

## **AI-DRIVEN DIGITAL TRANSFORMATION AND CONSUMER BEHAVIOUR IN ONLINE SHOPPING**

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### **ABSTRACT**

*Artificial intelligence (AI) is rapidly altering the digital marketing environment, redefining the way consumers engage with online purchasing platforms. AI-driven technologies, including predictive analytics, chatbots, recommendation systems, and personalized advertising, have had a substantial impact on consumer decision-making processes. The purpose of this investigation is to investigate the influence of AI-driven digital transformation on consumer behavior in online purchasing environments. By synthesising recent literature and theoretical frameworks, the paper explores how AI enhances personalisation, trust, engagement, and purchase intent among online consumers. The study adopts a conceptual research approach, drawing on recent empirical evidence to build a comprehensive understanding of AI-driven consumer interactions. The findings suggest that AI-driven digital transformation not only improves user experience but also reshapes consumer expectations, decision-making patterns, and brand relationships. This paper adds to the expanding body of research on AI in digital marketing by providing insights into emerging trends, key challenges, and future research directions related to the analysis of AI-driven consumer behaviour.*

**KEYWORDS:** *Artificial Intelligence, Digital Transformation, Consumer Behaviour, Online Shopping, E-Commerce, Ai Marketing.*

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### **INTRODUCTION**

The rapid expansion of digital technologies has profoundly reshaped the global retail environment, making online shopping one of the dominant modes of consumer purchasing (Kumar, 2021; Verhoef, 2015). In recent years, Artificial Intelligence (AI) has become a major catalyst for digital transformation across multiple industries, especially within digital marketing and e-commerce (Huang & Rust, 2021; Davenport, 2020). AI-enabled systems allow organisations to process large volumes of data, anticipate consumer preferences, automate

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customer interactions, and create highly personalised experiences, thus reshaping traditional marketing practices (**Chatterjee, 2021; Jarek & Mazurek, 2019**).

AI-driven digital transformation goes beyond mere technological advancement; it has important behavioural implications as well. Modern consumers increasingly interact with intelligent systems, such as recommendation algorithms, voice-enabled assistants, chatbots, and AI-based search platforms, which influence their purchasing journeys (**Kaplan & Haenlein, 2019; Huang & Rust, 2021**). These technologies play a crucial role in shaping how consumers identify products, compare options, and ultimately make purchase decisions (**Grewal, 2021**). As a result, examining the relationship between AI and consumer behaviour has become highly relevant for both academic research and industry applications (**Puntoni, 2021**).

This study seeks to examine how AI-enabled digital transformation influences consumer behaviour in online shopping environments. By analysing recent advancements in AI-powered digital marketing, the paper offers a comprehensive understanding of how intelligent technologies influence consumer engagement, trust formation, and purchase intentions (**Dwivedi, 2021; Huang & Rust, 2021**).

## Research Objectives

1. To analyse the role of AI in facilitating digital transformation within online shopping environments.
2. To analyse how AI-powered digital marketing influences consumer behaviour.
3. To explore the impact of AI on consumer trust, engagement, and purchase intention.
4. To identify emerging trends and challenges in AI-driven consumer ecosystems.

## Research Methodology

This study employs a conceptual research design, supported by a comprehensive review of recent literature drawn from peer-reviewed journals, conference proceedings, and major scholarly databases such as Scopus, Web of Science, and Google Scholar.

## Literature Review

### AI and Digital Transformation

AI-driven digital transformation can be defined as the incorporation of intelligent technologies into organisational processes to improve operational efficiency, deliver personalised experiences, and enable data-driven decision making (**Verhoef, 2021**). By utilising AI, companies can analyse real-time consumer data, automate customer interactions, and generate predictive insights that guide strategic actions. Research indicates that organisations embracing AI-led transformation experience higher levels of customer engagement and greater effectiveness in their marketing initiatives (**Bughin, 2019**).

Recent research shows that the adoption of artificial intelligence (AI) in e-commerce platforms is increasing rapidly, largely due to advancements in machine learning, natural language processing, and big data analytics (**Dwivedi, 2023**). These technological developments allow organisations to create dynamic and intelligent marketing systems that continuously adapt to changing consumer behaviour patterns.

### **AI in Digital Marketing**

Artificial Intelligence (AI) has substantially reshaped digital marketing by enabling greater automation, enhanced personalisation, and more accurate predictive targeting strategies. AI-driven recommendation systems, widely used by platforms such as Amazon and Netflix, have had a strong impact on consumer engagement and purchasing behaviour (**Gentsch, 2019**). The provision of personalised content enhances its relevance for users, resulting in higher conversion rates and greater customer satisfaction.

