

BIG DATA ANALYTICS AND ARTIFICIAL INTELLIGENCE FOR SUSTAINABLE OMNICHANNEL MARKETING IN THE FMCG INDUSTRY: A CONCEPTUAL FRAMEWORK

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How to cite this article:

Parihar, U.S., & Prakash, P. (2026). *Big Data Analytics and Artificial Intelligence for Sustainable Omnichannel Marketing in the FMCG Industry: A Conceptual Framework*. *International Journal of Business Strategy and Innovation*, 1(2), 1-19.

Received: 11 June 2026 | Accepted: 9 July 2026 | Published: 13 July 2026

DOI: <https://doi.org/10.68090/IJBISIVol1Iss2-10>

Abstract

The rapid digital transformation of the Fast-Moving Consumer Goods (FMCG) industry has significantly reshaped marketing practices by enabling organizations to engage consumers across multiple digital and physical touchpoints. The increasing adoption of Artificial Intelligence (AI) and Big Data Analytics (BDA) has enhanced firms' ability to deliver personalized customer experiences while simultaneously supporting sustainable business practices. Although prior studies have examined AI, Big Data Analytics, sustainability, and omnichannel marketing independently, limited research has integrated these interrelated concepts into a comprehensive conceptual framework. To address this gap, the present study adopts an integrative literature review approach to synthesize contemporary research and develop a conceptual framework explaining the relationships among AI capability, Big Data Analytics capability, sustainable omnichannel marketing, sustainable customer experience, consumer trust, and purchase intention within the FMCG industry. The review primarily considers peer-reviewed studies published between 2020 and 2026, as this period reflects the rapid advancement of AI technologies, accelerated digital transformation following the COVID-19 pandemic, and the growing emphasis on sustainability in marketing research. Earlier seminal studies were also consulted where necessary to establish theoretical foundations. Based on the synthesized literature, the study proposes that AI and Big Data Analytics jointly enhance sustainable omnichannel marketing by improving personalization, customer experience, and organizational transparency, which subsequently foster consumer trust and purchase intention. The

proposed framework also conceptualizes environmental consciousness as a moderating factor influencing sustainable consumer behaviour. The originality of this study lies in integrating Resource-Based View (RBV), Dynamic Capabilities Theory (DCT), and the Technology–Organization–Environment (TOE) framework to provide a unified theoretical explanation of AI-enabled sustainable omnichannel marketing. The proposed conceptual model offers a foundation for future empirical research while providing valuable strategic insights for FMCG organizations seeking to achieve sustainable competitive advantage through intelligent marketing capabilities.

Overall, the paper argues that the integration of Artificial Intelligence and Big Data Analytics within sustainable omnichannel marketing represents a critical capability for the future competitiveness of the FMCG industry.

Keywords

Artificial Intelligence, Big Data Analytics, Sustainable Marketing, Omnichannel Marketing, FMCG Industry, Consumer Analytics, Consumer Trust, Customer Experience, Purchase Intention, Customer Loyalty.

Introduction

Digital Transformation of the FMCG Industry

The Fast-Moving Consumer Goods (FMCG) industry has undergone profound transformation driven by rapid digitalization, evolving consumer expectations, intensified market competition, and increasing pressure to achieve sustainable business practices. Consumers now interact with brands through multiple interconnected touchpoints, including physical retail stores, e-commerce platforms, mobile applications, social media, and digital marketplaces, creating increasingly complex customer journeys. Recent studies indicate that seamless integration of these channels has become essential for delivering superior customer experiences and maintaining competitive advantage (Sharma et al., 2024; Brindha et al., 2025). However, despite widespread adoption of digital technologies, existing research presents conflicting perspectives regarding the effectiveness of omnichannel strategies. While some studies report significant improvements in customer engagement and operational performance, others highlight persistent challenges related to data integration, privacy concerns, technological complexity, and organizational readiness. These inconsistencies suggest that existing theoretical explanations remain insufficient to fully explain how emerging digital capabilities contribute to sustainable omnichannel marketing performance. Consequently, further conceptual integration is required to explain the interaction between technological capabilities, customer behaviour, and sustainability outcomes within the FMCG industry. Previous studies indicate that organizations with well-developed omnichannel capabilities achieve superior customer relationships, greater operational efficiency, and stronger competitive performance compared with firms relying on isolated marketing channels (Verhoef et al., 2015; Brynjolfsson et al., 2013; Cai et al., 2020; Cui et al., 2021).

Artificial Intelligence and Big Data Analytics in Omnichannel Marketing

Artificial Intelligence (AI) and Big Data Analytics (BDA) have emerged as complementary technological capabilities that support intelligent marketing decision-making in omnichannel environments. Artificial Intelligence capability refers to an organization's ability to deploy intelligent algorithms, machine

learning, natural language processing, and predictive models to automate decision-making, personalize customer interactions, and enhance marketing effectiveness (Huang & Rust, 2021; Wedel & Kannan, 2016). In contrast, Big Data Analytics capability is defined as an organization's ability to acquire, integrate, process, and analyse large volumes of structured and unstructured data to generate actionable business insights that support strategic decision-making (Akter et al., 2016; De Mauro et al., 2022). Although conceptually distinct, these capabilities are highly interdependent. Big Data Analytics provides the infrastructure for collecting, integrating, and processing customer information from diverse digital and physical touchpoints, whereas Artificial Intelligence transforms these analytical outputs into predictive recommendations, intelligent automation, and personalized marketing actions (Chintalapati & Pandey, 2021; Davenport et al., 2020).

