JOURNAL OF INTERDISCIPLINARY RESEARCH IN ARTIFICIAL INTELLIGENCE AND SOCIETY

Journal of Interdisciplinary Research in Artificial Intelligence and Society,
2026, 2(1), 1
eISSN: 3117-793X

lectito

Review paper

Artificial Intelligence Across Social Sciences and Humanities: The Evolution of Marketing Analytics in the Digital Era

Md. Nazrul Islam *

Prime University, BANGLADESH

***Corresponding Author:** nislam2000@gmail.com

Citation: Islam, M. N. (2026). Artificial intelligence across social sciences and humanities: The evolution of marketing analytics in the digital era. *Journal of Interdisciplinary Research in Artificial Intelligence and Society, 2*(1), 1. https://doi.org/10.20897/jirais/18474

Published: April 25, 2026

ABSTRACT

Artificial intelligence (AI) has transformed marketing analytics from a predominantly reporting-oriented function into a predictive, prescriptive, and increasingly generative decision infrastructure. Yet this transformation cannot be understood solely through the lenses of computational efficiency or firm performance. As AI systems shape segmentation, personalization, communication, and meaning production, they also raise questions of legitimacy, authorship, bias, trust, and governance that require interdisciplinary interpretation. This article develops an integrative review of 21 DOI-traceable scholarly sources published between 2014 and 2025 to explain how marketing analytics has evolved across four stages: descriptive-diagnostic measurement, predictive-prescriptive inference, generative-conversational production, and reflexive governance. The review shows that AI has deepened analytical capability, expanded analytics into narrative and symbolic domains, intensified tensions between assistance and anxiety narratives, and increased the need for explainable and ethically accountable systems. The article concludes that the future of marketing analytics lies not in automation alone, but in a more reflexive paradigm in which computational power is balanced by interpretive judgment, interdisciplinary oversight, and social legitimacy.

Keywords: artificial intelligence, marketing analytics, digital era, social sciences, humanities, generative AI

The digital era has transformed marketing from a function primarily concerned with promotion and distribution into a system increasingly structured around data capture, real-time measurement, algorithmic inference, and adaptive decision-making. Contemporary firms no longer rely solely on periodic sales reports or retrospective campaign surveys (Latif et al., 2026). Instead, they depend on continuous streams of customer, platform, transactional, and behavioral data to inform segmentation, personalization, pricing, customer relationship management, and communication strategy (Leeflang et al., 2014; Wedel & Kannan, 2016). As this data-intensive environment has matured, artificial intelligence (AI) has moved from a peripheral support tool to a central component of the analytical infrastructure underpinning modern marketing practice (Huang & Rust, 2021; Kumar et al., 2024).

This transformation is especially evident in the evolution of marketing analytics. Early forms of digital marketing analytics were largely descriptive and diagnostic, focusing on click-through rates, website traffic, campaign dashboards, and customer database reporting. More recent systems extend well beyond measurement to include predictive modeling, recommendation systems, customer lifetime value estimation, conversational interfaces, and generative content optimization (Ma & Sun, 2020; Ziakis & Vlachopoulou, 2023). In this sense,

analytics no longer merely reflects market behavior; it increasingly shapes how markets are interpreted, anticipated, and influenced (Muciaccia & Macchia, 2025).

However, the evolution of AI-driven marketing analytics is not exclusively a technical development. It is also social, cultural, and humanistic in character. Algorithms do not operate in a neutral vacuum; they classify individuals, privilege certain signals over others, reinforce specific forms of knowledge, and shape the narratives through which organizations understand consumers and through which consumers encounter brands (Latif et al., 2025; Sarkar, 2025). For this reason, scholarships in social sciences and humanities have become increasingly important to the study of marketing analytics. The social sciences contribute behavioral explanation, institutional analysis, public policy reasoning, and methodological critique, while the humanities bring attention to language, meaning, morality, culture, rhetoric, identity, authorship, and representation (Gefen et al., 2021; Greene, 2023; Bail, 2024; Dalgalıdere, 2026).

A key theoretical gap emerges at this intersection. Much of the established marketing literature explains AI in terms of capability enhancement, efficiency gains, and competitive advantage. That literature is valuable, but it often under-theorizes how analytics systems also affect symbolic production, interpretive authority, and social legitimacy (Latif et al., 2024). Conversely, scholarships in the social sciences and humanities have developed sophisticated critiques of AI, yet it less frequently connects those critiques to concrete marketing practices such as targeting, personalization, automated messaging, and content generation. The result is a fragmented conversation in which technical advancement and interpretive consequences are often discussed separately (Tanu et al., 2019).

In this context, Denia's (2025) AI narratives model is particularly instructive because it shows that AI is interpreted through competing narratives of assistance, apocalypse, and transcendence. Although developed in relation to public perception, popular culture, and science communication, the model has clear implications for marketing analytics. AI in marketing is similarly framed as a strategic assistant that improves decision quality, as an opaque system that may erode human judgment, and as an emerging infrastructure capable of reorganizing creativity, persuasion, and market influence. These tensions are central to contemporary marketing practice as firms accelerate AI adoption while regulators, educators, and researchers continue to debate its meaning, legitimacy, and consequences (Denia, 2025; Dutt et al., 2024; Katz, 2026).