Another significant application of AI in digital marketing is the deployment of chatbots and virtual assistants, which enable real-time customer engagement and provide instant support (**Huang & Rust, 2021**). These technologies enhance responsiveness while reducing operational costs, thereby improving the overall customer experience and strengthening brand loyalty.

Additionally, predictive analytics allows marketers to anticipate consumer preferences and design targeted campaigns accordingly. Empirical studies indicate that predictive marketing strategies play a significant role in enhancing purchase intentions and fostering long-term customer retention (**Kumar, 2020**).

### **Consumer Behaviour in Online Shopping**

Consumer behaviour in digital environments is influenced by various factors, including trust, perceived usefulness, convenience, and the level of personalisation provided by online platforms (**Gefen, 2003**). The Technology Acceptance Model (TAM) and the Unified Theory of Acceptance and Use of Technology (UTAUT) have been extensively applied in prior studies to explain patterns of technology adoption and usage in digital environments.

In online shopping, consumer behaviour is increasingly shaped by digital stimuli such as customer reviews, targeted advertisements, and algorithm-based recommendations. These digital cues help consumers reduce perceived risks and make more informed evaluations regarding product reliability and credibility (**Lemon & Verhoef, 2016**).

### **AI and Consumer Behaviour**

Recent research indicates that artificial intelligence (AI) significantly reshapes consumer decision-making by serving as an intelligent intermediary between consumers and products (**Davenport, 2020**). AI-enabled personalisation increases the perceived relevance of content and product offerings, thereby influencing both the cognitive and emotional responses of consumers throughout the decision-making process.

Nevertheless, the growing adoption of AI has generated concerns related to data privacy, algorithmic bias, and the possible reduction of individual decision-making autonomy (**Martin & Murphy, 2017**). Within this context, trust plays a pivotal role in the acceptance of AI. Consumers are more inclined to use AI-based platforms when their transparency and reliability are clearly evident.

Moreover, AI fosters higher levels of consumer engagement by facilitating interactive and immersive experiences, which help to strengthen brand relationships (**Huang & Rust, 2021**). This transition from purely transactional interactions to more experience-oriented forms of consumption underscores the transformative influence of AI on modern consumer behaviour.

### AI-Led Digital Transformation in Online Shopping Platforms

Artificial Intelligence (AI) has emerged as a key driver in reshaping the operations and ongoing development of online shopping platforms. Unlike earlier stages of digital transformation that focused mainly on automation and connectivity, the current phase is increasingly driven by intelligent technologies. AI allows online platforms to analyse large amounts of user data, predict behavioural patterns, and provide adaptive, responsive shopping experiences. Consequently, online retail is transitioning from a static, transaction-oriented model to a more dynamic and data-driven ecosystem (Verhoef, 2021).

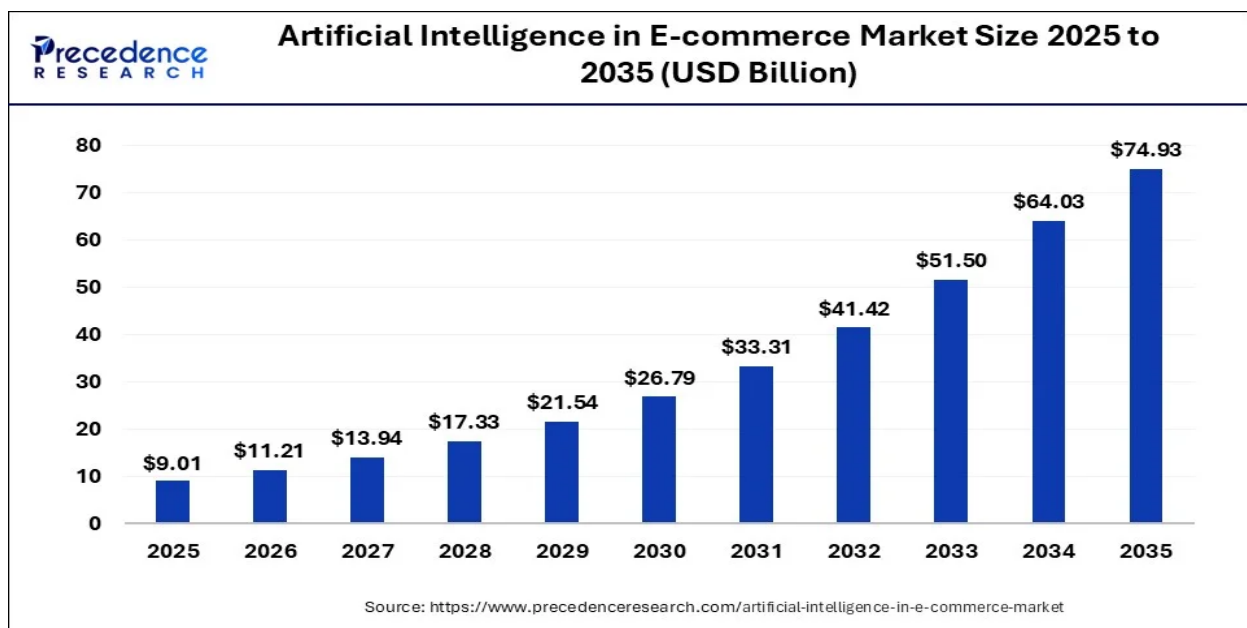
### Expansion of AI Adoption in Online Shopping