Thus, Big Data Analytics serves as the foundation that enables effective AI deployment, while AI enhances the strategic value derived from analytical capabilities. Together, these complementary capabilities facilitate more responsive, data-driven, and customer-centric omnichannel marketing strategies.

Sustainability as a Strategic Imperative

Sustainability has evolved from a corporate social responsibility initiative into a strategic organizational capability that creates long-term value for businesses and society. In the present study, sustainability is conceptualized according to the Triple Bottom Line (TBL) framework, encompassing environmental, social, and economic dimensions. Environmental sustainability focuses on reducing waste, minimizing carbon emissions, promoting recyclable packaging, and improving resource efficiency. Social sustainability emphasizes ethical sourcing, consumer well-being, responsible data management, and transparent business practices. Economic sustainability refers to maintaining long-term organizational profitability while creating value for stakeholders through responsible innovation and efficient resource utilization. Integrating these three dimensions into omnichannel marketing enables organizations to balance commercial objectives with environmental responsibility and social accountability, thereby strengthening consumer trust and sustainable competitive advantage within the FMCG industry.

Integrating AI, Big Data Analytics, and Sustainable Omnichannel Marketing

The convergence of AI, Big Data Analytics, and sustainable omnichannel marketing presents significant opportunities for enhancing organizational performance. AI-driven personalization allows organizations to recommend products according to individual customer preferences, automate customer service, optimize promotional campaigns, and improve customer relationship management through intelligent recommendation systems and virtual assistants. Likewise, predictive analytics assists organizations in forecasting market demand, optimizing inventory allocation, minimizing operational waste, and improving supply chain efficiency (D'Arco et al., 2019; De Bock et al., 2026).

These technological capabilities contribute not only to enhanced marketing effectiveness but also to sustainability objectives by reducing unnecessary resource consumption, improving operational efficiency, and supporting responsible decision-making. Consequently, organizations capable of integrating intelligent analytics with sustainable omnichannel strategies are more likely to achieve higher customer satisfaction, stronger consumer trust, improved purchase intention, and sustainable competitive advantage.

The conceptual framework presented in Figure 1 is developed from the theoretical arguments discussed in the preceding sections. Each proposed relationship is grounded in prior literature and supported by the complementary perspectives of Resource-Based View, Dynamic Capabilities Theory, and the Technology–Organization–Environment framework (Wamba et al., 2017). Accordingly, the model should be interpreted as a theoretical proposition intended for future empirical validation rather than as an empirically tested structural model.

