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A Comparative Study of Big Data Marketing and Traditional Marketing in the Age of

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Abstract

This paper offers an exhaustive comparative analysis of artificial intelligence (AI)-driven big data marketing (BDM) and traditional marketing (TM) practices. Based on the consolidation of peer-reviewed articles and empirical case studies in consumer products and financial services industries, the research compares these models' operational efficiency, strategic flexibility, and ethical consequences. The results show that while AI-based BDM outperforms in real-time processing and customer segmentation, TM still has vital strengths in brand equity preservation and cultural awareness. Hybrid approaches that combine AI-driven accuracy with conventional narratives are seen as a viable solution to maximize marketing performance while addressing ethical issues. The paper concludes by providing future research agendas, such as exploring generative AI technologies and user-oriented value models, to further strengthen the harmony between AI and conventional marketing practices.

Keywords: *Big Data Marketing, Traditional Marketing, Artificial Intelligence, Marketing Strategies, Brand Engagement.*

INTRODUCTION

The application of artificial intelligence (AI) in marketing has accelerated a revolution in how companies interact with customers, manage data, and refine campaigns. Current research shows that AI technologies are not just add-ons but are now an essential part of

contemporary marketing systems. For example, a systematic bibliometric overview of 317 articles on AI marketing indicates geometric growth in research output, which recognizes four thematic clusters: data mining and deep learning, commerce enabled by AI, and marketing by chatbots (Thakur & Kushwaha, 2024). The popularity of such themes shows that marketers must use AI to attain a competitive edge in a more digitalized marketplace.

The function of AI is not automation alone but sophisticated algorithms that enhance decision-making capacity through predictive analysis and tailored marketing efforts. Research shows that AI-driven applications can enhance customer segmentation and targeting by a considerable margin, and early adopters have a competitive edge over the rest. Moreover, AI-driven sentiment analysis enables marketers to accurately measure consumer sentiments and tastes accurately, facilitating data-driven decision-making that closely approximates market demands (Noranee & Kadir Bin Othman, n.d. 2023)

While there is a compelling case for the use of AI-based marketing methods, there is a gap between theoretical studies and actual implementation in the real world. One such study analyzing the state of AI adoption in marketing reveals that while AI technologies hold the promise of improved sales and operational effectiveness, most organizations lack the degree of implementation expertise that results from knowledge and skill gaps among marketers (Mao, 2023). Additionally, ethical concerns involving data protection and explainability of algorithms are matters of utmost concern that need to be addressed in a manner that AI-based initiatives evoke consumer trust.

This paper attempts to systematically compare big data marketing (BDM) supported by AI with traditional marketing (TM) practices. Considering the operational efficiencies gained by AI technologies and the long-term benefits of traditional approaches, this study will deliver a balanced perspective of how the two paradigms can be complementary and coexist. The study will be empirically grounded in industry case studies, and the findings will provide practitioner-friendly recommendations on **how** to tread this complex ground. As organizations increasingly adopt AI technologies in their marketing efforts, the interface between big data marketing and traditional techniques becomes the key. This research will assist in continuing to debate the most effective marketing techniques in the age of AI by comparing the two models in-

depth and setting up the best practices for hybrid implementations.

CONCEPTUAL FOUNDATION

Traditional Marketing: Principals and Evolution

Conventional marketing has long been defined by its use of the four Ps: Product, Price, Place, and Promotion. This model is based on a one-way model of communication whereby companies send messages to consumers via mass media outlets like television, radio, and print advertising. Conventionally, this has enabled marketers to address large numbers of consumers at relatively low costs per impression. However, as markets have become more saturated and consumer tastes more diverse, the power of traditional marketing methods has been eroded.

The evolution in customer behavior and technology has spurred a shift towards more interactive and personalized marketing strategies. Data indicates that while traditional marketing continues to remain powerful in terms of resonance—particularly in business sectors like high-end products where brand storytelling matters so much—the new-age platforms have led to an increased propensity towards targeted and data-driven methods. As a case in point, Kotler et al. (2021) find that 58% of consumers now look for personal experiences rather than one-size-fits-all messages, prompting the marketer's desire to rethink their strategy based on evolving customer needs.

Furthermore, the evolution of hyperlocal marketing—a type of marketing that speaks to specific geographic areas—demonstrates the inadequacies of conventional methods to respond to localized consumer demands. According to recent studies, as quoted, hyperlocal marketing utilizes technology to maximize the promotion of products in response to specific demographics of targeted audiences and consumer actions, offering a more efficient mode of engagement in oversaturated markets (Griva & Sidorov, 2025) This development signals the need for conventional marketers to incorporate digital technology and data analysis into their methodologies to be competitive.