Against this backdrop, this article addresses three interrelated research questions. First, how has marketing analytics evolved in the digital era under the influence of AI? Second, what distinctive contributions do the social sciences and humanities make to understanding this evolution? Third, what risks and governance concerns emerge as marketing analytics becomes increasingly predictive, generative, and autonomous?

The central argument advanced here is that the evolution of marketing analytics can be understood through four interconnected phases: descriptive measurement, predictive modeling, generative augmentation, and reflexive governance. Across these phases, the locus of analytical action shifts from data collection toward the production of meaning, judgment, and influence. Consequently, the future of marketing analytics should not be assessed solely in terms of technological performance. It must also be evaluated in relation to interpretive depth, ethical legitimacy, human oversight, and interdisciplinary literacy (Rahaman et al., 2023).

LITERATURE REVIEW

The literature on AI-enabled marketing analytics spans several intersecting domains, including digital marketing strategy, marketing analytics, artificial intelligence in marketing, public narratives of AI, computational social science, and digital humanities. A critical synthesis of this literature suggests that the evolution of marketing analytics should be understood not merely as a technical progression, but as a broader epistemic reorientation in how market knowledge is produced, interpreted, and acted upon (Sarkar, 2025). Three broad streams dominate the field: a capability stream that emphasizes performance enhancement, an interpretive stream that examines meaning and representation, and a governance stream that addresses ethics, transparency, and institutional accountability (Akhter et al., 2022).

The first stream originated in scholarship on digital transformation and data-rich marketing environments. Leeflang et al. (2014) demonstrated that digitalization reconfigured marketing strategy by multiplying channels, increasing the complexity of customer journeys, and requiring new organizational capabilities. Wedel and Kannan (2016) extended this position by establishing marketing analytics as the decision architecture of data-rich environments, with applications spanning customer analytics, marketing-mix analytics, and strategic support. These contributions remain foundational because they explain why analytics has become central to modern marketing. At the same time, they largely adopt a firm-centric lens in which analytical value is measured primarily through visibility, control, and optimization. What remains less developed in this stream is an account of how analytics also redefines the social categories through which consumers are understood.

The second stream focuses on AI and machine learning as accelerants of analytical sophistication. Ma and Sun (2020) argued that machine learning links computational power to managerial insight by detecting nonlinear

patterns and heterogeneous responses that conventional models often miss. Huang and Rust (2021) further differentiated AI in marketing into mechanical, thinking, and feeling AI, thereby showing that the field is not only automating repetitive tasks but also extending into judgment and affect recognition. Review-based studies reinforce this trajectory. Verma et al. (2021), Haleem et al. (2022), De Mauro et al. (2022), Ziakis and Vlachopoulou (2023), and Kumar et al. (2024) collectively show that AI now supports segmentation, personalization, service automation, campaign optimization, and generative engagement. Yet this body of work tends to privilege functional gain over critical reflection. In other words, literature is strong on what AI can do, but comparatively weaker on what kinds of assumptions, exclusions, or asymmetries those systems encode.

A third line of scholarship complicates this managerial optimism by foregrounding narrative, symbolism, and public perception. Denia (2025) argues that AI circulates through narratives of assistance, apocalypse, and transcendence. Nader et al. (2022) similarly show that entertainment media shape public understanding of AI, while Dutt et al. (2024) demonstrate that the future of marketing and communication depends not only on data and analytics, but also on narrative capacity. These studies matter because they shift attention from AI as a neutral decision tool to AI as a sociocultural object whose uptake depends on trust, symbolism, and legitimacy. In marketing analytics, this means that adoption cannot be evaluated solely in terms of model accuracy or campaign performance; it must also be assessed in terms of how automated outputs are interpreted by consumers, employees, and institutions.

The interpretive importance of AI becomes even clearer when the literature from the social sciences and humanities is considered. Gefen et al. (2021) note that AI has become a productive instrument in digital humanities and computational social science, but they also emphasize that computational practice raises philosophical questions about intelligence, interpretation, and humanity. Greene (2023) sharpens this critique by warning that many social variables resist reduction into algorithmically tractable categories. This caution has direct relevance for marketing analytics because constructs such as trust, authenticity, sentiment, loyalty, and identity are not merely technical variables; they are culturally mediated, context-dependent, and frequently contested (Yellamma et al., 2025). Consequently, the routine conversion of complex human phenomena into proxies or scores may improve operational speed while simultaneously narrowing interpretive validity.

