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A Literature Review on the Role of Artificial Intelligence in Marketing

Zirui Wang [1,*]

[1] School of management, Hebei University, Baoding 071000, China

*** Correspondence**:

Zirui Wang

15532180079@163.com

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Abstract

With the rapid advancement of artificial intelligence (AI) technologies, their application in marketing has become increasingly widespread. This paper reviews and synthesizes existing literature to examine the multifaceted impacts of AI on marketing practices. The findings indicate that AI offers significant advantages, including enhanced marketing efficiency, cost reduction, and the facilitation of personalized recommendations. These capabilities contribute to improved consumer experience and engagement, thereby fostering stronger brand loyalty and promoting brand image development. Nevertheless, the review also highlights inherent limitations of AI, particularly in emotional expression and authenticity perception, which may undermine consumer trust.

Keywords: Artificial Intelligence; Marketing; Consumer Behavior

1. Introduction

In the digital era, marketing continuously seeks innovation and breakthroughs to adapt to evolving consumer behaviors and media environments. As an emerging force, AI is reshaping traditional marketing with unique advantages: 24/7 operation, precise data analysis, personalized recommendations, and real-time interaction. It shows great potential in improving efficiency, diversifying methods, and enhancing consumer experience. Many companies have introduced AI in hopes of gaining a competitive edge in the competitive market (Haleem et al., 2022). However, despite the increasingly widespread application of AI, systematic research on its impact on the education sector remains relatively scarce. This review aims to synthesize relevant literature and deeply explore the current application status, advantages, challenges, and future research directions of AI in marketing, provide theoretical guidance and practical references for marketers, and assist enterprises in better utilizing AI to enhance marketing effectiveness and consumer experience.

While this review focuses primarily on marketing, insights from AI's application in education provide a valuable comparative perspective, helping to further illustrate the universality of AI's core capabilities and enrich the analysis of its role in marketing.

2. The Impact of AI on Brand Image

Among the diverse impacts of AI on marketing, brand image stands as a foundational pillar, shaping consumers' long-term perceptions and directly influencing their loyalty to the brand. As the bedrock of brand-consumer relationships, it merits priority analysis to understand how AI's technical capabilities translate into sustained market influence (Petrescu and Krishen, 2023).

The impact of AI on brand image is a long-term process. Brand image is a collection of consumers' inherent perceptions of a brand and the differentiated information conveyed by the brand, which can be achieved through strategies such as strategic positioning, visual design, user experience, and emotional value, in order to enhance user loyalty and market competitiveness (Ostberg and Hartmann, 2025).

The appearance design, language style, and interactive capabilities of AI play a significant role in conveying brand personality and values. An AI image that is both approachable and professional can not only significantly enhance the brand's appeal and credibility but also establish a positive brand image in the minds of consumers. The application of hybrid intelligence further enhances this process by combining human creativity with AI's computational power, enabling brands to shape their image more accurately and attract consumers (Petrescu and Krishen, 2023). For instance, Xinhua News Agency's 'Xin Xiao hao' and CCTV's 'Xiao sha', AI systems modeled after real individuals, excel in news reporting with high accuracy and stability (Wang, 2023). These systems improve news efficiency and deepen consumers' emotional bonds with the brand through continuous interaction and efficient service, which is crucial for fostering brand loyalty and enabling brands to gain a competitive edge in the market.

While AI enhances brand image through personalized interactions, its inability to exhibit genuine emotional depth stems from fundamental technical constraints. Current AI systems rely on pattern recognition of surface-level cues (e.g., facial expressions, lexical sentiment) rather than authentic emotional experience. Unlike humans, who interpret emotions through contextual, cultural, and experiential lenses, AI processes emotions as data points and thus reduces complex affective states to algorithmic outputs (Davenport et al., 2019). This limitation risks fostering "emotional fatigue" among consumers: over time, preset "warm" language or simulated empathy in AI interactions may be perceived as inauthentic, eroding trust in brands that over-rely on such tools (Niu, 2024). Socially, this could normalize superficial emotional exchanges, weakening consumers' capacity for deep interpersonal engagement, a shift with implications for long-term brand-consumer relationships.

AI can analyze customer data, preferences, and behaviors to provide valuable insights, while human judgment can be utilized to create relevant and engaging content, offers, and interactions. This combination makes marketing strategies more personalized and precise (Petrescu and Krishen, 2023). The "task automation" capability of AI technology enables AI to efficiently

process vast amounts of data, thereby delivering brand messages with greater precision. For instance, AI can dynamically adjust its language and interaction style in real time to better meet consumer needs (Davenport et al., 2019).

AI's strengths in personalized recommendations and precision marketing enhance brand satisfaction and loyalty (Gao et al., 2023). Its 24/7 live streaming attracts consumers by analyzing behavior data to deliver personalized recommendations (Zhu et al., 2025). This precise interaction meets individual needs and strengthens the consumer-brand emotional bond. Based on real-time data analysis, AI can instantly adjust the recommended content during live streaming, ensuring that every viewer receives information that matches their interests and needs. This personalized experience makes consumers feel the brand's attention and understanding, thereby enhancing their trust and reliance on the brand (Huang and Rust, 2020).

