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Artificial Intelligence in Marketing Communication: A Comprehensive Review of Applications, Challenges, and Future Directions

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Abstract

Artificial intelligence (AI) has evolved from a peripheral technology to a strategic driver of modern marketing communication, transforming how organisations engage, persuade, and retain customers. This paper aims to provide a comprehensive review of the applications, benefits, challenges, and future directions of AI in marketing communication. Drawing on peer-reviewed literature, the review examines the evolution of AI and its integration into key marketing communication functions, including digital advertising, social media marketing, chatbots, content creation, email marketing, customer relationship management, recommendation systems, and predictive analytics. The review demonstrates that AI enhances marketing effectiveness through personalization, customer engagement, automation, and data-driven decision-making while simultaneously raising ethical concerns related to data privacy, algorithmic bias, transparency, and consumer trust. It further highlights emerging trends such as generative AI, hyper-personalization, responsible AI governance, and human-AI collaboration that are expected to shape the future of marketing communication. The paper provides researchers, practitioners, and students with a structured conceptual understanding of AI-driven marketing communication and identifies strategic directions for responsible and effective AI adoption in contemporary marketing practice.

Keywords : *Artificial Intelligence; Marketing Communication; Digital Marketing; Customer Engagement; Personalization; Generative AI; AI Governance; Predictive Analytics*

Introduction

1.1 Background of Artificial Intelligence

Artificial intelligence is the technology of computers designed to carry out tasks that would normally require human intelligence, such as recognising patterns, making predictions, understanding language and adapting to new information. The term was coined in 1956 at the Dartmouth Conference, where researchers began to talk about machines that could think (Verma et al., 2021). Until recently, AI was primarily a research field, limited by the availability of computing power and small data sets. This changed substantially over the past 15 years. The advent of cheap cloud computing, huge amounts of digital data, and the development of machine learning and deep learning made AI a viable business tool (Huang & Rust, 2021).

One of the first business functions to be affected by this change was marketing. Companies that used to target general demographics and generic campaigns can now analyse real-time browsing behaviour, purchase history and even tone of voice. Davenport et al. (2020) call it a shift from marketers responding to customer behaviour to marketers predicting it before it occurs.

1.2 Importance of AI in Marketing Communication

Marketing communication sits at the point where a brand meets its audience, through advertising, social media, email, or customer service. AI plays a significant role here, as it alters the scope and accuracy of the meeting. The study by Verma et al. (2021) demonstrates that the research on AI in marketing has increased significantly from 1982 to 2020, particularly since 2015 when AI tools such as machine learning became commercially available. In a broader review of the literature, Vlačić et al. (2021) characterize the evolution of the literature on the role of AI in marketing as having moved from a narrow, efficiency-driven perspective to a more strategic perspective that impacts customer relationships, decision-making, and firm performance more broadly. AI has transcended its initial application and is now used in more than 170 different use cases, as identified by Chintalapati and Pandey (2022) in the areas of integrated digital marketing, content marketing, and customer experience.

AI is not just a technical matter. It is transforming the brand-customer dynamic. Suraña-Sánchez and Aramendia-Muneta (2024) revealed that the number of customer engagement and advertising engagement research articles with AI increased significantly following 2020, with 81 articles published in 2021 alone, more than twice as many as in 2020. The rate of academic research is comparable to the rate at which AI is being adopted in the industry, with AI-powered personalization, chatbots, and predictive targeting now being commonplace rather than experimental.

1.3 Objectives of the Study

This review is to have four aims. To begin with, it is important to understand the concept, definition, categories and characteristics of Artificial Intelligence (AI) as a basis for the subsequent discussion. Second, to review the fundamentals of marketing communication and demonstrate the difference between traditional communica-

tion and communication that is enabled by AI. Third, to identify the key applications of AI in various marketing communication roles, based on peer-reviewed research. Fourth, to discuss the opportunities and obstacles and outline the trajectory that will guide research and practice over the next few years, such as generative AI, hyper-personalization, and responsible AI governance.

