

The Role of Marketing Automation Platforms and AI Chatbots in Enhancing the Effectiveness of Digital Marketing Strategies in E-commerce: A Socio-Technical Perspective

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ABSTRACT

Rapid advances in technology, particularly Artificial Intelligence (AI), have catalyzed a revolution in digital marketing operations within the e-commerce sector. Modern consumer engagement relies heavily on digital infrastructure that offers personalized experiences and accelerated response times. Consequently, this study investigates the strategic role of marketing automation systems and AI-driven chatbots as socio-technical drivers to enhance the efficacy of digital marketing initiatives. Adopting an interpretive qualitative literature review methodology, this study regularly evaluates academic work published between 2021 and 2026. The analysis identifies four critical dimensions of digital marketing: automation as a meaning-making framework, chatbots as relational touchpoints, the necessity of human-AI integration, and ethical oversight as a prerequisite for sustainability. This study offers a conceptual contribution by positioning AI not merely as a tool for operational speed but as a transformative socio-technical instrument that fosters a more value-oriented and accountable e-commerce environment. The findings demonstrate that marketing success is contingent on more than just technical processes; it requires a balanced optimization of algorithmic functions and human managerial reflexivity.

Keywords: Marketing Automation Platform, Chatbot AI, E-commerce, Socio-Technical, Marketing Effectiveness

INTRODUCTION

The development of digital technology, particularly artificial intelligence (AI), has significantly changed digital marketing practices in the modern era. This requires e-commerce players to adapt their strategies to dynamic, data-driven consumer expectations (Kamil, I., & Miranda, 2024)(Purnama, N. I., Putri, L. P., & Bahagia, 2021). Today, e-commerce is no longer simply a transaction tool but rather an interactive space for building personal relationships with customers. In this context, marketing automation platforms and AI chatbots are key to increasing the efficiency and speed of response to market needs (Verma et al., 2021)(Anisa et al., 2025). These technologies enable companies to gain a deeper understanding of consumer behavior through large-scale data analysis and integrated campaign management (Oktaviani & Chairun Nisa, 2024).

However, much previous research has focused solely on technical aspects, often neglecting the sociological aspects of human-technology interactions (Trissetianto, A. C., & Ali, 2025). A socio-technical systems perspective suggests that the success of digital marketing depends heavily on how humans interpret technology within a specific social context (Mulyantomo, E., Sulistyawati, A. I., & Triyani, 2021)(Nugroho, R., & Mujanah, 2023). Furthermore, issues of digital trust, data ethics, and information security pose significant challenges to the use of AI (Kurnia, I., & Martinelli, 2021). Data transparency is a crucial factor in maintaining customer loyalty and trust (Sahabuddin, R., Arif, H. M., Lestari, W., Alviolin, E., & Dzaky, 2024).

Based on this background, this study focuses on analyzing the integration between AI technology and the human dimension through several key research questions. This research aims to answer the role of marketing automation platforms and AI chatbots in increasing the effectiveness of marketing strategies in the e-commerce ecosystem, as well as how the use of these technologies affects customer trust and engagement. Furthermore, it examines how the socio-technical dimension, including the role of humans and ethics, influences the

successful implementation of AI technologies. In line with this formulation, the purpose of this research is to analyze the contribution of marketing automation and AI chatbots in optimizing the performance of digital promotions while evaluating their impact on consumer loyalty and trust in electronic transactions. Finally, this study is expected to explain the urgency of synergy between technical and sociological aspects in creating a sustainable digital marketing strategy.

LITERATURE REVIEW

Socio-Technical Systems Theory

Automation and Artificial Intelligence (AI) assist humans in various business activities, particularly digital marketing (Izzatul Mula & Auliya Ristiani, 2025). From a socio-technical perspective, technology is seen not only as a tool but also as a factor driving change in business interactions and customer relationships. Mulyantomo et al. (2021) show that technology is a trigger for business transformation, while Nugroho and Mujanah (2023) explain that social media is changing the way MSMEs interact with customers more dynamically.

In the context of e-commerce, digitalization encourages businesses to adapt to social and economic changes (Kamil, I., & Miranda, 2024). Digital marketing has also evolved from a product-centric approach to emphasizing customer relationships. Khairunnisa (2022) states that the marketing mix concept has evolved by adding the element of people, emphasizing the importance of human interaction in marketing. Therefore, effective digital marketing requires a balance between technical and social aspects (Khairunnisa, 2022).

Interpretative Paradigm

The interpretive paradigm is used to understand how digital marketing technologies, such as marketing automation platforms and AI chatbots, help companies make strategic decisions. AI technology enables companies to understand consumer behavior through more accurate data analyses (Souza et al., 2025). Furthermore, AI helps improve the effectiveness of marketing campaigns through automation and predictive analytics (Oktaviani & Chairun Nisa, 2024).