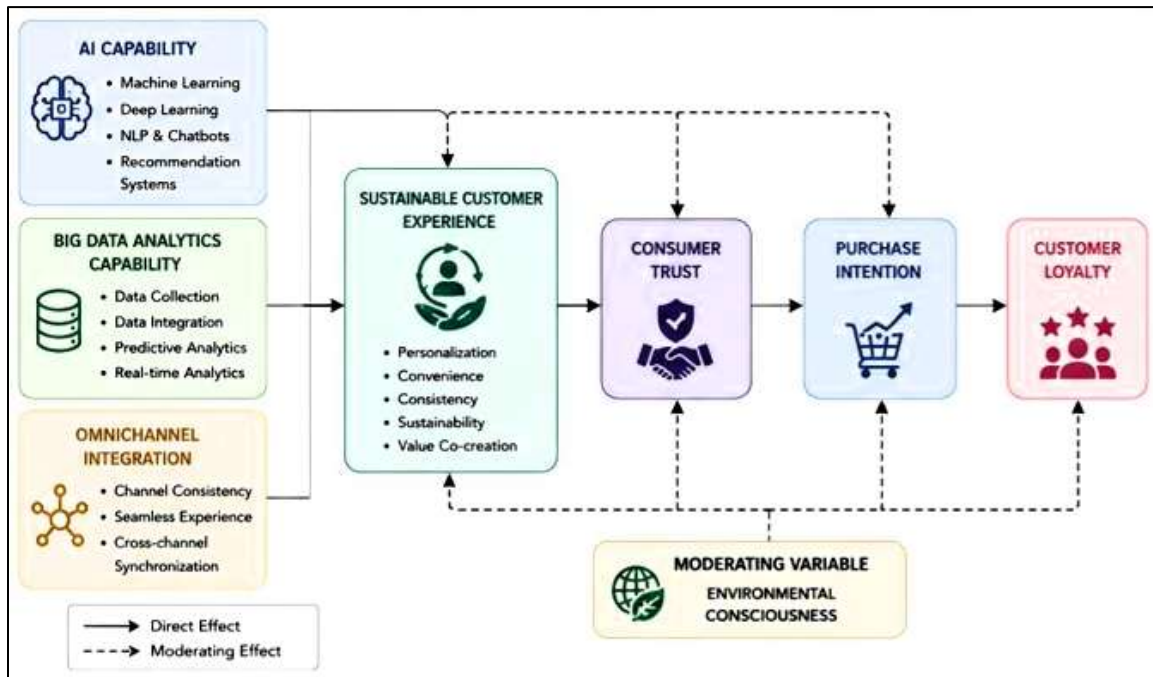


Figure 1: Integrated Conceptual Framework

Research Gap and Study Contribution

Although substantial research has examined Artificial Intelligence, Big Data Analytics, omnichannel marketing, and sustainability individually, the existing body of literature remains fragmented in several important respects. A review of the selected studies indicates that most previous research has focused on isolated relationships, such as AI and customer experience, Big Data Analytics and supply chain performance, or sustainability and organizational outcomes, with limited attention devoted to their combined influence within a unified conceptual framework. As summarized in Table 1, only a small proportion of the reviewed studies simultaneously consider AI capability, Big Data Analytics capability, sustainability, omnichannel marketing, consumer trust, and purchase intention within the FMCG context. This fragmentation demonstrates a significant theoretical gap and highlights the need for an integrated perspective that explains how these constructs interact. Furthermore, previous studies have relied predominantly on single theoretical perspectives, limiting their ability to explain the multidimensional nature of technology-enabled sustainable marketing. To address this limitation, the present study integrates the Resource-Based View (RBV), Dynamic Capabilities Theory (DCT), and the Technology–Organization–Environment (TOE) framework. RBV explains AI and Big Data Analytics as valuable strategic resources, DCT explains organizations' ability to continuously reconfigure these capabilities in response to changing market conditions, while TOE explains how technological, organizational, and environmental factors collectively influence technology adoption. By combining these complementary

theoretical perspectives, the proposed conceptual framework offers a more comprehensive explanation of AI-enabled sustainable omnichannel marketing and provides a robust foundation for future empirical.

Organization of the Paper

The remainder of this paper is organized as follows. Section 2 presents a comprehensive review of the existing literature on Artificial Intelligence, Big Data Analytics, sustainable omnichannel marketing, and consumer analytics. Section 3 discusses the research gap, research objectives, theoretical foundation, and hypothesis development. Section 4 describes the research methodology adopted for the secondary-data empirical analysis. Section 5 presents the observation and analytical findings derived from the reviewed literature, while Section 6 discusses the results in relation to previous studies. Finally, Section 7 concludes the study by highlighting its theoretical contributions, practical implications, limitations, and future research directions.

Literature Review

The integration of Artificial Intelligence (AI), Big Data Analytics (BDA), sustainability, and omnichannel marketing has emerged as a major research stream in contemporary marketing and retail management (Payne et al. 2017; Shankar et al., 2021). The literature suggests that AI-driven consumer analytics enables firms to process large volumes of customer data, predict purchasing behaviour, and personalize marketing interactions across multiple channels (Seyedan & Mafakheri, 2020; Singh et al., 2025). In the FMCG sector, where customer decisions are frequent and highly competitive, such analytical capabilities are increasingly viewed as strategic resources that improve customer engagement and operational responsiveness.

Big Data Analytics complements AI by transforming structured and unstructured customer information into actionable insights. Studies indicate that BDA improves demand forecasting, customer segmentation, inventory planning, and promotional effectiveness, thereby supporting more intelligent omnichannel decision-making (Darbanian et al., 2024; Kumar & Raj, 2025; Dwivedi et al., 2021). Furthermore, organizations that combine AI with advanced analytics capabilities tend to achieve higher levels of agility and supply chain resilience because decisions can be updated continuously as new customer data become available (Dubey et al., 2021).

Research on omnichannel marketing emphasizes the importance of creating a seamless customer experience across physical stores, websites, mobile applications, and social media platforms (Lemon & Verhoef, 2016). Brau et al. (2023) argue that digital supply chains and omnichannel systems are most effective when human judgment and predictive analytics are integrated. Similarly, Smyth et al. (2024) highlight that AI-enabled decision support improves customer experience and organizational responsiveness, particularly under conditions of market uncertainty. These findings suggest that omnichannel integration is not merely a technological issue but also a strategic capability that shapes consumer perceptions and loyalty.

Sustainability has become another critical dimension of omnichannel marketing. Consumers increasingly expect FMCG firms to demonstrate responsible sourcing, waste reduction, recyclable packaging, and transparent environmental practices. Chalmeta and Santos-deLeón (2020) show that Industry 4.0 technologies and big data can strengthen sustainable supply chain practices, while Bag et al. (2021) find that green supply chain initiatives positively influence firm performance. In this context, AI and analytics can help organizations monitor emissions, optimize logistics, and communicate sustainability achievements more effectively to consumers.

The literature also highlights the growing role of consumer trust in digital and sustainable marketing environments. AI-driven personalization can enhance customer satisfaction, but consumers may become skeptical if data usage appears intrusive or sustainability claims seem exaggerated (Singh et al., 2025; Dubey et al., 2019). Consequently, trust acts as a key mechanism linking technological capability with purchase intention and customer loyalty. Research on green marketing further suggests that transparent and verifiable sustainability information increases consumers' willingness to support environmentally responsible brands (Bag et al., 2021; Chalmeta & Santos-deLeón, 2020).