2. Artificial Intelligence

2.1 Meaning and Definitions

Artificial intelligence is broadly defined as the branch of computer science concerned with building systems that perform tasks normally requiring human cognition, including reasoning, learning, perception, and decision-making. Huang and Rust (2021) define AI in marketing as technology that can perform mechanical, thinking, and feeling tasks, such as automating repetitive tasks, analyzing data to make decisions, and understanding human emotions. The three-part definition is helpful because it shifts the focus from AI as a technology to AI as a spectrum of capability.

2.2 Evolution of AI

AI has been called the wave of the future. Early rule-based systems of the 1960s-1980s were based on a fixed logic and were unable to learn from new data. In the 1990s and 2000s, statistical machine learning emerged, where systems were trained on examples and improved their performance based on the data they were exposed to. Deep learning, a new approach that relies on multi-layered neural networks to process unstructured data like images, audio, and text, was introduced in the 2010s (Verma et al., 2021). The latest wave, which started around 2020, is generative AI, which can create new text, images, and video content, not just classify or predict from existing data. According to Davenport et al. (2020), every wave has increased the things that marketers can automate, from basic rule-based email triggers to systems that can write an ad or even have a full conver-

sation with a customer.

2.3 Types of AI

AI can be categorized into two types. By capability, it can be narrow AI, which is limited to a specific task like image recognition or language translation, or general AI, a theoretical AI that can perform any intellectual task a human can, or superintelligence, a theoretical AI that can outperform a human in all tasks. All the AI systems that are currently in use in the business world, such as the ones used in marketing, are narrow AI. AI can be divided into reactive machines, which only respond to the input they receive at the moment; limited-memory systems, which use the most recent information to make decisions; and the more advanced (but still largely theoretical) systems that are theory-of-mind and self-aware.

In marketing, Huang and Rust (2021) suggest a three-intelligence approach: mechanical intelligence automates repetitive tasks like data collection and routine customer responses; thinking intelligence handles structured data to inform decisions, such as demand forecasting; and feeling intelligence decodes emotional and social signals, as in sentiment analysis of customer reviews. One of the more popular approaches to marketing-specific general AI categories is this framework.

2.4 Features of AI

There are a number of characteristics that set AI systems apart from those that are relevant to marketing communication. They learn from data and not just from fixed instructions, so as more data is collected, they get better. They work at a scale that no human team could ever match, processing millions of interactions with customers at one time. They can tailor the output to the individual, not the segment. And, more and more with generative AI, they can create original content instead of just analysing content (Davenport et al., 2020). These are some of the reasons why AI has been used in so many marketing communication applications, where reaching

a large number of people with relevant and timely messages is essential.

3. Marketing Communication

3.1 Meaning and Definitions

Marketing communication is the sum of all messages, media and activities an organisation uses to communicate with its market and convince target audiences to accept the message and respond to it. One of the key elements of this definition is persuasion: the goal is to influence belief, desire or behaviour, and to do so in a manner that is consistent with the organisation's overall marketing plan. Marketing communication is best viewed as a coordinated set of tools, since a message can be communicated via advertising, public relations, direct marketing, or personal selling.

3.2 Objectives of Marketing Communication

Most marketing communication activity has three goals: to communicate information about the product or brand, to compete effectively against other brands that offer similar products, and to persuade the audience that the brand is the superior option. Communication should be clear, accurate and useful to those who receive it, in part because of persuasion and in part because of potential legal implications of false claims. When products are similar in terms of price and attributes, marketing communication is one of the last remaining tools that a firm can use to create loyalty and differentiate itself in competitive markets.

3.3 Components of Marketing Communication

Traditional promotion mix consists of advertising, public relations, personal selling, sales promotion, direct marketing, sponsorship, and, more recently, digital and social media. The theory of integrated marketing communication (IMC) suggests that these elements are best used in synergy, meaning that the customer receives the same message when they see a TV ad, a social post, or

an email. The characteristics most frequently mentioned as characteristics of a well-run IMC programme are consistency, coordination, a customer-centred starting point, and continuous measurement.

3.4 Traditional vs. AI-Enabled Marketing Communication

Traditional marketing communication is mostly one-way and segment oriented: a company creates a message for a large group of people and sends it out via mass media, and only receives feedback slowly, via sales or surveys. AI-powered marketing communication does just the opposite. Messages can be created and customized on a per-person basis, feedback is received in real time via clicks and engagement metrics, and the system can learn and adapt on the fly without waiting for the next campaign cycle. Huang and Rust (2021) conceptualise this transition in terms of standardisation, personalisation and relationalisation, which correspond more or less to the transition from mass communication to AI-driven, individually tailored dialogue. Pitt et al. (2023) add a historical warning here: new marketing technologies always come with their own set of benefits and drawbacks, and AI is no exception.