Consumers' acceptance of AI often hinges on their trust in artificial intelligence technology. Studies indicate that if AI frequently encounters technical issues during live broadcasts, such as incoherent speech, uncoordinated movements, or delayed information updates, these issues may significantly undermine consumers' trust in the brand and even trigger dissatisfaction and resistance. Therefore, ensuring the technical stability and information accuracy of AI is crucial for maintaining the brand image (Huang and Rust, 2020).

3. The Effect of AI on Consumer Engagement

A positive brand image, while crucial, cannot endure without active consumer engagement. AI’s role in shaping brand perception is intrinsically linked to its capacity to drive consumer participation, whether through real-time interactions or personalized experiences (Zhu et al., 2025). This chapter examines how AI promotes such engagement, a critical bridge between brand image and consumer loyalty.

Consumer engagement refers to the extent to which consumers actively participate in interactions during marketing activities. With the rapid development of artificial intelligence technology, the application of AI in live streaming sales has significantly enhanced consumer engagement. Studies have found that AI effectively captures consumers' attention and strengthens their sense of participation through real-time interaction, personalized recommendations, and entertaining elements (Zhang et al., 2024; Zhu et al., 2025).

In terms of real-time interaction, AI can quickly respond to audience questions, demonstrate product features, and continuously attract consumers' attention through interactive games and other methods (Zhang et al., 2024). For example, AI can capture audience questions in real time and quickly generate accurate responses using natural language processing technology. This efficient interaction method significantly increases consumers' willingness to participate. Experimental data shows that compared to traditional anchors, the time to solve problems when consumers interact with AI is reduced by 32%, and the interaction frequency is increased by 41% (Zhang et al., 2024).

AI also enhances engagement via personalized content recommendations based on consumer interests (Zhu et al., 2025). By analyzing historical behavior, it offers customized product suggestions, improving satisfaction and loyalty. Studies show such recommendations increase purchase conversion rates by 27% and repurchase by 19% (Zhu et al., 2025). When consumers view personalized products recommended by AI during live streams, their average dwell time is extended by 58 seconds compared to non-personalized recommendation scenarios, and the number of interactive comments is increased by 3.2-fold (Zhu et al., 2025). These significant improvements in engagement indicate that AI's personalized recommendation strategy has remarkable effects in practical applications.

A sense of humor and a relaxed interactive style also play a significant role in AI's interaction with consumers. Research indicates that humor can significantly enhance consumers' perceived entertainment, thereby increasing their engagement (Zhang et al., 2021). With the application of artificial empathy technology, emotional resonance and support can significantly enhance consumers' sense of engagement and willingness to interact (Liu-Thompkins et al., 2022).

When AI employs humorous expressions during live streaming, consumers are more likely to perceive the interaction as fun and warm (Zhang et al., 2021). Experimental data reveals that when AI uses humorous expressions, consumer engagement is 43% higher than when formal language is used, specifically manifested in a 2.3-fold increase in likes and a 1.8-fold increase in comments (Zhang et al., 2021). Further experiments indicate that a sense of humor can also effectively reduce consumers' defensive mentality, making them more receptive to product information. In an experiment targeting cosmetics live streaming, the use of a humorous AI style increased consumers' purchase intention by 34% (Zhang et al., 2021). This suggests that humor can not only effectively attract consumers' attention but also subtly influence their purchasing decisions, generating significant and long-lasting effects on brand marketing activities.

AI enhances consumer engagement through real-time interaction, personalized recommendations, and humorous elements (Zhang et al., 2024; Zhu et al., 2025). Despite its efficiency in resolving issues quickly and increasing interaction frequency (Zhang et al., 2024), AI's impact on *engagement quality* (not just quantity) remains debated. While it boosts participation metrics, its scripted, pattern-based emotional responses (Davenport et al., 2019; Niu, 2024) can trigger the "emotional fatigue" detailed in Chapter 2. Here, fatigue does not just erode brand trust (as in Chapter 2) but also weakens engagement depth: even with frequent interactions, the lack of genuine emotional resonance prevents meaningful connections that sustain long-term participation. In contrast, human communicators flexibly adjust tone and empathy to build authentic bonds, meaning AI excels in quantitative engagement but lags in qualitative emotional bonding—a trade-off requiring future research on balancing efficiency and human-like emotional intelligence.

Beyond AI's inherent capabilities like real-time interaction and humor, the way AI collaborates with humans also plays a key role in shaping consumer engagement, as different collaboration modes can amplify or weaken the effectiveness of AI's engagement strategies.

According to the use and gratification theory, AI-human collaboration can be divided into two modes: "assistive" and "supervised" (Zhang et al., 2024). Assistive AI is driven by humans in real-time through motion capture devices and language, featuring high flexibility and interactivity; whereas supervised AI automatically generates live broadcast content, with humans only responsible for supervision. Due to its flexibility and real-time response capability, consumer engagement in assistive AI is 67% higher than that in supervised AI. Consumers interact an average of 4.2 times more in assistive AI live broadcasts, and their dwell time is extended by 2.1 minutes. This indicates that assistive AI can significantly enhance consumers' perceived entertainment, thereby increasing engagement (Zhang et al., 2024).

