al. "Artificial intelligence (AI) applications for marketing: A literature-based study." *International Journal of Intelligent Networks* 3 (2022): 119-132.
63. Haleem, Abid, Mohd Javaid, and Ravi Pratap Singh. "An era of ChatGPT as a significant futuristic support tool: A study on features, abilities, and challenges." *BenchCouncil transactions on benchmarks, standards and evaluations* 2.4 (2022): 100089.

64. Haleem, Abid, Mohd Javaid, and Ravi Pratap Singh. "Exploring the competence of ChatGPT for customer and patient service management." *Intelligent Pharmacy* (2024).
65. Hermann, Erik. "Leveraging artificial intelligence in marketing for social good—An ethical perspective." *Journal of Business Ethics* 179.1 (2022): 43-61.
66. Ho, Shirie Pui Shan, and Matthew Yau Choi Chow. "The role of artificial intelligence in consumers' brand preference for retail banks in Hong Kong." *Journal of Financial Services Marketing* (2023): 1-14.
67. Hoffman, Donna L., et al. "The rise of new technologies in marketing: A framework and outlook." *Journal of Marketing* 86.1 (2022): 1-6.
68. Holmström, Jonny. "From AI to digital transformation: The AI readiness framework." *Business Horizons* 65.3 (2022): 329-339.
69. Hossain, Md Afnan, et al. "Marketing analytics capability, artificial intelligence adoption, and firms' competitive advantage: Evidence from the manufacturing industry." *Industrial Marketing Management* 106 (2022): 240-255.
70. Huang, Ming-Hui, and Roland T. Rust. "A framework for collaborative artificial intelligence in marketing." *Journal of Retailing* 98.2 (2022): 209-223.
71. Huang, Ming-Hui, and Roland T. Rust. "A strategic framework for artificial intelligence in marketing." *Journal of the Academy of Marketing Science* 49 (2021): 30-50.
72. Huang, Ming-Hui, and Roland T. Rust. "Artificial intelligence in service." *Journal of service research* 21.2 (2018): 155-172.
73. Huang, Ming-Hui, and Roland T. Rust. "Engaged to a robot? The role of AI in service." *Journal of Service Research* 24.1 (2021): 30-41.
74. Huang, Zan, et al. "Credit rating analysis with support vector machines and neural networks: a market comparative study." *Decision support systems* 37.4 (2004): 543-558.
75. Hussain, Khalid, M. Laeeq Khan, and Aqdas Malik. "Exploring audience engagement with ChatGPT-related content on YouTube: Implications for content creators and AI tool developers." *Digital Business* 4.1 (2024): 100071.
76. Jacques Bulchand-Gidumal, Eduardo William Secin, Peter O'Connor, Dimitrios Buhalis (2023). *Artificial intelligence's impact on hospitality and tourism marketing: exploring key themes and addressing challenges.*
77. Jarek, Krystyna, and Grzegorz Mazurek. "Marketing and Artificial Intelligence." *Central European Business Review* 8.2 (2019).
78. Javaid, Mohd, Abid Haleem, and Ravi Pratap Singh. "A study on ChatGPT for Industry 4.0: Background, potentials, challenges, and eventualities." *Journal of Economy and Technology* 1 (2023): 127-143.
79. Javaid, Mohd, Abid Haleem, and Ravi Pratap Singh. "ChatGPT for healthcare services: An emerging stage for an innovative perspective." *BenchCouncil Transactions on Benchmarks, Standards and Evaluations* 3.1 (2023): 100105.

80. Javaid, Mohd, et al. "Unlocking the opportunities through ChatGPT Tool towards ameliorating the education system." *BenchCouncil Transactions on Benchmarks, Standards and Evaluations* 3.2 (2023): 100115.
81. Jo, Hyeon. "From concerns to benefits: a comprehensive study of ChatGPT usage in education." *International Journal of Educational Technology in Higher Education* 21.1 (2024): 35.
82. Jose Ramon Saura, Domingo Ribeiro-Soriano, Daniel Palacios-Marqués (2021). Setting B2B digital marketing in artificial intelligence-based CRMs: A review and directions for future research.
83. K.T. Manis, Sreedhar Madhavaram (2023). AI-Enabled marketing capabilities and the hierarchy of capabilities: Conceptualization, proposition development, and research avenues.
84. Kakani, Vijay, et al. "A critical review on computer vision and artificial intelligence in food industry." *Journal of Agriculture and Food Research* 2 (2020): 100033.
85. Keegan, Brendan James, Denis Dennehy, and Peter Naudé. "Implementing artificial intelligence in traditional B2B marketing practices: an activity theory perspective." *Information systems frontiers* (2022): 1-15.