The use of automation features, such as content scheduling and cross-platform management, can also increase promotional reach (Prasetyo, J. A., & Rachmadany, 2026). However, technology cannot work alone, as it still requires human input to interpret data and determine marketing strategies that align with consumer requirements. Marketing strategies such as Segmenting, Targeting, Positioning (STP) also help companies define target markets and position their businesses (Al Azmi, F. K., & Humaeriyah, 2026).

Digital Trust Theory and Information Ethics

Digital trust theory explains that consumer trust is built through technological capabilities, transparency of data usage, and quality of digital interactions. In e-commerce, trust is a crucial factor because consumers often worry about the security of online transactions (Sahabuddin, R., Arif, H. M., Lestari, W., Alviolin, E., & Dzaky, 2024).

Furthermore, information ethics relates to a company's responsibility for managing customer data. Kurnia and Martinelli (2021) explain that e-commerce transactions carry risks related to data security and consumer protection, necessitating compliance with consumer protection regulations. Implementing ethics in digital marketing is crucial to prevent data misuse and maintain transparency in technology use (Nandavita et al., 2025).

Implementing ethics and transparency can increase consumer trust in companies. Sahabuddin et al. (2024) showed that digital marketing ethics positively impacts consumer trust, especially if the company is transparent in providing information to customers.

Based on socio-technical systems theory, the interpretive paradigm, and digital trust theory, this study forms a theoretical framework that is used as the basis for research analysis.

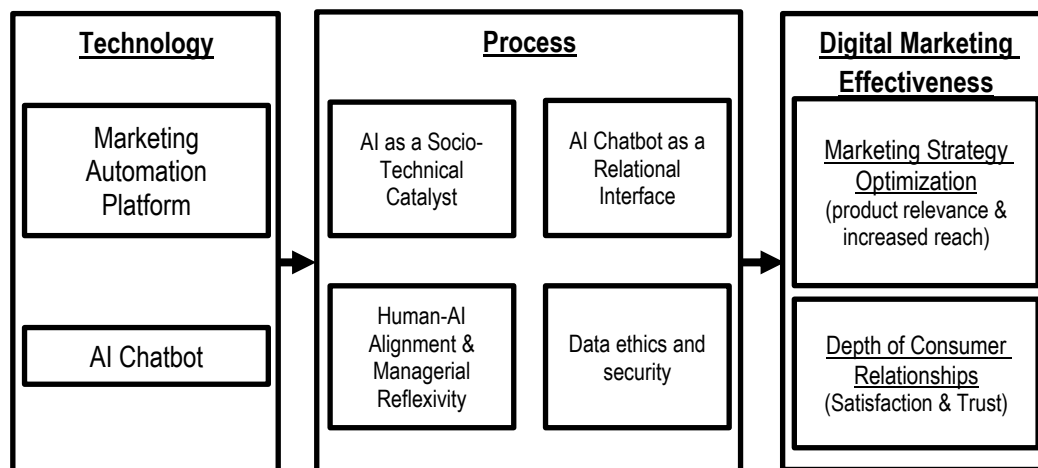


Figure 1. Research Concept Framework

This theoretical framework illustrates the relationship between marketing technology and the human touch, which can enhance the effectiveness of digital marketing. Marketing automation platforms and AI chatbots are technologies used by e-commerce in digital marketing, where four interacting pillars contribute to effective digital marketing. This entire process ultimately leads to the company's desired outcome: digital marketing effectiveness, which can be assessed through the optimization of marketing strategies and the depth of customer relationships.

To support the theoretical study, the following is a summary of several previous studies that are relevant to the research topic.

Writer	Year	Research Focus	Findings/Relevance
Azzah et al.	2026	Chatbot and relational experiences	Chatbot in the aspect of "Conversational Humanization" which is designed to imitate human communication patterns to create relational connections.
Haleem et al.	2022	Human-AI harmony	The use of AI technology as a sales tool, payment processing and engagement management to improve user experience.
Kamil & Miranda	2024	Socio-technical perspective	E-commerce become a trigger for MSMEs to adapt to changes in social and economic behavior in the new normal era.
Khairunnisa	2022	Socio-technical perspective	Changes to the conventional marketing mix method (marketing mix) 4P into broader elements with the addition of people
Kurnia & Martinelli	2021	Data ethics and security	Focusing on regulatory aspects, transaction ethics, and security risks in the digital ecosystem.
Maskur & Afandi	2024	Chatbot and relational experiences	The use of chatbot applications as virtual customer service that is capable of conducting interactive conversations.
Nandavita et al.	2025	Data ethics and security	The application of ethics is key to ensuring transparency, honesty, and responsibility in marketing strategies.
Nugroho & Mujanah	2023	Socio-technical perspective	Social media as a catalyst that triggers a transformation in the way MSMEs in Surabaya interact with customers
Oktaviani et	2024	The Role of AI as a	AI helps in improving the efficiency