The application of artificial empathy technology has also opened up new possibilities for AI's emotional expression. Through emotion recognition and expression, AI can better understand consumers' emotional states and enhance their engagement through emotional resonance (Liu-Thompkins et al., 2022). For instance, AI can identify consumers' negative emotions through sentiment analysis technology and provide emotional support through empathetic care, thereby alleviating consumers' negative emotions and enhancing their willingness to participate. This emotional interaction not only enhances consumers' engagement but also bridges the emotional gap between AI and human interaction, making AI more human-like in the eyes of consumers (Liu-Thompkins et al., 2022).

4. The Influence of AI on Purchase Intention

Increased consumer engagement, fostered by AI’s interactive strategies, often serves as a precursor to purchasing decisions. When consumers actively participate in marketing interactions, their interest in products deepens, creating a natural pathway to conversion (Wu et al., 2024). This chapter explores how AI converts engagement into concrete purchase intention.

AI can effectively drive consumers' purchase intention by providing detailed product information, answering consumer questions, and showcasing product advantages (Gao et al., 2023). For instance, Taobao's virtual anchors assist consumers with quickly locating products that meet their needs through real-time interaction and personalized recommendations, thereby significantly improving purchase efficiency (Wang et al., 2023). Furthermore, AI's personalized recommendations and precise marketing strategies further elevate consumers' interest and demand for products, ultimately promoting purchasing behavior (Zhang et al., 2024).

While AI-driven personalized recommendations and efficient interactions significantly boost consumers' purchase intention (Zhu et al., 2025; Wang et al., 2023), their effectiveness directly hinges on consumers' perceptions of the AI system's credibility and human-likeness. Studies show that when AI is excessively anthropomorphic yet lacks genuine emotion, it tends to trigger consumer unease and resistance (Wu et al., 2024). Moreover, if recommendations are seen as prioritizing conversion efficiency over genuine needs, their utilitarianism or even manipulativeness can inhibit purchase intent. In contrast, human recommenders, drawing on experience, intuition, and empathy, provide more persuasive and warm guidance. Thus, AI's role in driving purchase intention depends not only on technology but also on its close ties to

consumers' psychological identification, the system's transparency, and emotional acceptance. This debate reveals that AI marketing is not merely a technical race but a contest over trust and human-centered design.

From the perspective of perceived value theory, the "perceived usefulness" and "perceived pleasure" of AI are key factors influencing consumers' purchase intention. Perceived usefulness refers to consumers' belief that AI can enhance their purchasing efficiency and decision-making quality, while perceived pleasure is related to the emotional satisfaction and entertainment experience consumers gain from interacting with AI (Zhu et al., 2025). When consumers perceive the usefulness and pleasure of AI, their purchase intention will be significantly enhanced (Zhu et al., 2025). The capabilities of AI technology in task automation and context awareness enable AI to better understand consumers' specific needs and provide highly personalized recommendations (Davenport et al., 2019). For instance, when Lancôme used AI in its live broadcast, it successfully established consumers' trust in AI through transparent data usage policies and authentic emotional expressions, thereby significantly enhancing purchase intention (Zhu et al., 2025).

However, consumers' trust in AI and their acceptance of AI-recommended content also exert a significant influence on their purchase intention. If consumers perceive AI recommendations as unreliable or lacking in humanity, their purchase intention may be diminished (Zhu et al., 2025). Studies have revealed that AI systems with a designed sweet smile and natural simulated movements are more readily accepted by consumers, thereby enhancing their purchase intention (Wu et al., 2024). Furthermore, the "uncanny valley effect" of AI may pose a dual barrier affecting consumers' purchase intention and societal trust (Wu et al., 2024). On an individual level, when AI’s appearance or behavior closely resembles humans but lacks genuine emotions, consumers feel uneasy, which diminishes their interest in the product and weakens purchase intent. On a broader societal level, this dissonance triggers inherent distrust: authenticity is crucial in persuasive marketing interactions, and AI’s imitated emotion (rather than genuine affect) erodes the credibility of its recommendations, even amid advanced personalization capabilities. This effect complements algorithmic biases, for instance those that prioritize conversion over fairness (Li, 2024), as key obstacles to AI-driven purchase conversion. This distrust is further intensified by opaque decision-making processes, known as 'black-box algorithms,' which make consumers wary of hidden manipulation and reduce their willingness to purchase, despite the AI's advanced capabilities.

5. The impact of AI on brand loyalty

While AI effectively enhances immediate purchase intent, its strategic value extends far beyond one-time transactions. True brand success hinges on fostering long-term loyalty, and through sustained engagement and personalized care, AI plays a pivotal role in transforming occasional buyers into loyal advocates (Gao et al., 2023). This chapter explores this enduring impact.

AI positively impacts brand loyalty in multiple ways, especially in the realm of emotional connections and interactions. Studies show AI simulates human emotions to form deep connections with consumers, enhancing their identification with the brand. In live streams, its

warm tone and positive engagement convey brand values, making consumers feel cared for (Gao et al., 2023).

AI enhances the emotional connection between consumers and brands through human-machine interaction and automated analysis (Kaplan et al., 2021). By emulating emotions, AI strengthens this bond, leading to better brand identification, higher satisfaction, long-term loyalty, and increased repeat purchases (Zhu et al., 2025; Liu et al., 2025). Through positive interaction modes, AI can effectively convey the brand's values, making consumers feel cared for and close to the brand.