Despite these advances, the existing literature remains fragmented. AI studies primarily focus on prediction and automation, BDA studies emphasize information processing, omnichannel studies concentrate on customer experience, and sustainability studies examine environmental outcomes. Few studies integrate all these dimensions into a single framework that explains how AI and Big Data Analytics jointly influence sustainable omnichannel marketing performance through consumer experience and trust in the FMCG industry (Darbanian et al., 2024; Smyth et al., 2024). This fragmentation creates an important opportunity for developing a more comprehensive consumer analytics perspective.

Table 1: Literature Review Summary (15 Key Studies)

Authors	Year	Objective/Title	Key Findings	Research Gap
Singh et al.	2025	AI and supply chain sustainability	AI improves sustainability and decision-making.	Consumer behaviour not fully integrated.
Seyedan & Mafakheri	2020	Predictive analytics in supply chains	Forecasting accuracy improves significantly.	Limited omnichannel focus.
Brau et al.	2023	Digital supply chain demand planning	Human judgment and analytics should be combined.	Sustainability dimension absent.
Darbanian et al.	2024	Data analytics in supply chain management	Analytics supports intelligent decision-making.	Consumer trust not examined.
Kumar & Raj	2025	Big data adoption in supply chains	BDA enhances organizational performance.	Customer loyalty effects unclear.
Dubey et al.	2021	Analytics capability and resilience	Analytics strengthens resilience.	Marketing outcomes excluded.
Chalmeta & Santos-deLeón	2020	Industry 4.0 and sustainability	Digitalization supports sustainable operations.	Consumer analytics not addressed.
Bag et al.	2021	Green supply chain practices	Sustainability improves firm performance.	Omnichannel integration absent.
Smyth et al.	2024	AI and prescriptive analytics	AI improves responsiveness and resilience.	Consumer perspective limited.
Ivanov & Dolgui	2020	Supply network viability	Digitalization improves survivability.	Marketing implications missing.
Wang & Yan	2022	Predictive to prescriptive analytics	Optimization improves low-carbon logistics.	FMCG context not explored.
Queiroz et al.	2022	Digital supply chain disruptions	Digital tools support resilience.	Consumer trust not included.
Birkel & Müller	2021	Industry 4.0 and sustainability	Technology supports triple-bottom-line goals.	Omnichannel customer experience absent.
Kumar et al.	2021	Blockchain and disruption mitigation	Transparency improves supply chain management.	Consumer purchase behaviour not studied.
Belhadi et al.	2021	Supply chain resilience	Technology enhances recovery capability.	Sustainable omnichannel marketing unexplored.

Literature Synthesis and Research Gap

The reviewed studies collectively demonstrate that AI and Big Data Analytics have become powerful enablers of forecasting, personalization, resilience, and sustainability. Omnichannel marketing research emphasizes seamless customer experience, while sustainability research highlights the growing importance of environmentally responsible operations and transparent communication. However, these streams remain largely disconnected.

Research Gap, Research Objectives, and Hypotheses Development

Research Gap

The existing literature demonstrates that Artificial Intelligence (AI), Big Data Analytics (BDA), and omnichannel marketing significantly improve organizational performance and customer engagement (Singh et al., 2025; Darbanian et al., 2024). Similarly, sustainable marketing has become an important strategic priority in the FMCG industry due to increasing consumer awareness regarding environmental responsibility (Bag et al., 2021). However, previous studies have primarily examined these constructs independently, resulting in fragmented knowledge.

Although researchers have investigated AI-enabled personalization, omnichannel integration, and consumer analytics, limited studies have developed an integrated framework that explains how AI and BDA collectively enhance sustainable omnichannel marketing from a consumer perspective (Smyth et al., 2024; Brau et al., 2023). Furthermore, the mediating role of sustainable customer experience in influencing consumer trust and purchase intention remains insufficiently explored within the FMCG context.

Therefore, this study addresses these gaps by proposing a unified conceptual framework linking AI capability, Big Data Analytics capability, omnichannel integration, sustainable customer experience, consumer trust, and purchase intention.

Research Objectives

The study aims to investigate the role of Artificial Intelligence and Big Data Analytics in strengthening sustainable omnichannel marketing in the FMCG industry.

The specific objectives are:

- **RO1:** To examine the influence of Artificial Intelligence and Big Data Analytics on omnichannel marketing.
- **RO2:** To analyse the impact of omnichannel marketing on sustainable customer experience and consumer trust.
- **RO3:** To examine the influence of consumer trust on purchase intention toward sustainable FMCG products.



Figure 2: Role of AI and Big Data Analytics in Sustainable Omnichannel Marketing (FMCG)

Theoretical Foundation

The proposed framework is based on the Resource-Based View (RBV) and Dynamic Capabilities Theory (DCT). According to RBV, AI capability and Big Data Analytics capability are strategic organizational resources that create competitive advantage by improving customer value and marketing performance (Barney, 1991). Dynamic Capabilities Theory further suggests that organizations continuously reconfigure these technological capabilities to respond effectively to changing consumer expectations and competitive market environments (Teece, 2018). Together, these theories provide a strong foundation for explaining AI-enabled sustainable omnichannel marketing.