4. Applications of Artificial Intelligence in Marketing Communication

4.1 AI in Advertising

One of the most advanced AI applications in marketing is programmatic advertising, where AI algorithms bid and serve ads in real-time based on anticipated relevance. In addition to placement, generative models can now generate the creative itself. Hartmann et al. (2025) pitted seven text-to-image models against human-made images by professional designers and found that AI-generated images could be as effective as or nearly as effective as human-made images on several measures of advertising effectiveness, and cost a fraction as much per image (the study compared images created by DALL-E 3,

Midjourney, Firefly, and related models released in 2023 and 2024). Despite this, adoption has not been smooth sailing; according to data from the industry survey referenced in the trade research, there is a disconnect between the marketers who say they are excited about the potential of generative AI for copywriting and those who say they are using it in practice, with many citing concerns about factual accuracy and brand suitability.

4.2 AI in Social Media Marketing

AI can assist with content scheduling, audience segmentation, sentiment analysis, and influencer identification on social media platforms. Żymkowska and Zachurzok-Srebrny's (2025) systematic review of AI in customer engagement and social media marketing in the tourism and hospitality industry revealed that the extent of an organisation's digital maturity is a significant factor in determining its AI adoption and that AI's primary value is in personalising content and automating customer interactions around the clock using chatbots and virtual assistants. Similarly, Suraña-Sánchez and Aramendia-Muneta (2024) highlight two of the main research areas in the field of AI and marketing: advertising engagement and customer engagement, which further emphasize the role of social and advertising platforms in the literature. The picture is further supported by survey data from 893 consumers across the MENA region, which revealed that AI personalised content, optimised influencer selection and real-time interaction on social platforms were all found to have a positive impact on customer experience and purchase intention, albeit with varying degrees of impact depending on platform and product category (Beyari and Hashem, 2025).

4.3 AI Chatbots

One of the most noticeable uses of AI in marketing communication is through chatbots, which can respond to customer inquiries, assist in making purchases, and continue the conversation with the brand. Cheng and Jiang (2022) demonstrate that the customer-brand re-

lationship is influenced by the marketing activities of chatbots, and the quality of the customer-brand relationship is a mediator between the marketing activities of chatbots and the response of customers to the brand. More broadly, Pentina et al. (2023) examined the literature on consumer-machine relationships and found that customers are increasingly forming relationship-like bonds with AI systems like chatbots, but these relationships are not the same as those with brands, and are not fully captured by current marketing theory. After performing morphological analysis and co-occurrence analysis of the literature on chatbot marketing, Ramesh and Chawla (2022) conclude that the majority of the existing literature focuses on the customer service and engagement outcomes of chatbots, while comparatively less research has been conducted on the impact of chatbots on brand equity in the long run. This effect seems to be enhanced by anthropomorphism, which involves attributing human characteristics to a chatbot. Gomes et al. (2025) examined 1,319 participants and discovered that anthropomorphism of a chatbot positively affects purchasing decisions, primarily by boosting customer engagement rather than by directly affecting the purchase decision itself. The survey results of online shoppers in Saudi Arabia also revealed that the usability and responsiveness of chatbots have a significant impact on customer satisfaction, which ultimately leads to customer loyalty (Alsadoun & Alnasser, 2025). However, not all gratifications that a chatbot provides are equally effective; Nguyen et al. (2026) found that utilitarian and technological gratifications were more effective in driving engagement than hedonic and social gratifications, and that perceived privacy risk was detrimental to engagement even when the chatbot performed its task well, with engagement improving satisfaction but not directly predicting retention.

4.4 AI Content Creation

The way marketing content is created has been transformed by Generative AI. Large language models can

now write blog posts, ad copy, email subject lines and social captions in seconds, and image and video generation tools can create visual assets in a similarly compressed time (Heitmann, 2024). Heitmann (2024) states that generative AI is not just about accelerating current content processes, but fundamentally reshaping the value chain of content creation, from ideation to distribution, as the same model can be used to create content for advertising, public relations, and customer relationship management. This is a limitation that is common in the literature: generative tools can generate fluent but inaccurate content, which requires human review before it is sent to customers.