The increasing integration of Artificial Intelligence into online shopping is evident from rising global adoption patterns. Industry analyses indicate that AI-driven functionalities such as intelligent recommendations, virtual assistants, and automated customer support have become standard features across many leading e-commerce platforms.

Empirical shopping data further highlights the expanding influence of AI on consumer behaviour. AI-supported online shopping events have generated substantial sales volumes, while user traffic originating from AI-powered shopping tools has shown significant growth in recent years.

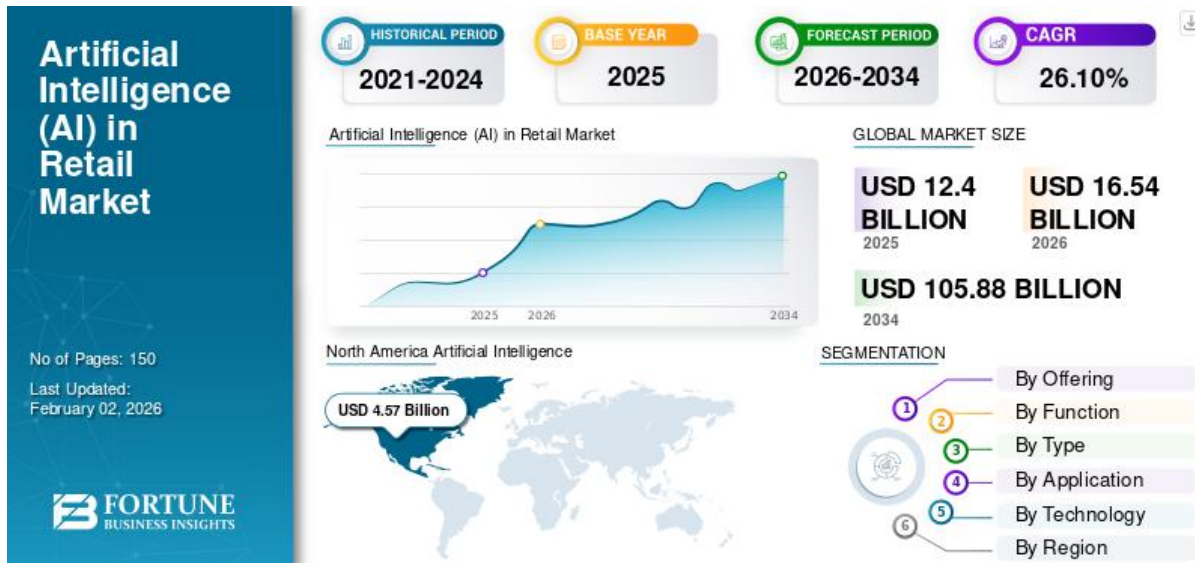
Collectively, these developments suggest that AI is rapidly evolving into a core structural element of online shopping ecosystems rather than merely serving as an additional technological enhancement.

Recent market evaluations indicate that the global AI-enabled online shopping ecosystem was valued at approximately USD 14.03 billion in 2025 and is projected to grow substantially in the years ahead. Estimates suggest that the market may reach nearly USD 70–75 billion by 2035, reflecting a compound annual growth rate (CAGR) of about 17.60% over the period 2026–2035. These forecasts highlight the increasing strategic importance of Artificial Intelligence in shaping the future of online consumer environments.