Hypotheses Development

H1: Artificial Intelligence and Big Data Analytics capability positively influence omnichannel marketing effectiveness

AI and BDA enable organizations to analyse customer behaviour, personalize marketing campaigns, optimize promotional decisions, and integrate customer interactions across multiple channels. These capabilities improve omnichannel effectiveness by delivering consistent and personalized customer experiences (Singh et al., 2025; Darbanian et al., 2024).

H1: Artificial Intelligence and Big Data Analytics capability have a positive effect on omnichannel marketing effectiveness.

H2: Omnichannel marketing positively influences sustainable customer experience and consumer trust

An integrated omnichannel strategy provides seamless shopping experiences, transparent sustainability information, and personalized services across physical and digital platforms. These attributes enhance customer satisfaction and strengthen trust in environmentally responsible FMCG brands (Bag et al., 2021; Brau et al., 2023).

H2: Omnichannel marketing positively influences sustainable customer experience and consumer trust.

H3: Consumer trust positively influences purchase intention toward sustainable FMCG products

Consumers who trust a firm's sustainability practices and AI-enabled services are more likely to purchase its products and maintain long-term relationships. Trust reduces perceived risk and strengthens consumers' willingness to support sustainable brands (Smyth et al., 2024; Singh et al., 2025).

H3: Consumer trust positively influences consumers' purchase intention toward sustainable FMCG products.

Research Method

This study adopts an integrative literature review methodology to develop a conceptual framework explaining the role of Artificial Intelligence (AI) and Big Data Analytics (BDA) in enabling sustainable omnichannel marketing within the Fast-Moving Consumer Goods (FMCG) industry. Unlike empirical studies that collect and analyse primary data, an integrative literature review systematically synthesizes existing theoretical and empirical knowledge to generate new conceptual insights and identify future research directions. This approach is particularly appropriate for emerging interdisciplinary research areas where knowledge is dispersed across multiple academic domains and requires theoretical integration.

The review primarily focuses on peer-reviewed journal articles published between 2020 and 2026, reflecting the period during which AI-enabled marketing, omnichannel retailing, and sustainability experienced rapid academic and industrial development following accelerated digital transformation during and after the COVID-19 pandemic (Pantano et al., 2020; Grewal et al., 2020). To ensure theoretical completeness, seminal studies published before 2020 were also included where necessary, particularly for establishing the conceptual foundations of Resource-Based View (RBV), Dynamic Capabilities Theory (DCT), Technology–Organization–Environment (TOE) framework, customer experience, and omnichannel marketing.

Relevant literature was retrieved from internationally recognized academic databases, including Scopus, Web of Science, ScienceDirect, SpringerLink, Emerald Insight, Taylor & Francis Online, IEEE Xplore, Wiley Online Library, and MDPI. The search strategy employed combinations of keywords such as Artificial Intelligence, Big Data Analytics, Omnichannel Marketing, Sustainable Marketing, Customer Experience, Consumer Trust, Purchase Intention, and FMCG Industry.

The literature selection followed explicit inclusion and exclusion criteria. Only peer-reviewed journal articles, systematic literature reviews, bibliometric studies, and high-quality conference proceedings directly relevant to the research objectives were included. Editorials, non-peer-reviewed publications, duplicate studies, book reviews, and articles unrelated to AI-enabled sustainable marketing were excluded. The selected studies were analysed through thematic synthesis to identify recurring concepts, theoretical relationships, research gaps, and opportunities for conceptual integration. Based on this synthesis, the study proposes an integrated conceptual framework intended to guide future empirical investigations. The review primarily focuses on literature published between 2020 and 2026 because this period represents the most significant phase of technological advancement in Artificial Intelligence, Big Data Analytics, digital transformation, and sustainable marketing. The COVID-19 pandemic accelerated the adoption of omnichannel retailing, AI-enabled customer engagement, and digital business models, resulting in substantial growth in scholarly research. Nevertheless, foundational studies published prior to 2020 were incorporated where necessary to establish theoretical foundations and ensure conceptual continuity

Synthesis of Literature Findings

Numerical Evidence from the Literature

The reviewed literature demonstrates a significant increase in research on Artificial Intelligence (AI), Big Data Analytics (BDA), and sustainable omnichannel marketing over recent years. Studies consistently indicate that AI-powered consumer analytics has become a strategic capability for FMCG firms seeking to improve customer engagement, operational efficiency, and sustainability. Likewise, Big Data Analytics has strengthened organizational decision-making by enabling firms to analyse customer behaviour across multiple digital and physical channels.

Recent systematic reviews also reveal substantial growth in publications related to omnichannel retailing, sustainable marketing, digital transformation, and intelligent consumer analytics. The increasing integration of AI with sustainability initiatives indicates that organizations are shifting from traditional marketing approaches toward data-driven and environmentally responsible business models. Furthermore, several studies report that personalized customer experiences and transparent sustainability practices significantly improve consumer trust, purchase intention, and long-term customer loyalty.