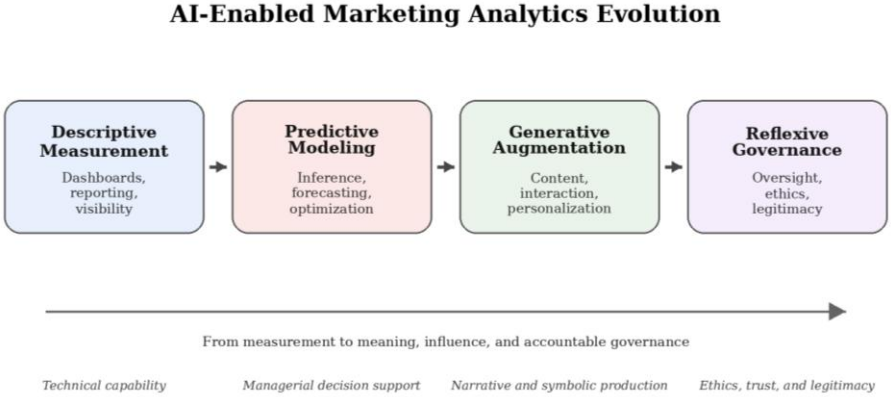
Recent scholarship on generative AI reveals a similar tension between promise and critique. Bail (2024) argues that generative AI can strengthen social science research by supporting survey design, experimentation, text analysis, and model development. Davidson and Karell (2025) likewise show that generative AI can assist with measurement, prompting, and simulation when embedded within explicit theoretical frameworks. However, Obreja et al. (2025) demonstrate that the research agenda around generative AI is increasingly structured by concerns about copyright, labor displacement, governance, and power. The significance of this literature for marketing analytics is substantial: once AI systems move from predicting behavior to generating persuasive content, the problem is no longer only one of analytical validity, but also one of authorship, accountability, and social consequence.

The capability-development literature underscores a further limitation in the field. Ye et al. (2024) show that digital marketing and analytics education is expanding across technical and strategic domains, but practical gaps remain in ethics, interpretive reasoning, and interdisciplinary integration. This finding suggests that the evolution of analytics is outpacing the institutional development of the competencies required to govern it responsibly. The implication is not merely pedagogical. It signals that many organizations may adopt powerful AI-enabled tools without a commensurate capacity to evaluate their broader cultural and ethical effects. The interdisciplinary challenge, therefore, is not simply to import humanistic critique into marketing, but to embed such critique within professional practice and analytical design (Khan et al., 2019).

Taken together, the literature reveals both convergence and fragmentation. There is clear convergence around the claim that AI has expanded the scale, speed, and strategic relevance of marketing analytics. There is also convergence around the view that generative systems extend analytics into communication and symbolic production. Fragmentation persists, however, because the marketing literature often treats AI as an application problem, whereas the social sciences and humanities frequently treat it as meaning, power, or governance problem. Existing studies rarely connect these perspectives within a single framework. This article addresses that gap by proposing an integrative interpretation in which technical development, interpretive consequence, and reflexive governance are analyzed as co-evolving dimensions of marketing analytics. **Figure 1** summarizes this integrative framework.

Figure 1

Integrative framework for ai-enabled marketing analytics across social sciences and humanities



RESEARCH METHODOLOGY

This study adopts an integrative review design because the research problem crosses disciplinary boundaries and includes conceptual, managerial, ethical, and interpretive dimensions. An integrative review is appropriate when the objective is not only to summarize prior studies, but also to compare traditions of inquiry, identify conceptual tensions, and develop a synthesized framework for future scholarships. In the present case, the method was selected to connect marketing analytics research with scholarship from the social sciences and humanities, two domains that are often discussed separately despite their growing overlap in AI-related debates.

The review followed a transparent, PRISMA-informed workflow for identification, screening, eligibility assessment, and reporting (Page et al., 2021), while the analytical stage drew on the principles of thematic analysis outlined by Braun and Clarke (2006). Searches were conducted across Google Scholar, Scopus-indexed records, and publisher databases using combinations of the following terms: "artificial intelligence," "marketing analytics," "digital marketing," "machine learning in marketing," "generative AI," "social sciences," "humanities," "AI narratives," and "digital humanities." The search window was limited to the period 2014–2025 in order to capture the most relevant phase of AI-enabled marketing development while retaining foundational digital-era studies.

To improve methodological transparency, explicit inclusion and exclusion criteria were applied. Sources were included when they were (a) peer-reviewed journal articles, book chapters, or conference papers; (b) directly relevant to AI and marketing analytics or to AI within the social sciences and humanities; (c) written in English; and (d) traceable through an identifiable DOI or equivalent scholarly record. Sources were excluded when they were purely technical engineering studies without marketing or interpretive relevance, practitioner commentaries lacking scholarly grounding, duplicate records, or publications that mentioned AI only tangentially. Applying these criteria produced a final corpus of 21 studies that offered conceptual influence, methodological diversity, and strong relevance to the research questions.