### AI Adoption Growth Rate in Online Shopping

The global market for Artificial Intelligence (AI) in the retail sector was valued at about USD 12.40 billion in 2025 and is expected to grow considerably during the forecast period. Projections suggest that the market will increase from nearly USD 16.54 billion in 2026 to around USD 105.88 billion by 2034, representing a compound annual growth rate (CAGR) of approximately 26.10%. From a regional perspective, North America held the largest share of the global market in 2025, accounting for about 36.90%. Within this region, the United States is projected to record strong growth, with the AI retail market expected to reach an estimated value of USD 17.76 billion by 2032.

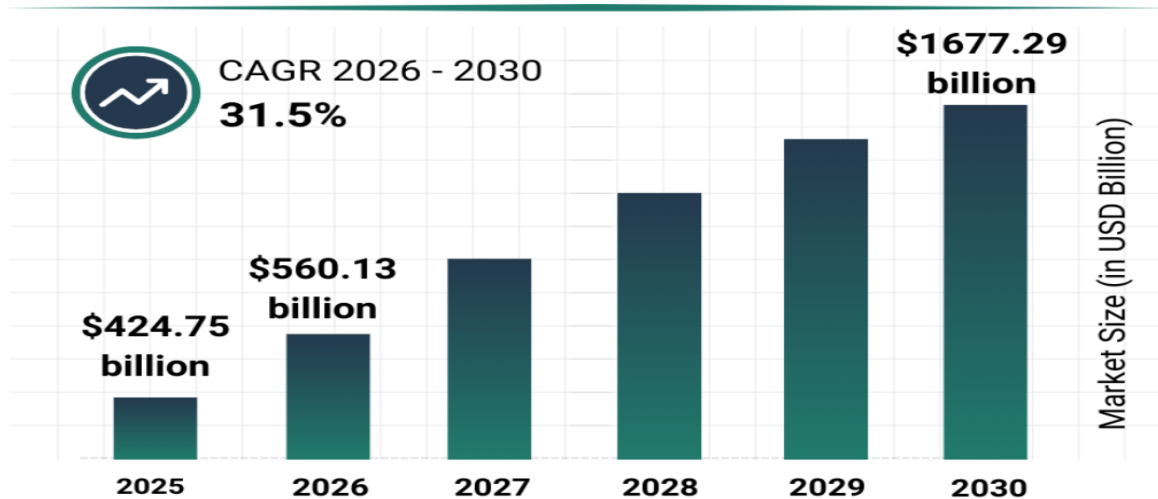


### Artificial Intelligence (AI) in the Digital Transformation Market Overview

#### Strategic Importance of AI in Digital Transformation

Artificial Intelligence is increasingly being recognised as a central force driving digital transformation across a wide range of sectors. In contrast to earlier phases of digitalisation that primarily emphasized automation and improved connectivity, the current phase is largely shaped by intelligent technologies. AI allows organisations to interpret complex data patterns, support automated decision-making, and build responsive digital systems, thereby positioning it as a critical enabler of sustained and long-term transformation.

## Artificial Intelligence (AI) In Digital Transformation Market Report 2026



### Artificial Intelligence (AI) in the Digital Transformation Market Overview

The Artificial Intelligence (AI) market within the digital transformation landscape has experienced rapid growth in recent years and is projected to increase from about USD 424.75 billion in 2025 to nearly USD 560.13 billion in 2026, representing a compound annual growth rate (CAGR) of 31.9%. The strong growth observed during this period can be linked to multiple contributing factors, including widespread enterprise digitisation efforts, early adoption of automation technologies, the increasing reliance on data-driven decision-making, rapid expansion of cloud computing, and the growing demand for improved operational efficiency.