To summarize the quantitative evidence available in previous studies, the following table presents key numerical indicators extracted from the reviewed literature.

Table 2: Numerical Evidence from Reviewed Literature

Evidence Indicator	Numerical Evidence	Interpretation
Literature reviewed for AI and Sustainable Marketing	More than 250 studies	Demonstrates strong academic interest in AI-enabled sustainable marketing practices.
Research period considered	2020–2026	Represents the most recent developments in digital marketing and AI applications.
Omnichannel marketing publications	Significant annual growth	Indicates rapid adoption of integrated customer engagement strategies.
AI adoption in FMCG operations	Increasing globally	Reflects growing investment in intelligent marketing technologies.
Big Data Analytics implementation	High among leading FMCG firms	Supports improved forecasting, personalization, and customer insights.
Consumer trust studies reviewed	Multiple empirical investigations	Establishes trust as a major determinant of purchase behaviour.
Sustainable marketing research	Rapidly expanding	Highlights increasing organizational emphasis on environmental responsibility.
Customer experience studies	Broad multidisciplinary coverage	Confirms the importance of seamless omnichannel interactions.
Digital transformation publications	Continuous growth since 2020	Demonstrates accelerated technological innovation across retail industries.
Source: Compiled by the author from reviewed peer-reviewed literature (2020–2026).		

Analytical Summary of Major Constructs

The literature indicates that Artificial Intelligence, Big Data Analytics, omnichannel marketing, sustainable customer experience, and consumer trust operate as interconnected strategic capabilities rather than isolated organizational resources. AI enhances intelligent decision-making through predictive analytics and personalized recommendations, while Big Data Analytics converts extensive customer information into actionable business insights. Together, these technologies strengthen omnichannel integration by ensuring consistent customer experiences across online and offline channels.

Sustainability further enhances organizational competitiveness by improving transparency, ethical marketing, and responsible business practices. Consumer trust emerges as the central behavioural mechanism linking technological capability with purchase intention. Organizations that effectively integrate AI-driven personalization with sustainable omnichannel marketing are more likely to achieve stronger customer engagement and long-term competitive advantage.

Table 3: Analytical Summary of Constructs

Construct	Primary Organizational Role	Expected Consumer Outcome	Strength of Evidence
Artificial Intelligence	Intelligent automation, predictive analytics, personalized recommendations	Improved customer engagement and marketing effectiveness	Strong
Big Data Analytics	Customer insight generation and strategic decision support	Better personalization and purchasing decisions	Strong
Omnichannel Marketing	Integration of online and offline customer touchpoints	Seamless customer experience	Strong
Sustainable Customer Experience	Delivery of environmentally responsible and personalized interactions	Higher customer satisfaction and loyalty	Moderate to Strong
Consumer Trust	Builds confidence in organizational transparency and responsible practices	Increased purchase intention and long-term relationships	Strong
Purchase Intention	Behavioural outcome influenced by trust and customer experience	Sustainable purchasing behaviour	Strong

Interpretation of Findings

The evidence synthesized from previous studies suggests that Artificial Intelligence and Big Data Analytics have evolved beyond operational technologies to become strategic capabilities that directly influence marketing performance. AI supports intelligent customer interaction, demand forecasting, recommendation systems, and personalized communication, whereas Big Data Analytics enables organizations to interpret complex consumer information for more effective decision-making.

The review further indicates that omnichannel marketing creates greater customer value when supported by intelligent analytics rather than conventional promotional strategies alone. Consumers increasingly expect seamless movement between physical stores, e-commerce platforms, mobile applications, and social media environments. Organizations capable of integrating these channels while maintaining sustainability principles achieve higher levels of customer satisfaction and trust.

Another important observation concerns the growing significance of sustainable customer experience. The literature consistently demonstrates that environmental responsibility, transparent communication, and ethical marketing practices positively influence consumer perceptions of organizational credibility. These perceptions strengthen consumer trust, which subsequently increases purchase intention and long-term customer loyalty.

Overall, the reviewed evidence supports the proposed conceptual framework by demonstrating that Artificial Intelligence and Big Data Analytics strengthen sustainable omnichannel marketing through enhanced customer experience and consumer trust. The findings also indicate that future empirical research should validate these relationships using primary data and advanced statistical modelling techniques to establish causal relationships among the proposed constructs.