4.5 AI Email Marketing

AI can assist in subject-line optimization, send-time prediction, and personalization of email content based on previous interactions in email marketing. This personalization can go beyond just inserting a name into an email and include product recommendations and offers based on a customer's purchase history and browsing behavior, as well as their name in their research on AI-driven personalization throughout the customer journey in interactive marketing. Gao and Liu (2023) discovered that the value of personalization is not consistent across all stages of the journey. Personalization works best at the consideration and purchase stages. At the awareness stage, more general, less targeted messaging performs better. However, personalization can go wrong. Nobile and Cantoni (2023) conducted two field experiments that showed that personalized emails overall resulted in better retailer performance, but also led to some cases of reactance, especially when the personalization was perceived as being related to the tracking of browsing behaviour rather than to a declared preference. This is consistent with a previous large-scale field experiment by Sahni et al. (2018) that found that the inclusion of non-informative, purely personalized content in marketing emails could have a measurable impact on response rates, either positive or negative, depending on

the method of personalization.

4.6 AI Customer Relationship Management (CRM)

AI-powered CRM systems consolidate purchase data, support interactions, and engagement metrics into a unified customer profile, empowering marketing, sales, and service teams to leverage this information for action. A systematic review of the literature on the use of AI in the customer journey, which included 101 peer-reviewed articles published from 2020 to 2024, revealed that AI has transformed CRM by facilitating data-driven co-creation between the firm and the customer, and by assisting with real-time personalization that was beyond the scope of previous CRM systems (Gouveia & Santos, 2025). The same review raises new questions on data governance, as a single view of the customer relies on the ability to integrate data that was previously stored in different systems.

4.7 AI Recommendation Systems

Recommendation systems use algorithms to look at a user's browsing history, purchase patterns, and other data on how customers behave to recommend products or content that might be of interest to an individual user. These systems now form the backbone of AI-powered marketing personalization, allowing a company to shift from mass segment targeting to personalized recommendations. According to a bibliometric analysis of 206 studies on AI and recommender systems in e-commerce, the field is moving from traditional collaborative filtering to more transparent and sentiment-driven models, and identified an open problem: the majority of recommender systems lack transparency, making it difficult for both the company and the customer to understand why a specific product is recommended (Valencia-Arias et al., 2024). The results of the studies that have applied AI-based recommendation methods to various industries, from e-commerce to food marketing, are always positive, with higher engagement and conversion rates than non-personalised methods, but most of the evi-

dence is cross-sectional and not longitudinal, meaning that the quality of the recommendations remains to be tested over time as consumer preferences evolve.

4.8 AI Predictive Analytics

Predictive analytics is the use of past data to predict future consumer behavior, demand, and campaign performance. These predictions are used by marketers to determine inventory levels, price, and which customer segments to target in a specific marketing campaign. While generative content creation relies on newer, less predictable model behaviour, Davenport et al. (2020) argue that predictive capability is one of the more mature applications of AI in marketing because it is based on structured data that companies have been gathering for years.

5. Benefits of Artificial Intelligence in Marketing Communication

5.1 Personalization

The most common advantage mentioned in the AI-marketing literature is personalization. AI can process individual data points instead of segment averages, enabling businesses to personalize messages, offers, and content for individual customers. Huang and Rust (2021) view personalization as the middle step in their established standardisation-personalisation-relationalisation framework, and believe that thinking AI, which processes data to make a decision, is what makes the transition from generic to personal messaging possible.

5.2 Customer Engagement

AI-powered engagement tools, especially chatbots, maintain customer engagement with a brand beyond business hours and through more channels than a human team could manage. Customer engagement is one of the most extensive and dynamic research areas in the realm of AI in marketing, as highlighted by Suraña-Sánchez and Aramendia-Muneta (2024), reflecting its grow-

ing significance in both research and practice. Peltier et al. (2024) bring a service-outcomes perspective to this picture, suggesting that the engagement benefit of AI is not a sure thing when it is used in isolation, but rather as part of the broader interactive marketing campaign.