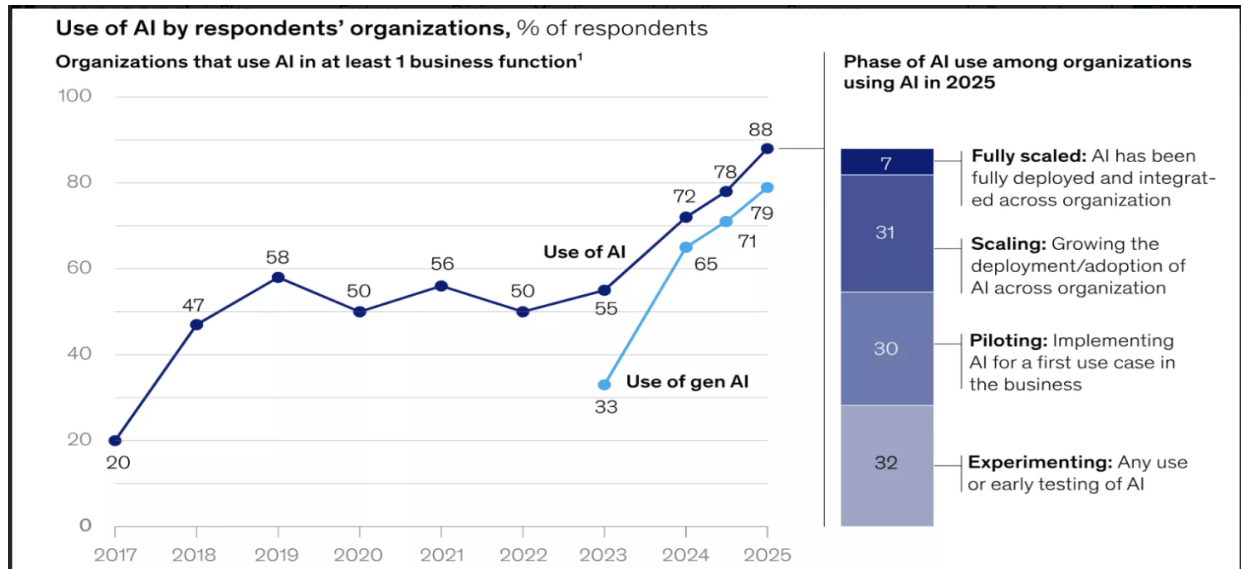
### Influence of AI-Powered Digital Marketing on Consumer Behaviour

#### Personalisation and Behavioural Targeting

Artificial Intelligence has played a transformative role in digital marketing by facilitating advanced levels of personalisation. AI-powered recommendation systems examine users' browsing behaviour, past purchases, and interaction patterns to generate customised product suggestions. Such personalised engagement minimises cognitive effort during the decision-making process and enhances the efficiency of consumer choices, thereby shaping purchasing behaviour.

Furthermore, AI-enabled personalisation increases the perceived relevance of marketing content and strengthens user engagement, which ultimately contributes to higher levels of customer satisfaction and a greater likelihood of purchase.