AI is capable of generating highly personalized product recommendations and shopping guidance based on consumers' purchase history, browsing behavior, and preference data (Gao et al., 2023). It can also dynamically adjust live-stream scripts according to user preferences, showcase related products, and offer exclusive promotions. This real-time adaptive interactive experience not only meets consumers' immediate needs but also deepens brand memory through contextual marketing (Wang et al., 2024; Cheng et al., 2023), which underscores the value of real-time interaction: during live streams, AI can respond to viewers' comments and questions in seconds, creating a seamless communication mechanism that breaks the one-way nature of traditional marketing. As consumers receive immediate feedback, they essentially transition from product users to brand advocates. This sense of being valued in the consumption experience becomes a key touchpoint for sustaining long-term loyalty.

The development of brand loyalty is a long-term and complex process, demanding continuous efforts from AI across multiple fronts. AI must continuously enhance its technical performance to ensure smooth and stable live-streaming (Zhang et al., 2024). By advancing speech recognition and natural language processing technologies, AI can more accurately grasp consumers' intentions and deliver more precise services. Additionally, optimizing interactive content is crucial for boosting brand loyalty. AI needs to continuously adjust and refine live-stream content based on consumer feedback to maintain its appeal and relevance. By offering high-quality audio-visual effects and a seamless shopping experience, AI can further elevate consumer satisfaction and loyalty. For instance, AI can leverage virtual reality (VR) and augmented reality (AR) technologies to create immersive shopping experiences, thereby enhancing brand attractiveness.

6.The Impact of AI on Dissemination Models

As an innovative application form, AI is gradually changing traditional communication modes. From news broadcasting to live streaming e-commerce, from brand promotion to educational entertainment, AI's use cases are becoming increasingly diverse, demonstrating immense potential and value.

The primary applications of AI in the field of news broadcasting include the automated generation and broadcasting of news content. Through text-to-speech technology, AI can quickly and accurately convert news articles into voice broadcasts, greatly enhancing the efficiency of news production. For instance, Indonesia's TV One television station introduced AI for news broadcasting in 2023, becoming the first television station in the country to adopt AI technology

for this purpose (Fitria, 2024). China's Xinhua News Agency also launched the world's first AI news anchor as early as 2018, marking the entry of news communication into the era of intelligence (Fitria, 2024). AI can support news broadcasting in multiple languages, providing a powerful tool for international communication. Its speech synthesis technology can achieve seamless switching between different languages, meeting the needs of global audiences. This multilingual capability not only enhances the coverage of news but also improves the timeliness and accuracy of international communication.

In the field of live-streaming e-commerce, AI enhances consumers' shopping experience by analyzing user data and providing personalized product recommendations and shopping suggestions. E-commerce platforms such as Taobao have introduced AI virtual anchors for live-streaming sales promotion and product marketing (Shi, 2024). AI plays a significant role in brand promotion. Brands such as Shiseido and L'Oréal have applied AI to brand promotion, successfully capturing a significant degree of consumers' attention and enhancing brand influence through the image and interaction of virtual anchors (Zhu et al., 2025). AI collects and analyzes real-time user data to provide precise insights, helping brands optimize strategies and improve conversion rates and consumer satisfaction. Advances in generative AI technology enable brands to generate high-quality visual content at lower costs and higher efficiency. For instance, visual content generated by the Realistic Vision model is perceived by consumers as more realistic than real images, and this phenomenon of "AI hyperrealism" provides new possibilities for brand promotion (Hartmann et al., 2025).

AI has demonstrated strong technical advantages in the field of language expression. The digital virtual anchor 'Aquamarine' launched by Shandong Radio and Television Station has performed exceptionally well in news broadcasting, especially in handling pauses and stress (Niu, 2024). Despite AI's excellent performance in technical processing, it still has limitations in emotional resonance and personalized expression. Real anchors have more advantages in emotional expression and interactivity, and can better establish emotional connections with viewers. Therefore, the complementary cooperation between AI and real anchors has become the key to future development. In live e-commerce, AI can be responsible for generating and displaying high-quality visual content in real time, while real anchors can enhance consumers' willingness to purchase through emotional expression and interactive strategies. The advantages of generative AI in visual content generation can compensate for its shortcomings in emotional expression. By combining the advantages of both, more effective marketing outcomes can be achieved (Hartmann et al., 2025).

The application of AI in the field of education includes virtual classroom hosting and course content generation. AI can achieve efficient teaching content generation through speech synthesis technology in the field of education, while supporting multilingual teaching (Wang, 2023). AI enables real-time interaction, providing students with learning support and feedback. Its efficient content generation capability and interactivity make the educational process more flexible and personalized, thereby improving learning outcomes.

The application of AI in the entertainment field includes the creation of virtual idols and the development of interactive entertainment content. The virtual idol "Hatsune Miku" is a classic

case of AI application in the entertainment field, and it achieves interaction with the audience through speech synthesis technology (Shi, 2024). Through simulated emotional expression and creative content generation, AI systems can attract the audience's attention and enhance the attractiveness and influence of entertainment content.

The impact of AI on dissemination models, marked by personalized delivery, real-time interaction, and data-driven optimization, has revolutionized marketing and media. These same capabilities extend seamlessly to education, where parallel demands for efficient knowledge dissemination, adaptive learning support, and engaging interaction mirror AI's transformative role in reshaping how information spreads. Next, we explore how these proven AI strengths are reshaping educational practices.