Writer	Year	Research Focus	Findings/Relevance
al.		Socio-Technical Catalyst	and effectiveness of marketing campaigns through automation and predictive analytics, which can increase conversions and sales.
Prasetyo & Rachmadany	2026	Socio-technical perspective	Use of automatic content scheduling and cross-platform management features to significantly increase promotional reach.
Putra & Asmunin	2024	<i>Chatbot</i> and relational experiences	<i>Chatbot</i> functions as a communication medium that simulates human conversation.
Sahabuddin et al.	2024	Data ethics and security	The role of digital marketing ethics in building consumer trust in e-commerce
Ronaldo et al	2022	Socio-technical perspective	AI as a tool that accelerates companies' ability to understand and predict consumer behavior at scale
Smith et al.	2025	Human-AI harmony	Managerial reflexivity and alignment between technology and Human Resources (HR).
Trissetianto & Ali	2025	Human-AI harmony	AI not only improves operational efficiency but also creates stronger relationships between companies and customers.

RESEARCH METHOD

This research uses a qualitative approach with a literature review to explore the role of marketing automation platforms and AI chatbots in increasing the effectiveness of digital marketing strategies in the e-commerce industry. Data were obtained from secondary sources through academic research literature from 2021–2026. The literature was identified through a systematic search of major academic databases, including Scopus, Web of Science, and Google Scholar, using keywords such as “marketing automation,” “AI chatbot,” “e-commerce strategy,” and “digital marketing effectiveness.” This approach ensured that the synthesis was based on high-quality validated scholarly discourse representing diverse global and regional e-commerce contexts. Thematic analysis was used to systematically identify patterns and meanings emerging from the various literature sources (Braun, V., & Clarke, 2006). The analysis process involved three systematic stages: initial coding of findings and concepts from the selected articles, development of descriptive themes that capture similarities and patterns across the literature, and generation of analytical themes that go beyond the original data to provide new theoretical insights. This rigorous process enabled the research to categorize the complex landscape of AI in e-commerce into four core themes addressed in this study: strategic meaning-making of technology as socio-technical, relational engagement, human-AI alignment, and ethical governance.

RESULTS AND DISCUSSIONS

Based on the analysis of the selected literature, this study identified four main themes that explain the role of marketing automation platforms and AI chatbots in increasing the effectiveness of digital marketing strategies in the e-commerce sector.

The Strategic Importance of Using AI Technology

The transformation of AI technology has brought about significant changes in digital marketing, particularly in the e-commerce sector. Companies are now leveraging technology to align their strategies with increasingly digital and dynamic consumer behaviorx. In this context, e-commerce serves not only as a transaction medium but also as a means of building relationships with customers (Kamil, I., & Miranda, 2024)(Purnama, N. I., Putri, L. P., & Bahagia, 2021). Automation platforms and AI chatbots help improve communication efficiency and understanding of consumer needs through data analysis (Verma et al., 2021). However, AI still requires human intervention to interpret data to ensure that decisions are aligned with market conditions. This aligns with socio-technical systems theory, which emphasizes the balance between

technological and human aspects (Mulyantomo, E., Sulistyawati, A. I., & Triyani, 2021)(Nugroho, R., & Mujanah, 2023).

AI Technology as a Relational Interface

In digital marketing, AI chatbots are used to facilitate faster and more efficient interactions with consumers. Chatbots function as a communication medium that mimics human conversation to build customer relationships (Putra, F. P. E., Asmunin, S., & Kom, 2024). Their effectiveness depends on how the chatbot creates a comfortable communication experience through the concept of conversational humanization (Makarim et al., 2025). Furthermore, the competence and credibility of chatbots significantly influence user trust levels (Mutuara, M. R. A., Hasman, H. C. P., Alfito, & Darmansyah, 2024). The use of Natural Language Processing (NLP) technology also helps create more natural communication (Sari, N. P., & Putra, 2024).

Integration of Technology and Human Role in Digital Marketing

AI technology helps companies process data and develop strategies effectively but still requires human input to understand the market context. The interpretive paradigm explains that technology acquires meaning through human use. AI has been shown to facilitate the implementation of Segmenting, Targeting, and Positioning (STP) strategies and increase marketing efficiency (Al Azmi, F. K., & Humaeriyah, 2026)(Oktaviani & Chairun Nisa, 2024). Furthermore, consumer trust is built through system competence, transparency, and data security (Sahabuddin, R., Arif, H. M., Lestari, W., Alviolin, E., & Dzaky, 2024).