5.3 Automation

Mechanical AI streamlines repetitive marketing activities, including data collection, basic customer responses, and campaign scheduling, allowing marketing teams to concentrate on strategy and creative decision-making, rather than routine execution (Huang & Rust, 2021).

5.4 Cost Efficiency

The per-unit cost of AI-generated content and campaign management decreases since AI can do it in a fraction of the time a human team would take. Hartmann et al. (2025) show that AI-generated ads are significantly cheaper per image than human-generated ads, though the quality gap between AI and human-created ads narrows for more intricate creative tasks.

5.5 Better Decision-Making

Predictive analytics and AI-driven market analysis provide marketers with a more immediate and accurate understanding of consumer trends than traditional methods based on surveys, which are slower to provide data (Davenport et al., 2020).

5.6 Improved Customer Experience

AI-driven personalization and automation result in quicker response times, more relevant recommendations, and a more uniform service experience across channels, all of which help to improve the overall customer experience. Cheng and Jiang (2022) attribute this improvement directly to the quality of the customer-brand relationship, indicating that the benefits of AI are not guaranteed but depend on the implementation of the technology.

6. Challenges of Artificial Intelligence in Marketing

Communication

6.1 Privacy Concerns

The use of AI for personalization relies on the collection of vast amounts of personal information, leading to continued concerns about consent and the extent of data collection. Consumers are unhappy with data collection practices that they feel are intrusive, especially if the advertising is personalized and seems to be related to their personal behavior, not their general preferences.

6.2 Data Security

The same information that can be used to personalize can also be targeted for breach and misuse. Companies that consolidate customer information in a CRM, marketing and service system to enable AI-driven personalization assume a greater security burden, as a single breach can reveal a much broader customer profile than previous, more disjointed systems. One of the primary tools governments have to incentivize better data-security practice is regulation, but the impact of regulation on the underlying data economy is not always clear. In a study of the European Union's General Data Protection Regulation (GDPR), Aridor et al. (2021) examined how GDPR affected the number of consumers an online travel intermediary could track and found that the opt-in requirement resulted in a measurable reduction in the number of consumers tracked by the firm, but the consumers that remained tracked were more predictable and, on average, more valuable to advertisers, which partially compensated the firm for the loss of consumers due to opt-outs. This implies that tighter data protection regulations do not just reduce the value of marketing data, but can also reshape it in ways that are not apparent in the stated intent of the regulation.

6.3 Ethical Issues

In addition to privacy and security concerns, AI in marketing also brings up ethical issues regarding manipulation and consumer autonomy. The distinction between

personalization and manipulation is not always clear when AI systems are used to identify and target psychologically vulnerable groups with particularly persuasive messages, and current marketing ethics codes were not designed for this kind of individual targeting.

6.4 Algorithmic Bias

Bias can be perpetuated and even exacerbated by AI systems that are trained on historical data, resulting in inequitable treatment of certain groups of customers in personalized marketing and pricing. These systems are typically a black box, and the resulting bias may not be apparent to the marketer using the system, or even to the customer who is being targeted, making it more difficult to detect and correct than the bias that can be found in traditional, rule-based targeting. Akter et al. (2023) surveyed 200 analytics professionals and 200 business customers in financial services and created a framework that indicates that algorithmic bias in marketing tends to occur at three stages: the data used to train a model, the model itself, and the deployment of the model, and that data-stage bias is the strongest predictor of the other two, so that firms that invest in cleaning and auditing their input data reduce bias risk more than those that audit the model after the fact. Real-world examples, such as the targeting of ads to women on major advertising platforms, show that this is not a theoretical threat, but one that has already had legal and reputational repercussions for well-known companies.

6.5 Consumer Trust

Transparency is a key factor in building trust in AI marketing: Esa et al. (2025) show that consumers are more likely to trust and remain loyal to companies that are transparent about their data collection, usage, and security practices. The reverse also holds. The lack of transparency and control over their own data can undermine years of positive brand engagement and make it more likely that people will lose trust in the brand as a whole, rather than just the chatbot or recommendation system

that failed them.