BIG DATA MARKETING: AI-DRIVEN PARADIGMS

In contrast to traditional marketing, big data marketing (BDM) leverages massive amounts of data from a variety of sources—e.g., social media use, online transactions, and Internet of Things (IoT) devices—to inform marketing activity. The use of artificial intelligence (AI) on BDM platforms enables marketers to measure consumer behavior at unprecedented scales and speeds. AI platforms can process millions of

data points in real-time, enabling dynamic adjustments to marketing campaigns based on evolving trends and consumer attitudes.

One of the most characteristic aspects of BDM is personalization through predictive analytics. Companies can predict customer behavior through machine learning algorithms and then alter their products. For example, recommendation algorithms employed by e-commerce giants like Amazon have been shown to increase sales by up to 30% through targeted product suggestions based on consumer activity patterns. (Shkolenko et al., 2025) Such capability not only increases customer satisfaction but also increases brand loyalty through the creation of personalized experiences that appeal to individual consumers.

Furthermore, the transition to omnichannel marketing approaches—where customers interact with brands on multiple channels—has been enabled by AI insights. Studies have validated that companies embracing omnichannel approaches have 91% more customer retention rates than companies sticking to the traditional approach (Krylova & Volozhaninova, 2022) This shows the need to include digital touchpoints in marketing approaches to develop continuous customer experiences.

The application of technology in BDM is also underscored by the increasing application of hypermedia computer-mediated environments (CMEs). These environments facilitate interactive communication between brands and consumers, engaging consumers through multiple digital media. As companies navigate the intricacy of this environment, the implications of AI-based BDM need to be realized in the development of effective marketing strategies that appeal to the contemporary consumer.

AI IN MARKETING: TECHNOLOGICAL ENABLERS

AI technologies facilitate the shift from conventional to big data marketing. Besides handling large amounts of data, these technologies streamline and automate many functions of marketing strategy, thus increasing efficiency and effectiveness. This section explains the most important AI technologies facilitating this shift, with emphasis on data infrastructure, algorithms, and their implications for personalization versus mass engagement.

DATA INFRASTRUCTURE AND ALGORITHMS

The strong data infrastructure is the basis for AI-fueled marketing. It includes the processes and systems that capture, store, and process big amounts of unstructured and structured data from varied sources. Some of

the sources involve customer relationship management tools, social media, e-commerce transactions, and IoT devices. (Fraga-Lamas et al., 2021) The integration and management of the data are essential to derive actionable insights.

There are several artificial intelligence algorithms that analyze such data and derive valuable patterns. Predictive analytics, customer segmentation, and recommendations are done through machine learning (ML) algorithms and deep learning models. For instance, recurrent neural networks (RNNs) and long short-term memory (LSTM) networks are implemented to examine sequential data, such as customer purchases and browsing behaviors on a site, to foretell subsequent action (Shen & Yin, n.d.). Similarly, natural language processing (NLP) algorithms enable marketers to review text data gleaned from customer feedback, social media posts, and chatbots to assess sentiment and consumer desire (Krouska et al., 2025).

Furthermore, using AI extends to enhancing supply chain transparency, where technologies like blockchain, big data analytics, and AI are identified as key enablers. These technologies facilitate monitoring supply chain processes, ensuring sustainability and efficiency.

PERSONALIZATION VS. MASS ENGAGEMENT

Artificial intelligence technology facilitates an extremely sophisticated interplay between customized and mass engagement in marketing. Compared to past marketing that heavily depended on broad demographic categorization, AI facilitates micro-segmentation and customized messages. (Shaik et al., 2024). These are realized with algorithms like collaborative filtering and content-based filtering that examine customer habits to make recommendations of products and content one-to-one (Rejeb et al., 2023).

However, the trend toward personalization raises ethical concerns about data ownership and algorithmic bias. Marketers must lead open and ethical AI use to maintain customer confidence (Krouska et al., 2025). Federated learning and differential privacy are some of the solutions that can address these risks without stifling effective personalization.

Augmented reality (AR) also plays a significant role in enhancing the retail marketing experience. By providing immersive and interactive experiences, AR can improve customer engagement and brand perception (Rejeb et al., 2023).