7. The Application of AI in Education

The application of AI in marketing has highlighted its strengths in personalized recommendation, real-time interaction, and data-driven optimization, capabilities that are equally impactful in education. Just as marketing relies on AI to match consumer needs with content, education depends on tailored knowledge delivery and adaptive learning support. This chapter explores how AI, building on the same technical foundations as its marketing applications, is transforming educational management, teaching practices, and learning outcomes.

7.1. The Role of AI in Education

AI in educational management automates administrative tasks and optimizes resource allocation, enabling institutions to manage homework, grading, and feedback more efficiently (Chen et al., 2020). For instance, Intelligent Tutoring Systems (ITS) can automatically grade and provide feedback, reducing the burden on teachers and allowing them to devote more time to teaching and guiding students (Zhang and Aslan, 2021). Furthermore, AI can predict learning outcomes by analyzing student data, aiding educational institutions in better planning and allocating resources (Zhang and Aslan, 2021).

The application of AI in teaching primarily focuses on personalized learning and the development of intelligent teaching tools. AI technologies such as intelligent tutoring systems and chatbots can provide customized content and feedback based on students' learning styles and abilities (Harry, 2023). AI-driven personalized learning systems can significantly enhance students' academic performance and learning motivation (Harry, 2023). Meanwhile, the integration of technologies like virtual reality (VR) and augmented reality (AR) with AI offers students an immersive learning experience, further enhancing learning outcomes (Zhang and Aslan, 2021). Student-AI Collaboration (SAC) is an important direction for future education. Through interdisciplinary teaching, real-world problem-solving, and creative tasks, students can learn and grow together with AI tools (Kim et al., 2022). Students can also utilize AI tools for data analysis, model building, and creative expression, thereby enhancing their problem-solving and innovation abilities (Kim et al., 2022).

AI has also demonstrated immense potential in enhancing learning outcomes. By analyzing students' learning behaviors and data, it can provide real-time feedback and personalized learning paths, effectively improving learning efficiency and effectiveness (Chen et al., 2020). AI can accurately identify students' learning difficulties and provide targeted tutoring and resources to help students overcome learning obstacles (Harry, 2023). Additionally, AI, when combined with simulated and gamified learning environments, can effectively stimulate students' interest and engagement, thereby enhancing learning outcomes (Zhang and Aslan, 2021).

7.2. Challenges Faced by AI in the Field of Education

7.2.1. Technical Challenge

The reliability and stability of AI systems are crucial issues. Many AI systems exhibit limited intelligent computing capabilities in practical applications, making it difficult to meet the complex demands in educational scenarios (Selwyn, 2022). In intelligent tutoring systems, AI needs to accurately understand students' learning status and provide personalized feedback, but current technological advancements may not consistently achieve this goal.

7.2.2. Privacy and Security Challenges

Data privacy and security issues are also significant challenges faced by AI in education. Educational institutions need to ensure the protection of student data and prevent data leakage and abuse (Chen et al., 2020). Algorithmic bias in AI systems may lead to unfair treatment of certain student groups, which is a problem that cannot be ignored in a diverse educational environment (Harry, 2023). The bias and unfairness of AI systems may have adverse effects on certain student groups;thus, ensuring fairness and transparency in the design and implementation of AI systems is necessary (Harry, 2023).

7.2.3. Educational Practice Challenges

The introduction of AI technology has the potential to transform traditional teaching methods and learning environments, enabling personalized learning through precision education (Wang, 2023). This transformation necessitates that teachers acquire new skills and knowledge to effectively utilize AI tools. However, many teachers may currently lack the necessary training and support, making it challenging for them to adapt to effective human-AI interaction.

The application of AI in education also faces challenges related to uneven resource allocation. Educators in schools and regions with abundant resources are more likely to access and use advanced AI technology, while those in regions with scarce resources may find it difficult to keep pace with this trend (Selwyn, 2022). This inequality could lead to further differentiation in education quality, further marginalizing students from disadvantaged groups.

7.2.4. Emotional Social Challenges

AI technology is not a neutral tool, but rather deeply embedded in social values and ideologies (Selwyn, 2022). The risk of 'dehumanization' in AI-driven education arises not from the technology itself, but from its misalignment with human developmental needs. Education is inherently a social process that depends on spontaneous emotional cues, such as a teacher's

empathy when a student is frustrated or peers' laughter during collaborative learning. These aspects are beyond AI's capabilities. AI's emotional responses, based on preset algorithms, lack the unpredictability and authenticity of human interaction, potentially hindering students' ability to interpret complex social signals (Selwyn, 2022). On a societal level, this could widen the gap in emotional abilities, with students in AI-intensive classrooms possibly lagging in empathy compared to those in more humanities-oriented environments.

Furthermore, AI exacerbates educational inequity through resource stratification. Wealthier institutions can afford advanced AI tools, such as adaptive learning systems with diverse and unbiased datasets, while underfunded schools rely on limited, outdated systems—often trained on homogeneous data that fail to address the needs of marginalized students (Harry, 2023). This creates a 'digital caste system,' where AI amplifies existing disparities rather than democratizing education. The root cause lies in profit-driven AI development: companies prioritize scalable, high-revenue solutions over inclusive design, perpetuating systemic inequities.