6.6 High Implementation Cost

While the cost of certain AI tools has decreased, the overall cost of implementing AI on a large scale is still high for many organisations. The barriers to realizing and scaling value from AI initiatives identified in industry research seem more pronounced for small and medium-sized enterprises than for larger companies with data science teams, and include integration complexity, workforce retraining, and the need for new governance structures. In a survey of 301 small and medium enterprises (SMEs) in Malaysia, Enshassi et al. (2025) discovered that perceived barriers significantly reduced the intention to adopt AI for digital marketing even when a firm was aware of the benefits of AI, and that the barriers accounted for a greater proportion of the variance in adoption behaviour than ease of use, indicating that cost and organisational readiness, rather than ease of use, were the most common barriers to AI adoption among smaller firms.

7. Future Directions

7.1 Generative AI

Generative AI is expected to continue to be one of the fastest-changing fields of AI-powered marketing communication. As of 2024, the market value of generative AI in marketing and advertising is estimated at a few billion dollars, and is expected to increase by several times by 2028, due to its growing application in copywriting, image creation, and optimisation of campaigns (Heitmann, 2024). The open research question is more about reliability than capability, as generative outputs still need human oversight to ensure factual accuracy and brand tone.

7.2 Hyper-Personalization

Hyper-personalization is the next step in recommendation and predictive systems, and it seeks to customize product recommendations, but also the entire custom-

er journey, timing, channel, tone and offer, in real time. One way this is being done in practice is by Micu et al. (2022), who created a deep-learning prototype that creates customer profiles on the spot, in physical retail stores, using facial expression recognition and automatic age and gender detection to tailor offers to a shopper's journey through the store, extending hyper-personalization beyond online browsing into the physical retail space. This increases the pressure on the privacy and trust issues mentioned above, as more personalization usually means more data collection, and researchers are increasingly viewing hyper-personalization and privacy protection as a trade-off that companies need to explicitly manage.

7.3 AI Governance

With AI now playing a more integral role in marketing decisions, companies are increasingly facing the challenge of defining clear governance frameworks, including who is responsible for the output of an AI system, how its decisions are tracked, and how mistakes are addressed. Papagiannidis et al. (2025) summarise the responsible AI literature and present this as a mix of structural, procedural and relational practices: structural – clear roles and responsibilities; procedural – the actual processes used to design and monitor systems; and relational – the development of staff working relationships and skills to use AI responsibly. Most of the current guidance on governance only goes so far as to state principles like fairness and transparency. Papagiannidis et al. (2025) see this as directly relevant to AI-driven marketing communication, but the guidance itself does not explain how a marketing team would apply those principles on a day-to-day basis.

7.4 Responsible AI

Responsible AI is a more specific aspect of governance that is concerned with fairness, transparency and accountability in the models themselves. In marketing, it means reviewing recommendation and targeting algo-

rithms for bias, notifying customers when they are dealing with an AI system instead of a human, and creating processes for customers to challenge or correct AI-based decisions that impact them.

7.5 Human-AI Collaboration

The future of AI in marketing is not about replacing human effort with automation, but about complementing it with a division of labour. The review of organisational human-AI collaboration suggests that the level of trust between humans and AI, and the governance of where accountability lies, will be as important to marketing results as the actual ability of the AI systems.

8. Conclusion

AI has gone from the periphery to the core of marketing, transforming advertising, social media marketing, customer service, content creation, and customer relationship management. The evidence presented here clearly demonstrates the benefits: more personalization, more engagement, more meaningful automation, and more informed decisions. It also highlights persistent issues that are not easily solved through technological solutions: privacy, security, bias and trust are open issues that rely as much on governance and organisational decisions as on technology.

In the future, generative AI, hyper-personalization, and more structured AI governance frameworks will likely shape the future of research and practice in this area. The trend in the literature is to work with humans and AI, not to replace humans with AI, and to have humans make decisions that AI cannot make. The next big challenge for researchers is to create more longitudinal evidence, as most of the studies currently conducted only capture a single moment in time, and are not yet able to demonstrate the relationship between AI-driven personalisation and consumer trust over a number of months or years. The takeaway for practitioners is that the technology of AI in marketing communication has

outstripped the governance frameworks necessary to deploy it responsibly, and bridging that gap will be more important for long-term brand equity than any one new AI tool.

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