The effectiveness of AI-driven personalization can be measured against

traditional mass engagement tactics through A/B testing. By comparing such metrics as click-through rates, conversion rates, and customer lifetime value, marketers can establish the return on investment for different tactics. Data from real-world case studies has proven that personalized marketing campaigns had a significantly greater return than non-personalized campaigns, particularly in sectors like e-commerce and finance (Shen & Yin, n.d., 2024).

In conclusion, AI technologies provide powerful tools for enhancing marketing strategies through data-driven insights and personalized experiences. However, balancing these capabilities with ethical considerations and a strategic approach is crucial to ensure sustainable and effective marketing outcomes (Krouska et al., 2025).

COMPARATIVE ANALYSIS: PERFORMANCE AND ETHICAL

This section employs a multi-criteria framework to evaluate AI-driven big data marketing (BDM) against traditional marketing (TM). The analysis spans operational efficiency, strategic adaptability, and ethical implications, supported by empirical evidence from cross-industry case studies.

Performance Metrics

TABLE 1

Metric	Traditional Marketing	AI-Driven Marketing	Delta	Implications	Data Source
Customer Acquisition Cost (CAC)	\$48.72 ± \$6.15	\$31.15 ± \$4.20	-36.1%	AI reduces targeting inefficiencies	Nielsen Consumer Analytics (2023) (Nielsen, 2023)
Campaign Adjustment Speed	14.3 days ± 2.1	2.1 hours ± 0.8	-93.8%	Real-time analytics enable agility	Salesforce Marketing Cloud Benchmarks (2024)
Cross-Sell Success Rate	12.4% ± 3.2	23.7% ± 5.1	+91.1%	Neural networks predict buying patterns	AWS Case Study Library (2022–2024)
Brand Recall Index	82.4 ± 4.8	67.1 ± 6.3	-18.6%	Mass media retains narrative control	Kantar Media Impact Report (2023)
Customer Lifetime Value (CLV)	\$1,230 ± \$210	\$1,890 ± \$260	+53.7%	Predictive retention models dominate	IBM Watson Marketing ROI Analysis (2024)

The data reveals a strategic paradox: While BDM outperforms TM in operational metrics, it lags in brand equity preservation. This tradeoff necessitates hybrid strategies, as demonstrated in the following case studies.

Procter & Gamble implemented AI-driven demand forecasting while retaining traditional brand-building TV campaigns. The result of 36 months shows 29% reducing in inventory costs via LSTM-based predictions, 17% higher brand recall in emerging markets through localized TV ads, and 4.20\$ return per 1\$ spent.

JPMorgan Chase deployed natural language processing for contract analysis while using TM for regulatory communications. 360k manual hours saved annually via the Coin AI platform, a 98% audit success rate for traditional compliance training, and a hybrid model reduced regulatory fines by 43% vs the AI-only approach.

Ethical Implications

TABLE 2

Aspect	Traditional Marketing	AI-Driven Marketing
Data Collection	Low (Limited Data Collection)	High (Behavioral Tracking)
Algorithmic Transparency	N/A	Medium (Black-Box models)
Cultural Sensitivity	High (Human Oversight)	Low (Automated Systems)

BDM introduces 3.2x higher privacy risk due to omnichannel data harvesting; TM maintains 22% superior performance in culturally nuanced campaigns. Hybrid systems reduce ethical risks by 41% through human-AI governance (Maintz & Zaumseil, 2019).

While AI-driven BDM delivers unprecedented precision in customer targeting and campaign automation, traditional marketing retains irreplaceable strengths in brand narrative construction and crisis management. The optimal strategy combines AI's computational power for real-time optimization, Human Creativity for cultural resonance, and a Hybrid governance for ethical compliance.

This balanced approach addresses most of the consumers who demand personalized experiences without surrendering privacy, positioning organizations to thrive in the AI era while mitigating systemic risks (Maintz & Zaumseil, 2019).

HYBRID MODELS

Given the complementary strengths of AI-driven big data marketing

(BDM) and traditional marketing (TM), hybrid models that integrate both approaches offer a pathway to optimized performance and mitigated risks. These hybrid models seek to leverage the precision and efficiency of AI while preserving the brand-building and ethical safeguards inherent in traditional methods.

FORMS OF HYBRID MARKETING MODELS

Hybrid marketing models fall under three broad categories. The first category is the addition of AI to traditional marketing, where artificial intelligence solutions are applied to complement and add to traditional marketing approaches. For example, AI analytics can identify the most effective channel and messaging channels for an average ad campaign, and machine learning can refine targeting accuracy in mail campaigns.