In addition, the transformation of the roles of teachers and students poses a significant ethical challenge. With the application of AI in education, the role of teachers may shift from knowledge transmitters to learning facilitators, while students may transition from passive recipients to active explorers (Zhai et al., 2021). This role transformation necessitates profound changes in the education system and may also elicit resistance from both teachers and students.

8. Comparative Analysis Between AI and Humans

Whether in marketing or education, the effectiveness of AI hinges on an understanding of its strengths relative to human capabilities. While AI excels in efficiency and data processing, humans retain unique advantages in emotional intelligence and creativity, and this balance is critical to maximizing its value. This chapter compares AI and humans across key dimensions to clarify their complementary roles.

8.1. Advantages of AI Compared to Humans

8.1.1. Efficiency and Stability

AI possesses the ability to work around the clock, unrestricted by time and space, and adept at handling breaking news in real-time, thereby significantly enhancing the efficiency of news dissemination. For instance, when a non-anthropomorphic female AI virtual anchor delivers news broadcasts using an anthropomorphic voice, viewers perceive the highest level of attraction. Moreover, AI's ability to work continuously reduces the time cost of news broadcasting significantly (Xue et al., 2022). Through automated analysis and human-computer interaction, AI technology can notably boost content production efficiency (Kaplan et al., 2021). The world's first AI synthetic news anchor, jointly launched by Xinhua News Agency and Sogou at the World Internet Conference in 2018, is capable of delivering news in real-time, significantly enhancing the efficiency and timeliness of news dissemination. Furthermore, Japan's virtual streamer Hatsune Miku has also demonstrated the all-weather application capability of AI technology in

the entertainment sector, garnering a substantial audience through virtual concerts and real-time interactions.

AI can also automate repetitive tasks, ensuring efficient execution of marketing activities in areas such as payment processing, logistics tracking, and customer service (Huang and Rust, 2020). However, human broadcasters, due to physiological limitations, require rest and preparation time, making it difficult for them to compete with AI in terms of working hours and efficiency in handling repetitive tasks.

8.1.2. Data Processing Capabilities and Personalized Services

AI, through deep learning and natural language processing technology, can analyze user behavior data in real time, providing personalized recommendations and shopping guidance (Shi, 2024). It can analyze users' purchase history and browsing behavior to recommend products that best meet their needs, thereby improving user conversion rates and satisfaction (Shi, 2024). In Taobao Live, AI analyzes users' browsing history and purchase records to recommend products that may interest them, enhancing their shopping experience and willingness to purchase; short video platforms such as Tiktok also utilize AI for personalized content recommendations, pushing videos that best match users' interests based on their viewing history and interactive behavior, thereby increasing user stickiness and platform activity.

In live-streaming e-commerce, AI can adjust content and interaction methods in real-time based on different users' interests and needs. In an auxiliary human-machine collaboration mode, it can quickly respond to user demands, enhancing users' engagement and willingness to purchase (Zhang et al., 2023). During the "618" shopping festival, JD's AI significantly improved the purchase conversion rate of users by analyzing users' questions and feedback in real-time and adjusting the display order of recommended products. Human hosts often fall short of AI in terms of efficiency and accuracy when dealing with large amounts of user data and providing personalized services.

8.1.3. Cross-Cultural Adaptability

AI can adjust its designed image, designed language, and content strategies according to different cultural backgrounds, thereby attracting audiences from diverse cultural backgrounds. It can enhance the audience's sense of identification and participation by incorporating local cultural elements (such as clothing and language style) (Li, 2024). The South Korean virtual anchor "Rozy" successfully entered the Chinese market by adjusting its designed image and language style, demonstrating AI's adaptability in different cultural contexts. Humans, limited by their own cultural backgrounds and language habits, require longer periods of adaptation and learning in cross-cultural communication, making it difficult for them to adjust quickly to different cultural environments like AI can.

8.1.4. Cost-effectiveness

In terms of operating costs, adopting AI eliminates the need to pay salaries, benefits, and other personnel-related expenses, significantly reducing operating costs. Its use can greatly reduce labor costs while improving the efficiency and quality of content production (Shi, 2024). Xinhua News

Agency's AI news anchors not only reduce labor costs but also enhance the efficiency and quality of news reporting through 24-hour uninterrupted work; e-commerce platforms such as Taobao and JD.com significantly reduce labor costs and improve sales efficiency and user satisfaction by using AI for live-streaming sales promotion. However, employing humans requires paying higher salaries, benefits, and other expenses, resulting in higher labor costs in the long run.

However, despite these clear advantages, AI also has distinct disadvantages compared to humans: it is particularly lacking in areas that rely on emotional connection, creativity, and trust, which remain human strengths.

8.2. The Disadvantages of AI Compared to Humans

8.2.1. Lack of Emotional Resonance

AI exhibits notable deficiencies in emotional expression and empathy. Despite significant advancements in task automation, AI technology still faces challenges in "contextual awareness" and conveying simulated genuine emotions (Davenport et al., 2019). This limitation may lead to reduced consumer trust in AI, especially in scenarios requiring high emotional interaction. AI lacks genuine emotions and personalized expression, and is unable to establish deep connections with viewers through emotional empathy like human anchors. When dealing with complex emotions and unexpected situations, it often appears mechanized and indifferent (Niu, 2024). Shandong TV's AI virtual anchor "Hailan" appears mechanized in emotional expression during news broadcasts, despite proper technical processing, and fails to establish deep emotional connections with viewers.