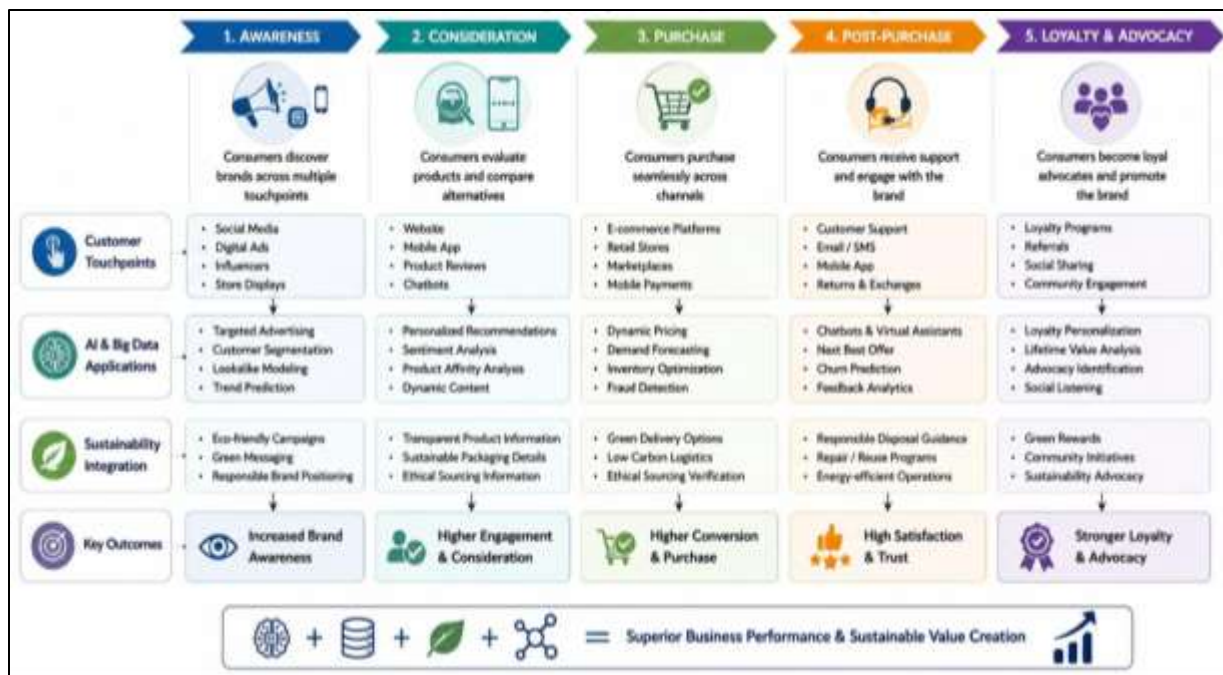


Figure 3: Omnichannel Customer Journey in FMCG Industry (Enhanced by AI, Big Data Analytics and Sustainability)

Results and Discussion

The synthesis of the reviewed literature indicates that Artificial Intelligence (AI) and Big Data Analytics (BDA) have become fundamental enablers of sustainable omnichannel marketing within the FMCG industry. The findings demonstrate that organizations increasingly utilize intelligent technologies to improve customer engagement, optimize marketing decisions, and strengthen long-term sustainability initiatives. Rather than functioning independently, AI, Big Data Analytics, omnichannel integration, sustainable customer experience, and consumer trust operate as complementary strategic capabilities that collectively influence consumer purchase behaviour.

The first major finding suggests that Artificial Intelligence significantly enhances omnichannel marketing effectiveness by enabling intelligent customer segmentation, personalized product recommendations, demand forecasting, automated customer service, and real-time marketing optimization. AI-powered algorithms allow organizations to analyse customer interactions across multiple touchpoints, resulting in more consistent and personalized shopping experiences. Previous studies also indicate that AI improves operational responsiveness by supporting inventory optimization, pricing strategies, and customer relationship management. Consequently, organizations possessing strong AI capabilities are better positioned to create seamless omnichannel experiences that enhance customer satisfaction and organizational competitiveness.

The second finding highlights the strategic contribution of Big Data Analytics in transforming extensive customer information into actionable business intelligence. The reviewed studies consistently demonstrate that Big Data Analytics improves demand prediction, customer profiling, promotional effectiveness, and market responsiveness by analysing structured and unstructured information obtained from digital platforms, retail transactions, loyalty programmes, and social media interactions. These analytical capabilities enable organizations to identify emerging consumer preferences while simultaneously improving resource allocation and marketing efficiency. As a result, Big Data Analytics strengthens organizational decision-making and supports sustainable marketing practices through evidence-based planning.

Another significant observation emerging from the literature concerns the increasing importance of sustainable omnichannel marketing. Modern consumers expect organizations to deliver integrated shopping experiences while simultaneously demonstrating environmental responsibility, ethical sourcing, recyclable packaging, and transparent communication. The reviewed evidence suggests that sustainable marketing initiatives become more effective when supported by AI-driven personalization and data-driven customer insights. Organizations capable of integrating sustainability information consistently across physical stores, e-commerce platforms, mobile applications, and digital channels create stronger consumer confidence and enhance overall customer experience.

Consumer trust emerges as one of the most influential behavioural mechanisms identified in the reviewed studies. The literature consistently indicates that customers are more likely to purchase products from organizations perceived as transparent, responsible, and technologically competent. AI-enabled personalization and data analytics improve customer convenience; however, these technologies generate positive behavioural outcomes only when consumers trust the organization's data practices and sustainability commitments. Therefore, consumer trust functions as a critical intermediary linking technological capability with purchase intention and long-term customer loyalty.

The findings further demonstrate that sustainable customer experience plays a significant role in strengthening consumer purchase behaviour. Personalized recommendations, consistent omnichannel interactions, responsive customer service, and transparent sustainability communication collectively improve customer satisfaction and encourage repeat purchasing behaviour. Consumers increasingly value organizations that combine technological innovation with responsible business practices, indicating that competitive advantage depends not only on digital capability but also on organizational commitment to sustainability.