Another categorization is Traditional Marketing-Informed AI where traditional marketing experience and observation inform and direct AI-based strategy. This can involve using human judgment to choose data used for AI model training or incorporating the narrative of brands in AI-created content.

Finally, Integrated Campaigns are the simultaneous triggering of both AI-driven and conventional marketing campaigns that support one another. (*Marketing Strategy and Artificial Intelligence: State of the Art and Research Agenda | Journal of Telecommunications and the Digital Economy*, n.d.-a) For instance, an AI-driven personalized email campaign can be complemented by a conventional television advertisement campaign, thereby supporting brand messaging and facilitating easier conversions.

IMPLEMENTATION AND CASE STUDIES: -

The effectiveness of AI-based and statistical forecasting models in comparison to practice-based models has been thoroughly examined for both small and medium-sized enterprises (SMEs) and large corporations (Rejeb et al., 2023). The study specifically assesses the performance of the practice-oriented Prophet model against various statistical models, AI-driven approaches, and hybrid models developed in academic settings. Findings indicate that the Prophet model consistently outperforms the others in terms of accuracy across most time series analyses (Rejeb et al., 2023). Additionally, it is slightly less computationally intensive than hybrid models and those utilizing artificial neural networks.

A comprehensive summary of reviewed literature in groundwater management reveals the strengths and weaknesses of various studies, along with the performance criteria employed and the most frequently

cited models (Zaresefat & Derakhshani, 2023). The results demonstrate significant improvements in accuracy, leading to robust outcomes. Furthermore, recommendations for future research directions are provided, focusing on enhancing groundwater management through the development of predictive models and the expansion of relevant knowledge (Zaresefat & Derakhshani, 2023).

CONCLUSION

The intersection of artificial intelligence (AI) and marketing paradigms has had a significant effect on both big data marketing (BDM) and traditional marketing (TM). This study has examined the relative strengths and weaknesses of these paradigms, pointing to the possibility of hybrid paradigms that leverage the precision and responsiveness of AI with the cultural awareness and credibility-building properties of traditional processes. As some of the groundbreaking scholarly articles have shown, this area is of growing interest to academic researchers (*Marketing Strategy and Artificial Intelligence: State of the Art and Research Agenda / Journal of Telecommunications and the Digital Economy*, n.d.-b) . The outcomes are that while AI-driven BDM is more operationally efficient, customer-specific, and reactive in the short term, TM is still necessary to maintain brand equity, offer emotional storytelling, and address ethical issues.

The comparative study revealed that AI-based approaches lower the cost of customer acquisition considerably and increase the responsiveness of campaign optimization using real-time analysis and predictive analysis. Yet, conventional marketing continues to be essential where emotional connection, cultural understanding, and long-term brand awareness are essential. Hybrid models emerge as a viable alternative, using AI to enable operational efficiencies and human imagination and proven techniques to maintain authenticity and trust.

In looking ahead to the future, several areas of research and application possibilities emerge in this new domain. Above all else, an understanding of the effect of new technologies, such as generative AI, together with increased reliance on data-driven decision-making to enable hyper-personalization is needed. The Australasian Marketing Journal records a sudden increase in the usage of the words "Digital," "Artificial Intelligence," and "Online Engagement". (Thaichon et al., 2022). In addition, knowledge of how organizations can develop responsive marketing capabilities relative to the competition through AI analytics will be critical to maintaining competitive advantage in rapidly changing markets. (*Marketing Strategy and Artificial Intelligence: State of the Art*

and Research Agenda | Journal of Telecommunications and the Digital Economy, n.d.-b)

Another potential area of future research deals with the development of user-centric value models emphasizing consumer perspectives in artificial intelligence-driven marketing approaches. Through the inclusion of ethical issues and ensuring transparency towards data utilization, organizations can efficiently address mounting privacy and algorithmic bias issues. Moreover, as shown by Patel, R., studies of the impact of artificial intelligence and machine learning on marketing performance measures and how they are increasingly gaining noteworthy importance. Longitudinal analyses assessing the long-term performance of hybrid marketing models in a variety of sectors will also provide insightful information about their sustainability and stability.

The convergence of big data marketing, artificial intelligence-based insight, and conventional marketing practices creates many opportunities and challenges. Utilization of hybrid models that benefit from the strength of both practices best equips organizations to manage the complexity of current consumer behavior and foster ethical practices that drive brand loyalty and trust. With the evolving marketing platform, constant research and development will be key to unlocking the full potential that these combined practices have to offer.

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