Data Ethics and Security as Determinants of Success

The use of AI poses challenges related to privacy and information security issues. Companies must maintain transparency in customer data management to minimize risks (Kurnia, I., & Martinelli, 2021). In e-commerce, data security has a significant impact on consumer trust. Implementing digital marketing ethics helps companies uphold the principles of honesty and responsibility (Nandavita et al., 2025). Furthermore, information transparency has been shown to increase consumer trust in companies (Sahabuddin, R., Arif, H. M., Lestari, W., Alviolin, E., & Dzaky, 2024).

Synthesis of Discussion

Overall, the effectiveness of a digital marketing strategy is determined by the integration of AI technology, human input, and trust and ethics (Mulyantomo, E., Sulistyawati, A. I., & Triyani, 2021)(Nugroho, R., & Mujanah, 2023). Technology serves as a tool for driving efficiency, but its success depends on its use in a social context (Kurnia, I., & Martinelli, 2021)(Sahabuddin, R., Arif, H. M., Lestari, W., Alviolin, E., & Dzaky, 2024).

CONCLUSION

This study concludes that the integration of marketing automation platforms and artificial intelligence (AI)-based chatbots significantly increases the effectiveness of digital strategies in the e-commerce sector, especially in optimizing efficiency, personalization, and the depth of customer interactions. However, the success of this technology is not self-sufficient, but rather relies heavily on human capabilities in interpreting data and managing strategies contextually, and is influenced by variables such as trust, ethical compliance, and data security. Consequently, practitioners must align system sophistication with sociological aspects and consumer protection to build sustainable business models. For future development, empirical studies using case studies across various industrial sectors are recommended to deepen the understanding of more comprehensive AI implementation.

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REFERENCES

- Ifanka, A., & Afriana, RA (2023). PRODUCT QUALITY IN INCREASING CUSTOMER SATISFACTION OF WARDAH BANJARMASIN BRANCH COSMETIC PRODUCTS (CASE STUDY AT THE GUARDIAN Q-MALL BANJARBARU SHOP). *Economic Dynamics: Journal of Economics and Business*, 16(1),331-342.
- "Ramdani, MD, & Rosita, N. (2022). The Influence of Service Quality on Consumer Satisfaction to Increase Customer Loyalty from an Islamic Economic Perspective (Case Study of Consumers of Ms Glow Skincare Products) . *Journal of Sharia Economics*, 1(2), 124-136. "

- Ferawati, R. (2018). Sustainable development goals in Indonesia: Measurement and agenda for realizing them from an Islamic economic perspective. *Contextualita* , 33 (02), 143-167.
- Masiga, R. (2023). THE INFLUENCE OF PERCEPTIONS OF BENEFITS, EASE, AND SPEED OF TRANSACTIONS ON CUSTOMER DECISIONS TO USE MOBILE BANKING FACILITIES AT INDONESIA SHARIA BANK (BSI). *Journal of Management and Islamic Finance*, 3 (1), 50-61.
- Basuki, FR, Fridiyanto, F., & Suryanti, K. (2021). Environmental Conservation Based on Local Wisdom in Lubuk Beringin from the Perspective of Religion, Management and Science. *Contextualita* , 36 (01), 89-108.
- Indrawan, B., Nurmita, N., Nengsih, TA, Utami, W., Nasrudin, D., Tanti, T., ... & Santoso, P. (2022). The influence of attitude and need for cognition on student's purchase intention behavior on halal food: schools clustering perspective . *Indonesian Journal of Halal Research* , 4 (1), 26-34.
- Usdeldi, U., Nasir, M.R., & Ahsan, M. (2022). The Mediate Effect of Sharia Compliance on the Performance of Islamic Banking in Indonesia . *Journal of Finance and Banking* , 26 (1), 247- 264.
- Addiarrahman, IY (2022). Halal industry in Javanese culture: Yogyakarta regional government policy in obtaining its economic values. *Inference* , 16 (1), 151-174.
- Hardi, EA (2021). Muslim youth and philanthropic activism . *Epistemé: Journal of Islamic Science Development* , 16 (01), 15-29.
- Nengsih, T. A., Abduh, M., Ladini, U., & Mubarak, F. (2023). The impact of Islamic financial development, GDP, and population on environmental quality in Indonesia. *International Journal of Energy Economics and Policy*, 13(1), 7-13.
- Addiarrahman, A. (2018). Ekonomi Kemakmuran Bersama: Indonesian Islamic Economic Thought of Kahrudin Yunus. *Shirka4h: Journal of Economics and Business*, 3(3).
- Addiarrahman, A., & Yanti, I. (2020). From Idealism to Pragmatism: Paradigm Shift in the Development of Sharia Economic Law in Indonesia . *Al-Manahij: Journal of Islamic Legal Studies* , 14 (2), 191-210.