In contrast, humans are able to establish deep connections with viewers through emotional expression and interactive strategies. For example, Dong Qing from CCTV is able to forge a profound emotional bond with viewers through her delicate emotional expression and interactions, thereby enhancing viewers' willingness to watch and loyalty. By perceiving the on-site environment and audience feedback, humans can adjust their expression in real time, making the content more infectious and attractive (Niu, 2024).

8.2.2. Trust Issues

The audience has a low level of trust in AI. The inherent impression of traditional news anchors negatively moderates the influence that AI's appeal exerts on their willingness to watch. Even if AI possesses high perceived appeal, the audience may still reduce their willingness to watch due to insufficient trust (Xue et al., 2022).

The low trust in AI among audiences can be attributed to epistemological differences. Humans tend to trust information sources they perceive as accountable. However, AI systems, which operate through opaque algorithms, lack clear accountability. When an AI news anchor disseminates misinformation, responsibility is diffused among developers, companies, and users (Xue et al., 2022). In contrast, human broadcasters build trust through long-term reputational stakes, such as career consequences for inaccuracies. This disparity erodes trust in institutional information systems, as audiences' distrust in AI-delivered news or educational content weakens the systems designed to inform and educate.

Humans, through long-term professional experience and genuine interaction, can earn the trust and recognition of their audience. Their adaptability in complex situations and proficiency in deep language expression make them more trusted among viewers (Xiao and Duan, 2024).

8.2.3. Technical Dependency

AI relies heavily on technical support and a stable network environment. Technical failures or network delays can directly affect AI's performance, thereby reducing user experience (Shi, 2024). However, humans can continue to complete tasks through their adaptability and creativity in the event of technical failures or unexpected situations. When facing breaking news or technical issues, human anchors can flexibly adjust content and expression methods to ensure the smooth progress of the program (Xiao and Duan, 2024).

8.2.4. Lack of Creativity

AI has limitations in the production of creative content. It primarily relies on preset models and algorithms, lacking the flexibility and creativity of human anchors. When dealing with breaking news or complex situations, AI often fails to engage in deep thinking and respond flexibly, as human anchors do (Xiao and Duan, 2024).

The creative limitations of AI stem from its dependence on statistical pattern-matching rather than original thought. Generative AI tools, such as content creators, recombine existing data but cannot conceptualize novel ideas beyond their training datasets (Hartmann et al., 2025). For instance, an AI generating lesson plans will not "invent" new pedagogical approaches—only refine existing ones. This hinders innovation in education and marketing, where breakthroughs often arise from challenging established norms. Socially, over-reliance on AI creativity could homogenize cultural production, diminishing diversity in thought and expression.

Human streamers are able to provide more attractive and impactful content through deep thinking and creative expression. Through emotional expression and cultural accumulation, they are better able to meet the emotional needs and aesthetic expectations of their audiences (Niu, 2024).

8.2.5. Summary

AI and humans exhibit significant differences in multiple key areas, primarily in terms of work capability, emotional interaction, content creation, cultural adaptation, cost-effectiveness, and dependence on technology. By comparing these areas, one can clearly see the respective strengths and limitations of both. The specific comparisons are as follows:

Table 1. Comparison of Advantages and Disadvantages Between AI and Humans

Comparison dimension	AI advantages	AI disadvantages	Human advantages	Human disadvantages
Emotion and interaction	No emotional fluctuations, stable output of standardized content	Emotional expression is mechanical, lacking empathy and deep	Senses audience emotions, conveys genuine feelings via tone and body	Mood can be influenced by personal state, leading to fluctuations that may

	(Davenport et al., 2019; Niu, 2024)	audience connection (Niu, 2024)	language, and enhances resonance (Niu, 2024)	affect output stability (Niu, 2024)
Work efficiency and duration	Works 24 hours non-stop, operates without time or space restrictions, and is suitable for high-frequency, repetitive tasks (Xue et al., 2022; Kaplan et al., 2021)	Lacks the ability to autonomously adjust rest periods, relies on technical maintenance, work is directly interrupted when there is a malfunction (Shi, 2024)	Can flexibly respond to unexpected tasks and adjust the pace according to the on-site situation (Xiao and Duan, 2024)	Due to physical and time constraints, it is impossible to work around the clock, and efficiency in handling repetitive tasks is low (Huang and Rust, 2020)
Personalized service	Leveraging data analysis, accurately push content/products that meet user needs, and adjust strategies in real-time (Shi, 2024)	Relies on preset algorithms, weak response capability for non-standardized demands (Davenport et al., 2019)	Personalized interactions can be provided with more warmth through human observation and experience (Niu, 2024)	Struggling to handle large-scale user data, the precision of personalized recommendations is lower than that of AI (Shi, 2024)
Creativity and adaptability	Can quickly generate standardized content, reducing repetitive creation costs (Hartmann et al., 2025)	Lacks independent thinking and poor adaptability when facing unexpected situations such as live stream failures or unexpected questions (Xiao and Duan, 2024)	Possesses independent thinking ability, can creatively design content, and flexibly handle unexpected crises (Niu, 2024)	Creativity is limited by personal experience and state of mind, which may lead to restricted ideas (Xiao and Duan, 2024)
Cross-cultural adaptation	Can quickly adjust language, image, content strategies, and integrate local cultural elements (Li, 2024)	Limited understanding of the deep cultural connotations such as customs and metaphors, leading to 'cultural misalignment' (Li, 2024)	Through long-term learning, one can understand cultural nuances and convey a more authentic sense of cultural identity (Li, 2024)	Cross-cultural adaptation requires long-term accumulation, slow adjustment speed, and high costs (Li, 2024)
Costs and operations	No salaries, benefits, or other human resource costs; cost-	Early-stage technology development and	No need for high technical investment, suitable	High labor costs such as salaries, training, and management create