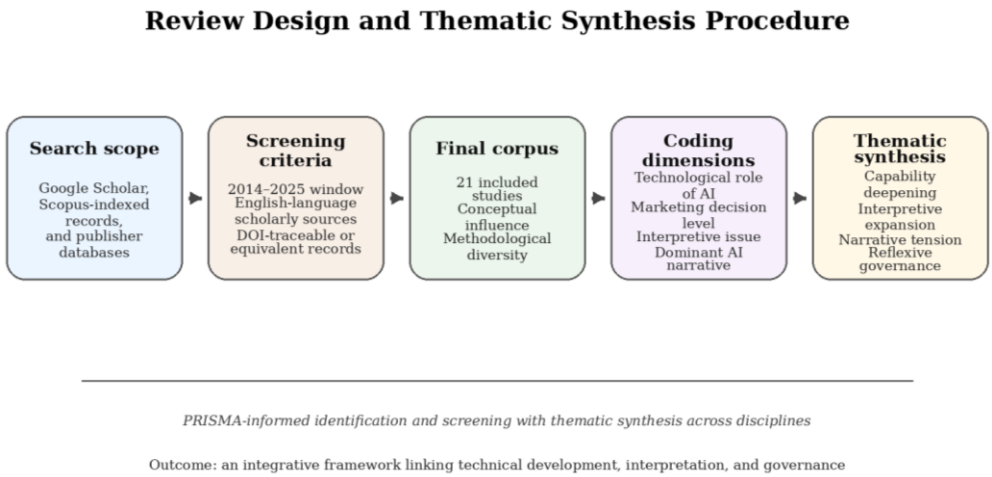
Each included study was read in full and coded using a structured extraction framework. Four coding dimensions guided the analysis: (1) the technological role assigned to AI in marketing analytics, (2) the level of marketing decision-making influenced, (3) the social-scientific or humanistic issue foregrounded, and (4) the dominant narrative through which AI was framed. The coding process moved in two stages. First, descriptive coding identified the principal contribution of each article. Second, interpretive coding clustered these contributions into higher-order themes in order to reveal cross-disciplinary patterns rather than isolated findings.

To enhance analytical rigor, the synthesis focused on pattern convergence, conceptual contrast, and recurrent tensions across studies rather than on simple frequency counts. This approach enabled the review to distinguish between capability-oriented, interpretive, and governance-oriented claims and to identify where the literature was complementary, silent, or contradictory. The final thematic structure comprised four overarching themes: capability deepening, interpretive expansion, narrative tension, and reflexive governance. These themes were then used to organize the Results and Discussion sections and to construct the integrative framework presented in **Figures 1** and **2**.

As a qualitative conceptual synthesis, the review does not claim exhaustive coverage or statistical generalizability. Its contribution lies instead in analytical integration: it brings together literature that is rarely read in combination and translates their insights into a coherent explanation of how marketing analytics evolves under AI conditions. This design also makes the review suitable for theory development, because it allows technical change to be interpreted alongside questions of meaning, power, fairness, and institutional legitimacy.

Figure 2

Review design and thematic synthesis procedure



DATA ANALYSIS AND RESULTS

The thematic analysis yielded four interrelated findings. Taken together, these findings indicate that the evolution of marketing analytics has not followed a purely linear or exclusively technical trajectory; rather, it has unfolded as a layered process shaped by technological change, organizational interpretation, and broader institutional dynamics.

Capability deepening

The first thematic pattern concerns the progressive deepening of analytical capability. Early forms of digital marketing analytics were primarily descriptive and diagnostic, emphasizing performance reporting through dashboards, web metrics, customer relationship management reports, and campaign summaries. At this stage, organizations mainly relied on analytics to understand past outcomes and assess what had already occurred (Leeflang et al., 2014). As data environments became more complex and information-rich, firms increasingly adopted model-based approaches to estimate customer lifetime value, improve attribution modeling, optimize media allocation, and enable more refined personalization strategies (Wedel & Kannan, 2016).

A second shift emerged with the integration of artificial intelligence and machine learning, which moved marketing analytics beyond description toward prediction and prescription. Rather than merely identifying historical patterns, machine learning systems enabled organizations to forecast likely behaviors, evaluate alternative actions, and optimize decisions in high-dimensional and rapidly changing data environments (Ma & Sun, 2020). This transition also redefined the role of the analyst. Analysts became less focused on manually generating insights and more engaged in designing, validating, and interpreting automated decision systems.

The most recent phase can be characterized as generative and conversational. In this stage, AI extends beyond audience ranking and outcome prediction to the production of text, images, recommendations, and interactive responses. This development expands the scope of marketing analytics into domains traditionally associated with copywriting, customer dialogue, and symbolic content creation (Ziakis & Vlachopoulou, 2023; Kumar et al., 2024). Accordingly, marketing analytics now shapes not only what marketers know, but also what marketers communicate. **Table 1** summarizes this evolutionary pattern.

Table 1

Evolutionary Stages of Marketing Analytics in the AI Era

Stage	Analytical logic	Marketing contribution	Interdisciplinary implication
Descriptive-diagnostic	Measurement and reporting	Performance visibility	Consumers treated mainly as measurable data points
Predictive-prescriptive	Inference and optimization	Forecasting and decision support	Need to scrutinize assumptions, proxies, and fairness
Generative-conversational	Content and interaction production	Scalable personalization and content generation	Raises questions of authorship, authenticity, rhetoric, and trust
Reflexive-governed	Oversight and accountability	Legitimate and sustainable AI use	Requires ethics, interpretation, governance, and interdisciplinary literacy

Interpretive expansion

The second thematic pattern is interpretive expansion. Under earlier analytics paradigms, data processing was often treated as analytically distinct from human meaning-making. Reviewed literature challenges that assumption. Basu et al. (2023) show that contemporary marketing analytics is deeply entangled with consumer psychology, indicating that analytical models do not merely process behavioral data; they also shape how firms interpret motivations, emotions, and preferences.