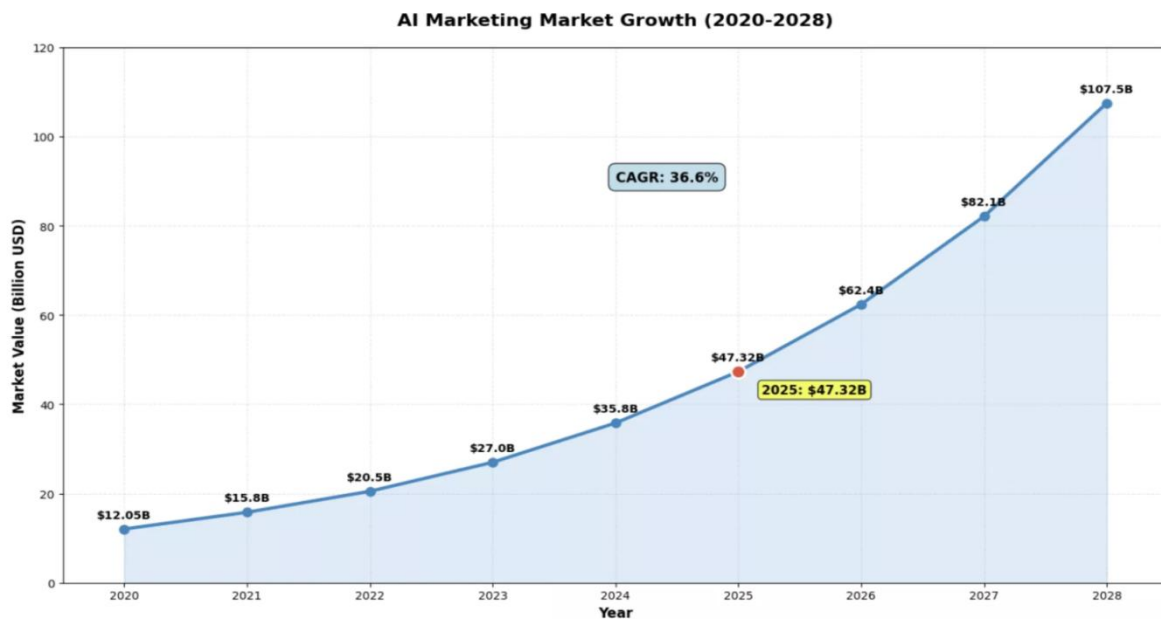
### AI Marketing Industry Growth



**Table Title: Adoption and Strategic Importance of AI in Marketing and Business Functions**

Stat No	Key Insight	Percentage / Value	Critical Insights
1.	Organisations using AI in at least one business function	88%	AI is now widely adopted and no longer limited to early adopters.
2.	CMOs expecting AI to reshape their role by 2026	65%	Marketing leadership is shifting toward data-driven and tech-enabled roles.
3.	Firms using AI for personalised experiences	73%	Personalisation is a key reason behind rapid AI adoption in marketing.
4.	Firms planning to increase AI budgets	92%	Organisations see AI as a long-term strategic investment.
5.	Marketers automating repetitive tasks using AI	43%	AI is helping improve efficiency by reducing manual workload
6.	Companies already using AI in marketing	50%	AI adoption in marketing is already mainstream but still expanding
7.	Firms planning to increase AI spending next year	78%	Investment momentum suggests continued growth in AI-led marketing.
8.	AI marketing industry valuation (2025)	\$47.32	The market size reflects the growing economic importance of AI in marketing.

**Source:** Compiled from recent industry reports including McKinsey AI surveys, CMO outlook studies, and global AI marketing market analyses (2025–2026).



Source: omniscend.com

### Expansion of the AI Marketing Industry

- AI marketing industry valued at **\$47.3 billion in 2025**
- Projected to exceed **\$107 billion by 2028**
- Over **80% of marketers actively use AI tools**

These figures highlight a clear transition from conventional digital marketing practices toward more advanced, AI-driven marketing ecosystems.

### Impact of AI on Consumer Trust, Engagement, and Purchase Intention

#### AI and Consumer Trust

Artificial Intelligence performs a complex role in influencing consumer trust within online shopping environments. On one side, AI-driven tools such as chatbots and recommendation systems contribute positively to trust by providing accurate information, personalised guidance, and instant assistance. Empirical evidence suggests that factors like chatbot responsiveness, perceived usefulness, and service quality play a significant role in strengthening trust toward online platforms (Illescas-Manzano, 2024).

Trust also functions as an important mediating variable between AI interactions and consumer behaviour. Studies based on the Technology Acceptance Model (TAM) show that consumers' perceptions of the usefulness and reliability of AI tools play a significant role in shaping their attitudes towards, and trust in, AI-enabled shopping environments (Nagy & Hajdu, 2022).

In a broader sense, trust serves as a psychological link connecting AI functionality with user acceptance. When AI systems are viewed as transparent, supportive, and human-like in their interactions, they tend to foster higher levels of trust and sustained user engagement.

## AI and Consumer Engagement

Artificial Intelligence has considerably redefined how brands communicate with consumers in digital spaces. Technologies such as chatbots, virtual assistants, and generative AI interfaces have enabled interactions that are faster, more personalised, and ongoing in nature. In contrast to traditional customer service systems, AI-enabled engagement tools enable real-time interaction across multiple digital channels, such as websites, mobile applications, and social media platforms, allowing brands to maintain continuous connectivity with their audiences.

A key contribution of AI is its ability to facilitate continuous engagement. AI-based chatbots and conversational systems operate around the clock, enabling users to obtain assistance without delays typically associated with human support. This constant availability enhances user convenience and reflects the growing expectation among modern consumers for immediate responses and frictionless digital experiences.

In addition, AI enhances engagement by delivering highly personalised interactions. By examining user browsing habits, purchase records, and behavioural patterns, AI systems generate customised responses and recommendations tailored to individual preferences. Such personalised interactions foster a more engaging and immersive shopping journey, encouraging users to spend more time on digital platforms and build stronger connections with brands.

Another important benefit of AI-driven engagement is enhanced responsiveness. AI-powered support tools significantly minimise response times when compared with traditional service channels. Prompt and efficient replies help sustain higher engagement levels, as consumers are more likely to continue interacting with brands when their concerns are addressed quickly and effectively.

## Quantitative Insights into AI and Consumer Engagement

- Research findings indicate that the use of AI chatbots can increase customer satisfaction by nearly 18 percentage points, underscoring their significant role in enhancing user engagement and overall service quality (**Sutantri, 2025**).
- Organisations that adopt AI chatbot technologies report approximately 24% higher customer satisfaction levels, while nearly 80% of users describe their experiences as positive, indicating increasing consumer acceptance of AI-enabled interactions (**Envive AI Insights, 2024**).
- AI-powered conversational systems are capable of resolving customer issues up to 92% more quickly, enabling organisations to deliver more efficient responses and sustain higher levels of user engagement (**Master of Code, 2024**).
- Studies indicate that AI chatbots can shorten response times by more than 99% when compared with traditional customer support systems, resulting in faster and more seamless user interactions (**Sutantri, 2025**).
- Evidence suggests that during peak online shopping periods, the adoption of AI-based chat services has grown by more than 40% on a year-on-year basis, indicating an increasing reliance on AI-driven customer assistance (**Reuters, 2025**).