	effective for long-term use (Shi, 2024)	equipment maintenance costs are high, relying on professional team support (Shi, 2024)	for small-scale, personalized scenarios (Shi, 2024)	significant cost pressure when applied on a large scale (Shi, 2024)
Trustworthiness and authority	Suitable for transmitting standardized, data-type content, with strong consistency in output (Xue et al., 2022)	Audience trust levels are relatively low, especially for major events and emotional content, where recognition of authority is weak (Xue et al., 2022)	Long-term professional accumulation forms a professional image, resulting in high trustworthiness in interpreting complex content and reporting major events (Xiao and Duan, 2024)	Personal reputation may affect audience trust in content (Xiao and Duan, 2024)
Dependence on technology	Technological iteration can quickly enhance capabilities (Shi, 2024)	Highly dependent on the network, hardware, and algorithms, failures directly affect work, leading to a decline in user experience (Shi, 2024)	Low dependence on technology, equipment failures can be remedied manually (Xiao and Duan, 2024)	The ability to use technical tools is limited by personal skills, which may affect efficiency (Selwyn, 2022)

9. Prospects for Future AI Research

Based on the quantitative and qualitative analysis results of AI in marketing literature, this article proposes the technological development and research prospects of AI in the education industry.

Firstly, technical optimization and intelligent enhancement are crucial for the application of AI in the field of education. How can we enhance the reliability and stability of AI in understanding students' learning progress and providing personalized feedback? Can we improve natural language processing and sentiment analysis technology to enable AI to more accurately capture students' learning needs? Currently, AI still has limitations in these areas. Through technological advancements, AI can more precisely understand students' learning status and provide more targeted guidance (Selwyn, 2022).

Secondly, educational equity and resource allocation are issues that cannot be ignored in AI applications. Will the introduction of AI exacerbate the inequality in educational resource allocation, leading to further marginalization of students from disadvantaged groups? Schools and regions with abundant resources are more likely to access advanced AI technology, while regions with scarce resources may struggle to keep up with this trend. Can policy support and technology

sharing be utilized to enable regions with scarce resources to equally access AI? How can low-cost and easy-to-operate AI solutions be designed to accommodate the educational needs of different regions? These issues require in-depth research to ensure that the popularization of AI does not further marginalize students from disadvantaged groups (Selwyn, 2022).

Furthermore, the transformation of teacher and student roles poses new challenges brought about by AI applications. Will AI completely replace human teachers, or will it need to form a complementary relationship with them? Will the shift of teachers from knowledge imparters to learning guides lead to profound changes in the education system? Will the transformation of students from passive recipients to active explorers have a positive impact on educational outcomes? Future research can explore the impact of this role shift on the education system and how to help teachers and students adapt to this change. Will the overuse of AI weaken humanistic values in education, making the educational process more mechanized? How can we balance technology and humanistic care in the application of AI to avoid "dehumanization" in the educational process? Will AI ignore students' emotional and social needs, thereby affecting the overall quality of education? Future research can explore how to retain humanistic care in education in the application of AI. In the future, AI can collaborate with human teachers, with AI responsible for knowledge impartation and data processing tasks, while human teachers focus on emotional support and social interaction, thus achieving a balance in education (Zhai et al., 2021).

The synergy between human teachers and AI is pivotal to the future development of education. The introduction of AI does not signify the replacement of human teachers, but rather provides a new tool for education. Can the synergy between human teachers and AI maximize educational outcomes? Can AI handle repetitive, data-driven tasks, while human teachers focus on solving complex problems and providing emotional support? How can a blended teaching model be designed to enable both AI and human teachers to jointly enhance the quality of education? This collaborative model may become the mainstream trend in future education (Zhai et al., 2021).

Lastly, the innovation and transformation of educational models present new opportunities brought about by AI applications. Can AI drive the innovation of educational models, such as achieving precision education and personalized learning? Can AI support diverse learning methods, such as flipped classrooms and project-based learning? Will the application of AI fundamentally change traditional teaching methods and learning environments? In the future, we can explore how to utilize AI to achieve these innovations, thereby enhancing learning efficiency and educational quality.

In summary, the application of AI in the field of education holds significant potential while confronting challenges. Future research needs to delve into areas such as technology optimization, educational equity, emotional socialization, and synergistic collaboration between human teachers and AI. By balancing technology and humanistic care, equity and efficiency, AI is expected to become an important driving force for educational transformation, providing students with a more personalized, inclusive, and efficient educational experience. Ultimately, the ideal direction for the joint development of AI and education is the synergy, rather than opposition, between human teachers and AI.

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