This tendency becomes even more pronounced when generative AI is incorporated into the analytical stack. Tools for sentiment summarization, customer-facing copy generation, conversational simulation, and inference of latent attitudes are not neutral instruments of measurement (Latif, 2022). Rather, they participate directly in the construction of meaning. In this sense, AI systems do not simply detect value; they help produce it. As Dutt et al. (2024) suggest, the convergence of data, analytics, and narrative is becoming central to the future of marketing communication. Extending that insight, the present review argues that AI-driven marketing analytics is now mediating the production of narrative itself.

The implications of this transition are substantial. It places perspectives from the humanities closer to the center of analysis, because issues such as tone, persuasion, symbolism, discourse, authenticity, and representation cannot be resolved through predictive accuracy alone. A chatbot may be functionally effective yet rhetorically inappropriate. A statistically robust recommendation may still be culturally insensitive. Likewise, a generative campaign may appear creative while relying on problematic assumptions or ambiguous authorship. Consequently, the evolution of analytics does not reduce the need for interpretive judgment; rather, it intensifies it (Latif, 2017).

Narrative tension

The third thematic pattern concerns the narratives through which AI is understood and legitimized in the marketing analytics literature. Across much of the reviewed scholarship, the dominant discourse remains one of assistance. AI is commonly represented as a capability-enhancing tool that improves efficiency, reduces routine workload, and supports more accurate decision-making (Haleem et al., 2022; Kumar et al., 2024). This orientation is consistent with Denia's (2025) notion of assistance and reflects the broader techno-optimism present in much of the marketing literature.

However, this assistance narrative is accompanied by a powerful countercurrent of uncertainty. Greene (2023) demonstrates that algorithmic systems frequently struggle to accommodate complex social variables. Obreja et al. (2025) identify broader concerns related to job displacement, copyright, and macro-social disruption, while Davidson and Karell (2025) emphasize the methodological and interpretive risks associated with uncritical reliance on AI-generated outputs. In the context of marketing, these concerns converge around several recurring tensions: opacity in automated decision-making, bias in data-driven targeting, surveillance through intensive data extraction, deskilling among analysts and creative professionals, and erosion of trust when consumers cannot easily distinguish between human- and machine-generated communications.

The review therefore suggests that although assistance remains the dominant functional narrative, it is increasingly challenged by a cautionary counter-narrative that may be described as apocalyptic. A third, more selective discourse also appears in strategic rhetoric, where AI is portrayed as a transformative force capable of redefining the future of marketing. Yet literature provides stronger support for augmentation than for full autonomy. Put differently, AI in marketing analytics is not yet conceptualized primarily as an independent market actor, but as a powerful human adjunct.

Reflexive governance

The fourth thematic pattern is reflexive governance. As AI systems become embedded in segmentation, personalization, content creation, and customer engagement, the central question is no longer whether these activities can be automated, but under what conditions they should be automated. This marks an important shift from adoption to accountability.

Reflexive governance involves transparency in model use, meaningful human oversight of high-stakes outputs, clear accountability for automated recommendations, safeguards against discriminatory targeting, explicit disclosure regarding synthetic content, and the cultivation of interdisciplinary teams capable of evaluating both technical performance and cultural consequences. This direction is also supported by adjacent scholarship. Ye et al. (2024) show that analytics capability development must extend beyond technical proficiency toward integrative competence. From this perspective, social science and humanities scholarship makes clear that AI systems cannot be assessed solely through technical metrics; they must also be evaluated in terms of interpretive validity, ethical acceptability, and social legitimacy (Bail, 2024; Greene, 2023; Denia, 2025).

Overall, the analysis indicates that the future of marketing analytics does not lie in complete automation. Instead, it lies in a contested governance project in which efficiency gains must be balanced against interpretive integrity, ethical accountability, and social legitimacy.

DISCUSSION

The findings suggest that the evolution of marketing analytics in the digital era should be understood through a dual lens. On the one hand, artificial intelligence has substantially expanded analytical capability by enabling prediction, optimization, personalization, and content generation at a scale previously unattainable. On the other hand, this same expansion has moved marketing analytics into domains where technical performance alone is insufficient. Increasingly, the field operates at the intersection of computation and culture, where analytical output influences not only decisions and efficiency but also meaning, interpretation, and social relations (Sultan et al., 2025).

This conclusion carries three major implications. First, it broadens the conceptualization of AI within marketing. Much of the existing literature treats AI primarily as a strategic resource that enhances productivity, decision quality, and competitive advantage. While this perspective remains valid, it is incomplete. AI also functions as a classificatory and rhetorical technology: it sorts consumers into categories, generates inferences from digital traces, and produces communicative outputs that may shape trust, identity, and emotional response. Consequently, AI-driven marketing analytics should be examined not only through a performance-oriented lens, but also through interpretive frameworks that account for its symbolic and social effects (Shishakly, 2025).

Second, the review demonstrates that the social sciences and humanities are not peripheral to the advancement of marketing analytics; rather, they are integral to its next stage of development. Social science contributes essential theoretical insights into behavior, institutions, inequality, legitimacy, and methodological rigor, thereby clarifying what analytical models actually measure and how their outputs circulate within broader social systems. The humanities, in turn, illuminate questions of language, ethics, aesthetics, authorship, narrative, and value. Together, these traditions help prevent analytical reductionism, namely, the mistaken assumption that increasingly sophisticated calculation necessarily produces deeper understanding.