- AI-enabled support systems have been shown to increase first-contact resolution rates by over 60%, thereby minimising repeated queries and enhancing the overall user experience (**Envive AI Insights, 2024**).

### **AI and Purchase Intention**

One of the most widely examined outcomes of AI adoption is its effect on consumers' purchase intentions. AI-enabled tools help reduce decision-related uncertainty by providing personalised recommendations, rapid responses, and contextually relevant product information. Empirical evidence suggests that AI-driven personalisation enhances purchase intention by increasing perceived relevance and usefulness among consumers (**AngKhuong, 2025**).

Chatbots, in particular, play a critical role in transforming browsing activity into actual purchasing behaviour. Studies conducted in online shopping contexts indicate that interactions with AI chatbots significantly increase purchase likelihood by enhancing consumer confidence and lowering perceived risks (**Dave & Machhar, 2025**).

Behavioural analytics findings further indicate that consumers who engage with AI-driven chat tools generally spend more and achieve higher conversion rates than those who shop without AI assistance. This pattern highlights the tangible commercial value of AI-supported decision-making in digital retail environments (**Rep AI Report, 2025**).

AI increases purchase intention by enhancing confidence, minimising effort, and offering personalised shopping experiences.

### **Emerging Trends and Challenges in AI-Driven Consumer Ecosystems**

#### **Emerging Trends in AI Commerce**

Artificial Intelligence is progressively reshaping digital commerce by introducing advanced technological capabilities that change how consumers interact with online shopping platforms. The progression of AI in this domain has moved beyond basic automation and is now advancing toward predictive, conversational, and autonomous systems. A number of emerging developments illustrate how AI is shaping the future trajectory of online retail and influencing evolving patterns of digital consumer behaviour.

#### **Generative AI in Digital Commerce**

Generative Artificial Intelligence is redefining how brands develop content, interact with customers, and deliver personalised experiences. Contemporary AI tools are capable of producing product descriptions, marketing materials, and conversational responses in real time, thereby making digital marketing more scalable and responsive. Existing research indicates that generative AI plays a significant role in enhancing content personalisation and overall customer experience, particularly within online retail settings (**Dwivedi, 2023**).

Industry analyses further suggest that organisations adopting generative AI report higher levels of customer engagement along with improved operational efficiency, particularly in content-centric customer journeys (**McKinsey, 2024**). These trends imply that generative AI is increasingly emerging as a core component of AI-driven commercial ecosystems.

### **Rise of AI Shopping Assistants and Agents**

AI-driven shopping assistants have emerged as one of the most prominent manifestations of intelligent commerce. These systems support consumers in discovering products, evaluating alternatives, and making well-informed decisions through conversational interfaces. Existing research indicates that such conversational agents improve decision convenience and lower cognitive effort during the online shopping process (**Huang & Rust, 2021**).

Recent market projections suggest that AI-powered shopping agents are likely to become widely adopted within the current decade, supported by the growth of voice commerce and conversational AI ecosystems (**Salesforce, 2024**). This trend signals a gradual shift from traditional search-oriented shopping models toward more assistance-driven forms of digital consumption.

### **Conversational and Voice Commerce**

Conversational commerce is emerging as a major trend, largely fuelled by ongoing developments in natural language processing and voice recognition technologies. AI-enabled voice assistants and chat-based interfaces enable consumers to search, evaluate, and purchase products through natural, dialogue-based interactions. Existing research suggests that such conversational interfaces increase user engagement and enhance shopping convenience by facilitating more intuitive and user-friendly interactions (**Grewal, 2021**).

Voice commerce, in particular, is witnessing increasing adoption as smart speakers and mobile voice assistants become more widely used. Research indicates that conversational AI enhances accessibility and improves overall user experience, particularly among mobile-first consumers (**PwC, 2023**).

### **Predictive and Hyper-Personalised Commerce**

Predictive analytics is driving a transition from reactive to proactive models of commerce. Contemporary AI systems are capable of anticipating consumer preferences by analysing behavioural data, browsing activities, and prior purchase patterns. This predictive functionality enables digital platforms to suggest relevant products even before users actively search for them. Existing research suggests that predictive personalisation enhances customer satisfaction and improves conversion rates by increasing the perceived relevance of recommendations (**Verhoef, 2021**).