86. Khan, Muhammad Salar, and Hamza Umer. "ChatGPT in finance: Applications, challenges, and solutions." *Heliyon* 10.2 (2024).
87. Kim, Jungkeun, et al. "Decisions with ChatGPT: Reexamining choice overload in ChatGPT recommendations." *Journal of Retailing and Consumer Services* 75 (2023): 103494.
88. Klaus, Phil, and Judith Lynne Zaichkowsky. "The convenience of shopping via voice AI: Introducing AIDM." *Journal of Retailing and Consumer Services* 65 (2022): 102490.
89. Kmieciak, Mariusz. "ChatGPT in third-party logistics—The game-changer or a step into the unknown?." *Journal of Open Innovation: Technology, Market, and Complexity* 9.4 (2023): 100174.
90. Kolade, Oluwaseun, Adebowale Owoseni, and Abiodun Egbetokun. "Is AI changing learning and assessment as we know it? Evidence from a ChatGPT experiment and a conceptual framework." *Heliyon* 10.4 (2024).
91. Kopalle, Praveen K., et al. "Examining artificial intelligence (AI) technologies in marketing via a global lens: Current trends and future research opportunities." *International Journal of Research in Marketing* 39.2 (2022): 522-540.
92. Kshetri, Nir, et al. "So what if ChatGPT wrote it?" Multidisciplinary perspectives on opportunities, challenges and implications of generative conversational AI for research, practice and policy." *International Journal of Information Management* 71 (2023): 102642.
93. Kshetri, Nir, et al. "Generative artificial intelligence in marketing: Applications, opportunities, challenges, and research agenda." *International Journal of Information Management* (2023): 102716.

94. Kumar, Pradeep, Yogesh K. Dwivedi, and Ambuj Anand. "Responsible artificial intelligence (AI) for value formation and market performance in healthcare: The mediating role of patient's cognitive engagement." *Information Systems Frontiers* 25.6 (2023): 2197-2220.
95. Kumar, V., Divya Ramachandran, and Binay Kumar. "Influence of new-age technologies on marketing: A research agenda." *Journal of Business Research* 125 (2021): 864-877.
96. Ledro, Cristina, Anna Nosella, and Andrea Vinelli. "Artificial intelligence in customer relationship management: literature review and future research directions." *Journal of Business & Industrial Marketing* 37.13 (2022): 48-63.
97. Li, J., et al. "ChatGPT in healthcare: A taxonomy and systematic review. medRxiv 2023." Preprint 30 (2023).
98. Liu-Thompkins, Yuping, Shintaro Okazaki, and Hairong Li. "Artificial empathy in marketing interactions: Bridging the human-AI gap in affective and social customer experience." *Journal of the Academy of Marketing Science* 50.6 (2022): 1198-1218.
99. Liu, Rui, Suraksha Gupta, and Parth Patel. "The application of the principles of responsible AI on social media marketing for digital health." *Information Systems Frontiers* 25.6 (2023): 2275-2299.
100. Liu, Yuan, et al. "An efficient smart data mining framework based cloud internet of things for developing artificial intelligence of marketing information analysis." *Information Processing & Management* 60.1 (2023): 103121.
101. Liudmila Alekseeva, José Azar, Mireia Giné, Sampsa Samila, Bledi Taska (2021). The demand for AI skills in the labor market.
102. Ma, Liye, and Baohong Sun. "Machine learning and AI in marketing—Connecting computing power to human insights." *International Journal of Research in Marketing* 37.3 (2020): 481-504.
103. Mahmoud SalahEldin Kasem, Mohamed Hamada & Islam Taj-Eddin (2023). Customer profiling, segmentation, and sales prediction using AI in direct marketing.
104. Mahmud, Arif, et al. "Adoption of ChatGPT by university students for academic purposes: Partial least square, artificial neural network, deep neural network and classification algorithms approach." *Array* 21 (2024): 100339.
105. Manis, K. T., and Sreedhar Madhavaram. "AI-Enabled marketing capabilities and the hierarchy of capabilities: Conceptualization, proposition development, and research avenues." *Journal of Business Research* 157 (2023): 113485.
106. Maria Jimenez Castillo, Hamed Taherdoost (2023). The Impact of AI Technologies on E-Business.
107. Mariani, Marcello M., et al. "Artificial intelligence in innovation research: A systematic review, conceptual framework, and future research directions." *Technovation* 122 (2023): 102623.