Third, applying Denia's (2025) narrative framework to marketing analytics clarifies why debates about AI adoption are often simultaneously technical and cultural. Within current practice discourse, the narrative of assistance remains dominant, with AI commonly positioned as a supportive tool for human decision-makers. By contrast, apocalyptic concerns are not merely speculative exaggerations; they correspond to concrete issues such as opacity, surveillance, discrimination, and labor displacement. The narrative of transcendence also appears in aspirational claims about autonomous marketing systems, yet the literature suggests that such claims remain more visionary than empirically grounded. Rather than privileging the prospect of machine supremacy, the more defensible pathway lies in institutionally governed human-AI co-agency.

From a managerial standpoint, these findings indicate the need for organizations to establish interdisciplinary analytics teams, institutionalize oversight mechanisms, and evaluate AI systems against both efficiency and legitimacy criteria. From a research perspective, future studies should move beyond cataloguing applications toward deeper examination of cultural context, consumer interpretation, discursive effects, and the politics of data classification (McKim, 2023). Longitudinal research would be particularly valuable for tracing how narrative orientations toward AI evolve as generative systems become increasingly embedded in marketing practice.

CONCLUSION

This paper examined the evolution of marketing analytics in the digital era through an interdisciplinary artificial intelligence (AI) lens that integrates marketing, social sciences, and the humanities. The review indicates that marketing analytics has progressed beyond descriptive reporting toward predictive, prescriptive, and increasingly generative forms of intelligence. This transition is not merely technical; it reshapes how organizations understand consumers, construct communication, and negotiate legitimacy in digitally mediated environments.

Four major conclusions emerge from the analysis. First, AI has significantly strengthened analytical capabilities by enabling real-time inference, adaptive learning, and dynamic decision-making. Second, generative AI has expanded the scope of marketing analytics beyond measurement and prediction to include interpretation, narrative construction, and symbolic content production. Third, although AI in marketing analytics is often framed as an assistive and value-enhancing tool, persistent concerns remain regarding algorithmic bias, opacity, surveillance, and labor displacement. Fourth, and most importantly, the next frontier of the field lies in reflexive governance: the development of analytics systems that are explainable, ethically grounded, and meaningfully interpretable by human actors.

Accordingly, the future of marketing analytics should not be understood as the replacement of human judgment by autonomous intelligence. A more sustainable trajectory is interdisciplinary, in which AI enhances analytical and strategic capacity while the social sciences and humanities provide critical frameworks for evaluating meaning, power, fairness, trust, and accountability. From this perspective, the real transformation of marketing analytics in the digital age is not the substitution of humans by machines, but the movement from narrow optimization toward reflexive intelligence.

Acknowledgement

The author expresses sincere gratitude to Prime University for institutional support.

Funding

This research did not receive any external funds or grants for conducting the study.

Ethical statement

Ethical approval and informed consent were not required for this study because it is an integrative review based exclusively on published scholarly literature and did not involve human participants, animals, interviews, surveys, or identifiable personal data.

Competing interests

The author declares that there are no competing interests regarding the publication of this paper.

Author contributions

The author solely contributed to the conceptualization, methodology, writing, review, and editing of the final manuscript.

Data availability

No new empirical dataset was generated for this study. All materials analysed are drawn from published sources that are cited in the reference list, and the conceptual data supporting the findings are contained within the manuscript itself.

AI disclosure

During the preparation of this manuscript, the author used ChatGPT (GPT-5, OpenAI, 2025) only for language polishing, readability enhancement, academic clarity, and grammatical improvement. All intellectual content, interpretation, and final revisions were undertaken by the author, who accepts full responsibility for the content and accuracy of the manuscript.

Biographical sketch

Md. Nazrul Islam is an Assistant Professor in the Department of Business Administration at Prime University, Dhaka, Bangladesh. His research interests include artificial intelligence, marketing analytics, digital transformation, and interdisciplinary research spanning business and the social sciences. His current work examines how data-driven technologies are reshaping marketing practices, organizational decision-making, and governance in the digital era.

REFERENCES

Akhter, A., Islam, K. M. A., Karim, M. M., & Latif, W. B. (2022). Examining determinants of digital entrepreneurial intention: A case of graduate students. *Problems and Perspectives in Management*, *20*(3), 153–163. https://doi.org/10.21511/ppm.20(3).2022.13

Bail, C. A. (2024). Can generative artificial intelligence improve social science? *Proceedings of the National Academy of Sciences, 121*(21), Article e2314021121. https://doi.org/10.1073/pnas.2314021121

Basu, R., Lim, W. M., Kumar, A., & Kumar, S. (2023). Marketing analytics: The bridge between customer psychology and marketing decision-making. *Psychology & Marketing, 40*(12), 2588-2611. https://doi.org/10.1002/mar.21908

Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology, 3*(2), 77-101. https://doi.org/10.1191/1478088706qp063oa

Dalgalıdere, S. (2026). Generative artificial intelligence in crisis journalism: A comparative analysis of ChatGPT and Gemini news texts. *ISophos: International Journal of Information, Technology and Philosophy*, *8*(15), 1–11.