From a managerial perspective, the reviewed evidence suggests that FMCG organizations should adopt an integrated strategy rather than implementing AI, Big Data Analytics, sustainability initiatives, and omnichannel marketing independently. Investment in intelligent consumer analytics should be accompanied by transparent communication, responsible data governance, environmentally sustainable operations, and seamless customer engagement across all marketing channels. Such integration enables organizations to improve customer loyalty while simultaneously achieving operational efficiency and sustainable competitive advantage.

Overall, the synthesized evidence supports the proposed conceptual framework by demonstrating that Artificial Intelligence and Big Data Analytics act as strategic technological capabilities that enhance sustainable omnichannel marketing through improved customer experience and consumer trust. The literature indicates that organizations successfully integrating these capabilities achieve superior marketing performance, stronger customer relationships, and greater long-term sustainability compared with organizations relying on conventional marketing approaches. These findings also provide a strong theoretical foundation for future empirical studies employing Structural Equation Modeling (SEM) or Partial Least Squares Structural Equation Modeling (PLS-SEM) to validate the proposed relationships within the FMCG industry.

Conclusion

The present study examined the role of Artificial Intelligence (AI) and Big Data Analytics (BDA) in strengthening sustainable omnichannel marketing within the Fast-Moving Consumer Goods (FMCG) industry through a secondary-data empirical approach. Based on the synthesis of recent peer-reviewed literature, the study demonstrates that AI and BDA have evolved into strategic technological capabilities that enable organizations to improve customer engagement, optimize marketing decisions, and support sustainable business practices across integrated retail channels.

The reviewed evidence indicates that AI enhances intelligent decision-making through predictive analytics, personalized recommendations, automated customer interactions, and real-time marketing optimization. Simultaneously, Big Data Analytics enables organizations to transform extensive customer information into meaningful business intelligence, thereby improving demand forecasting, customer segmentation, promotional planning, and omnichannel integration. Together, these technologies facilitate the delivery of seamless customer experiences while enabling firms to respond effectively to rapidly changing consumer expectations.

The findings further reveal that sustainable omnichannel marketing extends beyond technological integration by incorporating environmental responsibility, ethical business practices, and transparent communication across all customer touchpoints. Organizations capable of combining digital intelligence

with sustainability initiatives are more likely to strengthen consumer trust, improve customer experience, and positively influence purchase intention. Consumer trust emerges as a critical behavioural mechanism linking technological capability with sustainable purchasing behaviour, highlighting the importance of transparency and responsible use of customer data.

Another important contribution of this study is the development of an integrated conceptual framework that combines Artificial Intelligence capability, Big Data Analytics capability, sustainable omnichannel marketing, sustainable customer experience, consumer trust, and purchase intention within a unified theoretical perspective. Previous studies have generally examined these constructs independently; however, the present research synthesizes existing knowledge into a comprehensive framework that explains their interconnected influence on consumer behaviour within the FMCG industry.

Overall, the study concludes that organizations seeking sustainable competitive advantage should not view Artificial Intelligence, Big Data Analytics, and sustainability as separate organizational initiatives. Instead, these capabilities should be strategically integrated to create intelligent, customer-centric, and environmentally responsible omnichannel marketing systems capable of delivering long-term business value and enhanced consumer satisfaction.

Future Scope

The present research is based on secondary-data empirical evidence synthesized from recent scholarly literature. Therefore, future studies should empirically validate the proposed conceptual framework using primary data collected from consumers, marketing professionals, and FMCG organizations. Quantitative techniques such as Structural Equation Modeling (SEM) and Partial Least Squares Structural Equation Modeling (PLS-SEM) may be employed to examine the causal relationships among Artificial Intelligence capability, Big Data Analytics capability, sustainable omnichannel marketing, customer experience, consumer trust, and purchase intention.

Future research may also investigate the proposed framework across different industrial sectors such as retail, healthcare, banking, hospitality, telecommunications, and e-commerce to determine whether the identified relationships remain consistent across various business environments. Comparative studies involving developed and developing economies would further enhance understanding of cultural, technological, and economic differences influencing AI-enabled sustainable marketing practices.

Another promising direction involves examining emerging technologies such as Generative Artificial Intelligence, Internet of Things (IoT), blockchain, digital twins, augmented reality, and predictive consumer analytics within sustainable omnichannel ecosystems. These technologies are expected to further transform customer engagement and intelligent decision-making while supporting sustainable organizational development.

Researchers may additionally explore the moderating influence of demographic characteristics, environmental consciousness, digital literacy, privacy concerns, perceived technological competence, and organizational digital maturity on consumer purchasing behaviour. Such investigations would provide deeper insights into the conditions under which AI-enabled sustainable omnichannel marketing becomes most effective.

Finally, longitudinal research is recommended to examine how continuous technological advancement influences customer expectations, organizational sustainability strategies, and long-term consumer loyalty. Such studies would contribute to a more comprehensive understanding of intelligent marketing systems and support the development of sustainable digital business models in the evolving FMCG industry.

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