108. Mariani, Marcello M., Rodrigo Perez-Vega, and Jochen Wirtz. "AI in marketing, consumer research and psychology: A systematic literature review and research agenda." *Psychology & Marketing* 39.4 (2022): 755-776.

109. Markus Blut, Cheng Wang, Nancy V. Wunderlich, Christian Brock (2021). Understanding anthropomorphism in service provision: a meta-analysis of physical robots, chatbots, and other AI.
110. Md Afnan Hossain, Raj Agnihotri, Md Rifayat Islam Rushan, Muhammad Sabbir Rahman, Sumaiya Farhana Sumi (2022). Marketing analytics capability, artificial intelligence adoption, and firms' competitive advantage: Evidence from the manufacturing industry.
111. Menon, D., and K. Shilpa. "Chatting with ChatGPT": Analyzing the factors influencing users' intention to Use the Open AI's ChatGPT using the UTAUT model. *Heliyon*, 9 (11), e20962." (2023).
112. Mikalef, Patrick, et al. "Artificial intelligence (AI) competencies for organizational performance: A B2B marketing capabilities perspective." *Journal of Business Research* 164 (2023): 113998.
113. Mikalef, Patrick, Kieran Conboy, and John Krogstie. "Artificial intelligence as an enabler of B2B marketing: A dynamic capabilities micro-foundations approach." *Industrial Marketing Management* 98 (2021): 80-92.
114. Ming-Hui Huang, Roland T. Rust (2020). A strategic framework for artificial intelligence in marketing.
115. Ming-Hui Huang, Roland T. Rust (2020). Engaged to a Robot? The Role of AI in Service.
116. Ming-Hui Huang, Roland T. Rust (2022). A Framework for Collaborative Artificial Intelligence in Marketing.
117. Mishra, Sagarika, Michael T. Ewing, and Holly B. Cooper. "Artificial intelligence focus and firm performance." *Journal of the Academy of Marketing Science* 50.6 (2022): 1176-1197.
118. Moradi, Masoud, and Mayukh Dass. "Applications of artificial intelligence in B2B marketing: Challenges and future directions." *Industrial Marketing Management* 107 (2022): 300-314.
119. Mubin, Omar, et al. "Tracking ChatGPT Research: Insights from the literature and the web." *IEEE Access* (2024).
120. Mustak, Mekhail, et al. "Artificial intelligence in marketing: Topic modeling, scientometric analysis, and research agenda." *Journal of Business Research* 124 (2021): 389-404.
121. Nagendran, Myura, et al. "Artificial intelligence versus clinicians: systematic review of design, reporting standards, and claims of deep learning studies." *bmj* 368 (2020).
122. Nazir, Anam, and Ze Wang. "A comprehensive survey of ChatGPT: advancements, applications, prospects, and challenges." *Meta-radiology* (2023): 100022.
123. Neha Soni, Enakshi Khular Sharma, Narotam Singh, Amita Kapoor (2020). *Artificial Intelligence in Business: From Research and Innovation to Market Deployment*.

124. Ngai, Eric WT, and Yuanyuan Wu. "Machine learning in marketing: A literature review, conceptual framework, and research agenda." *Journal of Business Research* 145 (2022): 35-48.
125. Ngo, Vu Minh. "Does ChatGPT change artificial intelligence-enabled marketing capability? Social media investigation of public sentiment and usage." *Global Media and China* 9.1 (2024): 101-125.
126. Nir Kshetri, Yogesh K. Dwivedi, Thomas H. Davenport, Niki Panteli (2024). *Generative artificial intelligence in marketing: Applications, opportunities, challenges, and research agenda.*
127. Nisreen Ameen, Gagan Deep Sharma, Shlomo Tarba, Amar Rao, Ritika Chopra (2022). *Toward advancing theory on creativity in marketing and artificial intelligence.*
128. Novelli, Claudio, et al. "Taking AI risks seriously: a new assessment model for the AI Act." *AI & SOCIETY* (2023): 1-5.
129. Ooi, Keng-Boon, et al. "The potential of generative artificial intelligence across disciplines: Perspectives and future directions." *Journal of Computer Information Systems* (2023): 1-32.
130. Osadchaya, Elena, et al. "To ChatGPT, or not to ChatGPT: Navigating the paradoxes of generative AI in the advertising industry." *Business Horizons* (2024).
131. Pablo Rivas, Liang Zhao (2023). *Marketing with ChatGPT: Navigating the Ethical Terrain of GPT-Based Chatbot Technology.*
132. Padigar, Manjunath, et al. "The effect of marketing department power on investor responses to announcements of AI-embedded new product innovations." *Journal of the Academy of Marketing Science* 50.6 (2022): 1277-1298.