Davidson, T., & Karell, D. (2025). Integrating generative artificial intelligence into social science research: Measurement, prompting, and simulation. *Sociological Methods & Research, 54*(3), 775-793. https://doi.org/10.1177/00491241251339184

De Mauro, A., Sestino, A., & Bacconi, A. (2022). Machine learning and artificial intelligence use in marketing: A general taxonomy. *Italian Journal of Marketing, 2022*(4), 439-457. https://doi.org/10.1007/s43039-022-00057-w

Denia, E. (2025). AI narratives model: Social perception of artificial intelligence. *Technovation, 146*, Article 103266. https://doi.org/10.1016/j.technovation.2025.103266

Dube, R., Agarwal, K., Rahman, A., Latif, W. B., & Balaji, V. (2025, February). The impact of AI on economic forecasting: A case study of currency exchange rate prediction. In *2025 International Conference on Technology Enabled Economic Changes (InTech)* (pp. 755-760). IEEE. https://doi.org/10.1109/InTech64186.2025.11198571

Dutt, A., Kasilingam, D., Angell, R., & Singh, J. (2024). The future of marketing and communications in a digital era: Data, analytics and narratives. *Journal of Strategic Marketing, 32*(8), 1435-1443. https://doi.org/10.1080/0965254X.2024.2386002

Gefen, A., Saint-Raymond, L., & Venturini, T. (2021). AI for digital humanities and computational social sciences. In J.-D. Braunschweig & D. Ghallab (Eds.), *Reflections on artificial intelligence for humanity* (Lecture Notes in Computer Science, Vol. 12600, pp. 191-202). Springer. https://doi.org/10.1007/978-3-030-69128-8_12

Greene, C. (2023). AI and the social sciences: Why all variables are not created equal. *Res Publica, 29*, 303-319. https://doi.org/10.1007/s11158-022-09544-5

Haleem, A., Javaid, M., Qadri, M. A., Singh, R. P., & Suman, R. (2022). Artificial intelligence (AI) applications for marketing: A literature-based study. *International Journal of Intelligent Networks, 3*, 119-132. https://doi.org/10.1016/j.ijin.2022.08.005

Huang, M.-H., & Rust, R. T. (2021). A strategic framework for artificial intelligence in marketing. *Journal of the Academy of Marketing Science, 49*(1), 30-50. https://doi.org/10.1007/s11747-020-00749-9

Katz, N. (2026). Digital inequality in context: A socio-technical analysis of Arab students' remote learning in Israel. *Asia Pacific Journal of Education and Society*, *14*(1), Article 6. https://doi.org/10.20897/apjes/17975

Khan, M. R., Latif, W. B., Ahmed, S., Hira, M. A., & Tanu, D. R. (2019). Practices of Islamic ethics in the electronics industry in Bangladesh: A study on Minister Hi-Tech Park Electronics Ltd. *International Journal of Islamic Business & Management, 3*(1), 1–13. https://doi.org/10.46281/ijibm.v3i1.232

Kumar, V., Ashraf, A. R., & Nadeem, W. (2024). AI-powered marketing: What, where, and how? *International Journal of Information Management, 77*, Article 102783. https://doi.org/10.1016/j.ijinfomgt.2024.102783

Latif, M. W. (2017). *Brand image on customer-based brand equity in the hotel industry in Bangladesh: Tourism management and advertisement as moderators* (Doctoral dissertation, School of Business Innovation & Technopreneurship). https://doi.org/10.13140/RG.2.2.27026.26560

Latif, W. (2022). Determinants of hotel brand image: A unified model of customer-based brand equity. *International Journal of Customer Relationship Marketing and Management, 13*(1), 1-20. https://doi.org/10.4018/IJCRMM.300834

Latif, W. B., Yasin, I. M. Y., Rahaman, M. A., Forid, M. S., Islam, M. N., & Hossain, M. Z. (2024). Impact of augmented reality (AR) and virtual reality (VR) on interactive learning systems. Pacific *Journal of Advanced Engineering Innovations, 1*(1), 23–32. https://doi.org/10.70818/pjaei.2024.v01i01.016

Latif, W. B., Yasin, I. M., Amin, M. B., Roy, J. K., Rahaman, M. A., & Hossain, M. K. (2026). Transformational leadership strategy as a driving force to engagement of workers: Empirical study in the banking system. *Corporate and Business Strategy Review, 7*(1), 250-257. https://doi.org/10.22495/cbsrv7i1art22

Latif, W. B., Yasin, I. M., Peneti, S., Bhukya, S., & Abhilash, K. (2025, December). Quantum-inspired neural networks for accelerated processing in edge devices. *In 2025 IEEE 5th International Conference on ICT in Business Industry & Government (ICTBIG)* (pp. 1-7). IEEE. https://doi.org/10.1109/ICTBIG68706.2025.11323783

Leeflang, P. S. H., Verhoef, P. C., Dahlström, P., & Freundt, T. (2014). Challenges and solutions for marketing in a digital era. *European Management Journal, 32*(1), 1-12. https://doi.org/10.1016/j.emj.2013.12.001