Hyper-personalisation, enabled by Artificial Intelligence and big data analytics, is transforming digital experiences by providing highly customised product recommendations and promotional offers. This development is expected to significantly influence future consumer expectations within online shopping environments (**Kumar, 2020**).

### **Challenges in AI-Driven Consumer Ecosystems**

Although Artificial Intelligence has greatly improved digital consumer experiences, it has also brought forward a range of complex challenges that affect both adoption and long-term sustainability. These issues are not limited to technological constraints but also encompass ethical, psychological, and regulatory concerns. Recognising and addressing these barriers is crucial for the development of responsible and sustainable AI-driven consumer ecosystems.

### **Privacy and Data Security Concerns**

One of the most commonly emphasised challenges in AI-driven ecosystems is the issue of data privacy. AI technologies depend heavily on extensive consumer data, such as browsing patterns, purchase histories, and individual preferences. The scale of this data collection often gives rise to concerns regarding surveillance, potential misuse, and the risk of data breaches. Existing research suggests that privacy-related apprehensions play a significant role in shaping consumer resistance toward AI-enabled services, particularly within online shopping contexts (**Martin & Murphy, 2017**).

Recent research further indicates that consumers are increasingly seeking greater transparency in the ways their data is collected and utilised by AI systems. Ambiguities in data governance and management practices can weaken consumer trust and lower their willingness to interact with AI-enabled platforms (**Dwivedi, 2023**).

### **Algorithmic Bias and Fairness**

Algorithmic bias constitutes another major challenge in the context of AI ecosystems. Because AI models are developed using historical datasets, they may unintentionally reproduce or intensify pre-existing societal biases. In the context of digital commerce, such biases can result in inequitable product recommendations, exclusionary targeting practices, or even discriminatory pricing outcomes.

Academic literature indicates that algorithmic bias can compromise fairness and inclusivity, thereby creating ethical concerns for organisations implementing AI technologies (**O’Neil, 2016**). Subsequent research on AI governance further highlights the importance of designing fairness-oriented AI systems to minimise discriminatory effects and promote more equitable digital experiences (**Floridi, 2018**).

### **Lack of Transparency and Explain ability**

AI systems are frequently described as “black boxes” due to the limited transparency of their decision-making processes. This lack of interpretability makes it challenging for users to understand the rationale behind specific recommendations or automated outcomes. Prior studies indicate that explainability plays a crucial role in the acceptance of AI, as people are more likely to trust systems that provide transparent and easily understandable explanations for their results (**Rai, 2020**).

Within consumer ecosystems, opaque AI-driven decisions can generate scepticism and discourage adoption, particularly in sensitive contexts such as financial transactions or personalised pricing models (**Glikson& Woolley, 2020**).

### **Regulatory and Ethical Governance Challenges**

The rapid evolution of AI technologies has progressed faster than the development of corresponding regulatory frameworks, leading to uncertainty for both organisations and consumers. In response, governments and global institutions are increasingly working toward establishing ethical AI standards that address issues such as transparency, accountability, and data protection rights.

Previous studies indicate that the lack of clear and well-established regulatory frameworks can create legal uncertainty and restrict the wider adoption of AI, particularly in cross-border digital

commerce contexts (**Jobin, 2019**). Emerging governance approaches to AI emphasise responsible innovation, highlighting the importance of ethical system design and adherence to evolving international regulatory frameworks (**European Commission, 2023**).

## CONCLUSION

Artificial Intelligence has become a transformative force in redefining the online shopping landscape by altering how consumers engage with digital platforms. Capabilities such as personalised recommendations, intelligent search functions, and automated support systems have made the shopping experience more intuitive and adaptive. By processing behavioural data in real time, AI enables platforms to deliver customised interactions that closely match individual preferences. As a result, online shopping has evolved from a purely transactional process into a more interactive and experience-driven activity.

In addition to enhancing convenience, AI has influenced important behavioural aspects, including consumer engagement, trust, and decision-making. Rapid response mechanisms, conversational interfaces, and predictive recommendations help minimise friction within the shopping journey and contribute to higher satisfaction levels. However, the increasing dependence on AI also raises concerns regarding data privacy, transparency, and ethical use. These challenges are critical in shaping consumer trust and the long-term acceptance of AI-driven platforms.

Looking ahead, the role of AI in online retail is expected to grow further as technologies become more advanced and increasingly integrated into everyday digital interactions. For organisations, the primary challenge is not merely adopting advanced AI solutions but implementing them in a responsible and consumer-centric manner. Maintaining an appropriate balance between technological progress and ethical responsibilities will be essential for building sustainable and trustworthy digital shopping ecosystems in the future.

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