133. Pangkey, Franycia Maria, Lalu M. Furkan, and Lalu Edy Herman. "Pengaruh artificial intelligence dan digital marketing terhadap minat beli konsumen." *Jurnal Magister Manajemen Unram* Vol 8.3 (2019): 21-25.
134. Patrick Mikalef, Najmul Islam, Vinit Parida, Harkamaljit Singh, Najwa Altwaijry (2023). *Artificial intelligence (AI) competencies for organizational performance: A B2B marketing capabilities perspective.*
135. Pentina, Iryna, et al. "Consumer-machine relationships in the age of artificial intelligence: Systematic literature review and research directions." *Psychology & Marketing* 40.8 (2023): 1593-1614.
136. Peres, Renana, et al. "On ChatGPT and beyond: How generative artificial intelligence may affect research, teaching, and practice." *International Journal of Research in Marketing* 40.2 (2023): 269-275.
137. Phil Klaus, Judith Lynne Zaichkowsky (2022). *The convenience of shopping via voice AI: Introducing AIDM.*
138. Phoebe Clark, Jayne Kim, Yindalon Aphinyanaphongs (2023). *Marketing and US Food and Drug Administration Clearance of Artificial Intelligence and Machine Learning Enabled Software in and as Medical Devices.*

139. Pillai, Rajasshrie, Brijesh Sivathanu, and Yogesh K. Dwivedi. "Shopping intention at AI-powered automated retail stores (AIPARS)." *Journal of Retailing and Consumer Services* 57 (2020): 102207.
140. Pradeep Kumar, Yogesh K. Dwivedi, Ambuj Anand (2021). Responsible Artificial Intelligence (AI) for Value Formation and Market Performance in Healthcare: the Mediating Role of Patient's Cognitive Engagement.
141. Praveen K. Kopalle, Manish Gangwar, Andreas Kaplan, Divya Ramachandran, Werner Reinartz, Aric Rindfleisch (2022). Examining artificial intelligence (AI) technologies in marketing via a global lens: Current trends and future research opportunities.
142. Puntoni, Stefano, et al. "Consumers and artificial intelligence: An experiential perspective." *Journal of Marketing* 85.1 (2021): 131-151.
143. Rai, Arun. "Explainable AI: From black box to glass box." *Journal of the Academy of Marketing Science* 48 (2020): 137-141.
144. Raj, Rohit, et al. "Analyzing the potential benefits and use cases of ChatGPT as a tool for improving the efficiency and effectiveness of business operations." *BenchCouncil Transactions on Benchmarks, Standards and Evaluations* 3.3 (2023): 100140.
145. Raman, Raghu, Murale Venugopalan, and Anju Kamal. "Evaluating human resources management literacy: A performance analysis of ChatGPT and bard." *Heliyon* 10.5 (2024).
146. Ransbotham, Sam, et al. "Reshaping business with artificial intelligence: Closing the gap between ambition and action." *MIT Sloan Management Review* 59.1 (2017).
147. Renana Peres, Martin Schreier, David Schweidel, Alina Sorescu (2023). On ChatGPT and beyond: How generative artificial intelligence may affect research, teaching, and practice.
148. Rivas, P., and L. Zhao. "Marketing with ChatGPT: Navigating the ethical terrain of gpt-based chatbot technology. *AI*, 4 (2), 375-384." (2023).
149. Rui Liu, Suraksha Gupta, Parth Patel (2021). The Application of the Principles of Responsible AI on Social Media Marketing for Digital Health.
150. Rust, Roland T. "The future of marketing." *International Journal of Research in Marketing* 37.1 (2020): 15-26.
151. Rusthollkarhu, Sami, et al. "Managing B2B customer journeys in digital era: Four management activities with artificial intelligence-empowered tools." *Industrial Marketing Management* 104 (2022): 241-257.
152. SalahEldin Kasem, Mahmoud, Mohamed Hamada, and Islam Taj-Eddin. "Customer Profiling, Segmentation, and Sales Prediction using AI in Direct Marketing." *arXiv e-prints* (2023): arXiv-2302.
153. Sami Rusthollkarhu, Sebastian Toukola, Leena Aarikka-Stenroos, Tommi Mahlamäki (2022). Managing B2B customer journeys in digital era: Four management activities with artificial intelligence-empowered tools.

154. Saura, Jose Ramon, Domingo Ribeiro-Soriano, and Daniel Palacios-Marqués. "Setting B2B digital marketing in artificial intelligence-based CRMs: A review and directions for future research." *Industrial Marketing Management* 98 (2021): 161-178.