Ma, L., & Sun, B. (2020). Machine learning and AI in marketing: Connecting computing power to human insights. *International Journal of Research in Marketing, 37*(3), 481-504. https://doi.org/10.1016/j.ijresmar.2020.04.005

McKim, C. (2023). Meaningful member checking: A structured approach to member checking. *American Journal of Qualitative Research*, *7*(3), 41–52. https://doi.org/10.29333/ajqr/12973

Muciaccia, T., & Macchia, L. (2025). Artificial intelligence, collective intelligence, and human experience: A socio-economic and ontological analysis. *Journal of Interdisciplinary Research in Artificial Intelligence and Society*, *1*(1), Article 2. https://doi.org/10.20897/jirais/17618

Nader, K., Toprac, P., Scott, S., & Baker, S. (2022). Public understanding of artificial intelligence through entertainment media. *AI & Society, 39*(2), 713-726. https://doi.org/10.1007/s00146-022-01427-w

Obreja, D. M., Rughinis, R., & Rosner, D. (2025). Mapping the multidimensional trend of generative AI: A bibliometric analysis and qualitative thematic review. *Computers in Human Behavior Reports, 17*, Article 100576. https://doi.org/10.1016/j.chbr.2024.100576

Page, M. J., McKenzie, J. E., Bossuyt, P. M., Boutron, I., Hoffmann, T. C., Mulrow, C. D., Shamseer, L., Tetzlaff, J. M., Akl, E. A., Brennan, S. E., Chou, R., Glanville, J., Grimshaw, J. M., Hróbjartsson, A., Lalu, M. M., Li, T., Loder, E. W., Mayo-Wilson, E., McDonald, S., ... Moher, D. (2021). The PRISMA 2020 statement: An updated guideline for reporting systematic reviews. *BMJ, 372*, Article n71. https://doi.org/10.1136/bmj.n71

Rahaman, M. A., Uddin, M. S., & Latif, W. B. (2023). Effects of training and development, organizational culture, job satisfaction, and career development on employee retention in commercial banks in Bangladesh. *The Journal of Asian Finance, Economics and Business, 10*(2), 91–97. https://doi.org/10.13106/jafeb.2023.vol10.no2.0091

Sarkar, R. (2025). A review of human-centered AI: A multidisciplinary perspective for policy-makers, auditors, and users. *Journal of Interdisciplinary Research in Artificial Intelligence and Society, 10*(1), Article 1. https://doi.org/10.20897/jirais/17534

Sarkar, R. (2025). A review of human-centered AI: A multidisciplinary perspective for policy-makers, auditors, and users. *Journal of Interdisciplinary Research in Artificial Intelligence and Society*, *1*(1), Article 1. https://doi.org/10.20897/jirais/17534

Shishakly, R. (2025). Understanding AI in higher education: Gendered and intersectional students' experience with ChatGPT use. *European Journal of STEM Education*, *10*(1), Article 36. https://doi.org/10.20897/ejsteme/17646

Sindhura, K., Rajagopal, N. K., Latif, W. B., Kumar, J. R., Kayande, R. A., & Sakthivel, S. (2025, February). Leveraging big data and machine learning for real-time economic monitoring and forecasting. *In 2025 International Conference on Technology Enabled Economic Changes (InTech)* (pp. 789-794). IEEE. https://doi.org/10.1109/InTech64186.2025.11198446

Sultan, Y., Dautova, G., & Dalle, J. (2025). Examining the relationship among artificial intelligence literacy, cultural literacy, and intercultural communication proficiency of philology students. *Journal of Ethnic and Cultural Studies*, *12*(5), 345–362. https://doi.org/10.29333/ejecs/2839

Tanu, D. R., Ahmed, S., & Latif, W. B. (2019). Assessing customer-based brand equity and brand competitiveness of an electronic company in Bangladesh. *Journal of Research in Marketing, 10*(1), 758–765. https://doi.org/10.17722/jorm.v10i1.763

Verma, S., Sharma, R., Deb, S., & Maitra, D. (2021). Artificial intelligence in marketing: Systematic review and future research direction. *International Journal of Information Management Data Insights, 1*(1), Article 100002. https://doi.org/10.1016/j.jjimei.2020.100002

Wedel, M., & Kannan, P. K. (2016). Marketing analytics for data-rich environments. *Journal of Marketing, 80*(6), 97-121. https://doi.org/10.1509/jm.15.0413

Ye, C., Kim, Y., & Cho, Y.-N. (2024). Digital marketing and analytics education: A systematic review. *Journal of Marketing Education, 46*(1), 32-44. https://doi.org/10.1177/02734753231166414

Yellamma, M., Latif, W. B., Koilraj, M., Manjula, M., Peneti, S., & Vedaansh, M. (2025, December). Real-time gesture recognition for human-robot interaction using mmWave radar and deep learning. *In 2025 IEEE 5th International Conference on ICT in Business Industry & Government (ICTBIG)* (pp. 1-7). IEEE. https://doi.org/10.1109/ICTBIG68706.2025.11323973

Ziakis, C., & Vlachopoulou, M. (2023). Artificial intelligence in digital marketing: Insights from a comprehensive review. *Information, 14*(12), Article 664. https://doi.org/10.3390/info14120664