155. Shirie Pui Shan Ho & Matthew Yau Choi Chow (2023). The role of artificial intelligence in consumers' brand preference for retail banks in Hong Kong.
156. Soni, Neha, et al. "Artificial intelligence in business: from research and innovation to market deployment." *Procedia Computer Science* 167 (2020): 2200-2210.
157. Surajit Bag, Shivam Gupta, Ajay Kumar, Uthayasankar Sivarajah (2021). An integrated artificial intelligence framework for knowledge creation and B2B marketing rational decision making for improving firm performance
158. Tran, Gina, et al. "Setting the future of digital and social media marketing research: Perspectives and research propositions."
159. V. Kumar, Divya Ramachandran, Binay Kumar (2021). Influence of new-age technologies on marketing: A research agenda.
160. Van Esch, Patrick, J. Stewart Black, and Joseph Ferolie. "Marketing AI recruitment: The next phase in job application and selection." *Computers in Human Behavior* 90 (2019): 215-222.
161. Verma, Sanjeev, et al. "Artificial intelligence in marketing: Systematic review and future research direction." *International Journal of Information Management Data Insights* 1.1 (2021): 100002.
162. Vlačić, Božidar, et al. "The evolving role of artificial intelligence in marketing: A review and research agenda." *Journal of Business Research* 128 (2021): 187-203.
163. Volkmar, Gioia, Peter M. Fischer, and Sven Reinecke. "Artificial Intelligence and Machine Learning: Exploring drivers, barriers, and future developments in marketing management." *Journal of Business Research* 149 (2022): 599-614.
164. Wahid, Risqo, Joel Mero, and Paavo Ritala. "Written by ChatGPT, illustrated by Midjourney: generative AI for content marketing." *Asia Pacific Journal of Marketing and Logistics* 35.8 (2023): 1813-1822.
165. Wirth, N. (2018). Hello marketing, what can artificial intelligence help you with?. *International Journal of Market Research*, 60(5), 435-438.
166. Wisetsri, Worakamol. "Systematic analysis and future research directions in artificial intelligence for marketing." *Turkish Journal of Computer and Mathematics Education (TURCOMAT)* 12.11 (2021): 43-55.
167. Wolf, Vinzenz, and Christian Maier. "ChatGPT usage in everyday life: A motivation-theoretic mixed-methods study." *International Journal of Information Management* 79 (2024): 102821.
168. Yaiprasert, Chairote, and Achmad Nizar Hidayanto. "AI-driven ensemble three machine learning to enhance digital marketing strategies in the food delivery business." *Intelligent Systems with Applications* 18 (2023): 200235.

169. Yang, X., Li, H., Ni, L., & Li, T. (2021). Application of artificial intelligence in precision marketing. *Journal of Organizational and End User Computing (JOEUC)*, 33(4), 209-219.
170. Yenduri, Gokul, et al. "Gpt (generative pre-trained transformer)–a comprehensive review on enabling technologies, potential applications, emerging challenges, and future directions." *IEEE Access* (2024).
171. Yogesh K. Dwivedi, Elvira Ismagilova, D. Laurie Hughes, Jamie Carlson, Raffaele Filieri, Jenna Jacobson, Varsha Jain, Heikki Karjaluo, Hajer Kefi, Anjala S. Krishen, Vikram Kumar, Mohammad M. Rahman, Ramakrishnan Raman, Philipp A. Rauschnabel, Jennifer Rowley, Jari Salo, Gina A. Tran, Yichuan Wang (2021). Setting the future of digital and social media marketing research: Perspectives and research propositions.
172. Yu, H. "The application and challenges of ChatGPT in educational transformation: New demands for teachers' roles. *Heliyon*, 10 (2), e24289." (2024).
173. Yuan Liu, Ibrahim R. Alzahrani, Refed Adnan Jaleel, Saleh Al Sulaie (2023). An efficient smart data mining framework-based cloud internet of things for developing artificial intelligence of marketing information analysis.
174. Yuping Liu-Thompkins, Shintaro Okazaki, Hairong Li (2022). Artificial empathy in marketing interactions: Bridging the human-AI gap in affective and social customer experience.
175. Zarifhonarvar, Ali. "Economics of chatgpt: A labor market view on the occupational impact of artificial intelligence." *Journal of Electronic Business & Digital Economics* 3.2 (2024): 100-116.
176. Zhang, Yaozhi, and Nina Katrine Prebensen. "Co-creating with ChatGPT for tourism marketing materials." *Annals of Tourism Research Empirical Insights* 5.1 (2024): 100124.