

# Artificial Intelligence in Commerce: Its Impact on Consumer Decision-Making, Personalised Marketing, and Business Performance

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**Abstract**—Artificial Intelligence (AI) has emerged as one of the most influential technologies transforming contemporary commerce. The integration of AI into e-commerce, digital marketing, customer relationship management, recommendation systems, predictive analytics, chatbots, and business decision-making has changed the ways in which organizations interact with consumers and manage their operations. AI enables businesses to analyse large volumes of consumer data, identify behavioural patterns, predict purchasing preferences, personalize marketing communication, and automate customer services. At the consumer level, AI-powered recommendation systems and personalized advertisements can influence product discovery, consideration, evaluation, and purchase decisions. At the organizational level, AI can improve marketing efficiency, customer engagement, operational decision-making, and business performance. However, the increasing use of AI also raises concerns relating to privacy, algorithmic bias, transparency, consumer autonomy, and excessive personalization. Recent research indicates that personalization and perceived relevance can strengthen consumer engagement, while transparency and trust remain important factors in AI-mediated marketing. This article examines the role of Artificial Intelligence in commerce with particular attention to consumer decision-making, personalised marketing, and business performance. It argues that the effectiveness of AI in commerce depends not only on technological sophistication but also on responsible data use, transparency, consumer trust, and the strategic integration of AI into business processes.

**Index Terms**—Artificial Intelligence, Consumer Decision-Making, Personalised Marketing, E-Commerce.

## I. INTRODUCTION

Artificial Intelligence has moved from being a specialized technological concept to becoming an increasingly important component of contemporary commerce. Businesses across retail, banking, e-commerce, advertising, hospitality, financial services, and other consumer-oriented sectors are using AI to automate processes, analyse data, communicate with customers, and support managerial decisions. The development of machine learning, natural language processing, predictive analytics, computer vision, recommender systems, and generative AI has expanded the range of commercial activities that can be supported by intelligent technologies. Research on AI and consumer behaviour has grown substantially, covering areas such as consumer trust, engagement, attitudes, decision-making, adoption, and interactions with AI systems.

The increasing availability of consumer data has been an important factor behind the expansion of AI in commerce. Every digital interaction can potentially generate information about searches, product views, purchases, reviews, browsing patterns, preferences, and responses to marketing communication. AI systems can process these large datasets and identify patterns that may not be easily recognized through traditional methods. Businesses can consequently use these insights to develop targeted marketing strategies, recommend products, forecast demand, improve customer service, and support operational decisions. Consumer decision-making has also been affected by the increasing presence of AI. Traditional purchasing processes required consumers to independently search

for information and compare alternatives. AI-powered recommendation systems can now present consumers with selected products based on previous behaviour, preferences, and contextual information. Research has found that AI recommenders and conversational AI systems can influence the consideration set that consumers develop during the purchasing process.

Personalised marketing represents another major application of AI in commerce. Instead of delivering identical promotional messages to an entire customer population, AI enables businesses to segment consumers and provide different recommendations, advertisements, offers, and communication based on individual or group-level characteristics. Recent research indicates that AI-powered personalization can influence consumer engagement, while perceived relevance is particularly important in determining how consumers respond to AI-driven advertising. The impact of AI extends beyond marketing and consumer behaviour to overall business performance. AI can automate repetitive activities, improve customer service, support demand forecasting, optimize marketing campaigns, and provide managers with data-driven insights. A 2026 empirical study of consumer-oriented businesses in Jordan reported relationships between AI applications, customer-service efficiency, business processes, and business performance.

## II. ARTIFICIAL INTELLIGENCE AND CONSUMER DECISION-MAKING

Consumer decision-making refers to the process through which individuals recognize a need, search for information, evaluate alternatives, select a product or service, and assess the outcome of their purchase. AI is increasingly becoming part of each stage of this process. Search engines, recommendation systems, conversational assistants, personalized advertisements, and predictive tools can influence what consumers see, what information they receive, and which products receive greater attention.

AI-powered recommendation systems are particularly important in digital commerce. E-commerce platforms can analyse consumers' previous purchases, browsing behaviour, product interactions, and preferences to generate recommendations. These systems can reduce the amount of information consumers need to process by presenting products that are predicted to be

relevant. A 2024 study comparing ChatGPT recommendations with conventional AI recommendation systems found that AI-based recommendations can influence the formation of consumers' consideration sets during the purchase journey. AI can also influence consumer decision-making through predictive analytics. Predictive systems analyse historical and behavioural information to estimate the products, services, or content that consumers may prefer. This can simplify product discovery and reduce search costs. At the same time, consumers may become increasingly dependent on algorithmic recommendations, making trust in AI systems an important factor in digital purchasing environments.

The influence of AI on consumer decisions is not necessarily uniform. Consumers may respond positively when recommendations are relevant, useful, and transparent, but they may react negatively when personalization appears excessive or intrusive. Recent research on AI-generated personalized advertising suggests that greater personalization can increase perceived personalization while excessive personalization may also increase feelings of "creepiness," demonstrating the importance of finding an appropriate level of personalization. AI can also affect impulse buying. Research on online shopping has examined the relationship between trust in algorithmic recommendations and impulse purchases, suggesting that consumer trust in algorithm-driven recommendations can be associated with greater willingness to purchase recommended products. Thus, AI does not merely provide information; it can influence the way consumers encounter, evaluate, and prioritize products.

## III. AI AND PERSONALISED MARKETING

Personalised marketing involves tailoring marketing communication, offers, product recommendations, and customer experiences to specific consumers or consumer segments. AI has significantly expanded the scale and speed at which personalization can be implemented. Traditional marketing segmentation often relied on demographic characteristics and broad customer categories, whereas AI can incorporate behavioural, transactional, contextual, and interaction data.

AI-powered recommendation engines can provide individualized product suggestions based on customer histories and behavioural patterns. For example, an online retailer can recommend products based on previous purchases, searches, product views, and related consumer behaviour. Such systems can make digital shopping experiences more relevant and reduce the effort required to discover products. Personalised advertising is another important application. AI can determine which advertisement, message, product, or offer is more appropriate for a particular consumer segment. This allows businesses to allocate marketing resources more strategically. Recent research on AI-driven advertising found that personalization, interactivity, and transparency influence consumers' perceptions and engagement, with perceived relevance emerging as an important factor in emotional and behavioural responses.

AI can also support personalized email marketing and customer communication. Instead of sending the same message to every customer, businesses can use AI systems to identify suitable products, timing, communication formats, and offers. This can potentially improve customer engagement and reduce irrelevant communication. Research on AI-powered personalization in e-commerce has similarly examined product recommendations, targeted advertisements, personalized emails, behavioural tracking, and perceived relevance as factors influencing consumer engagement.

Chatbots represent another important component of AI-based personalized marketing. AI chatbots can respond to customer queries, provide product information, recommend products, assist with order-related questions, and offer support at different times of the day. Unlike conventional automated systems based on fixed responses, advanced conversational AI can process natural language and provide more flexible interactions. Generative AI has further expanded the possibilities for personalization by enabling businesses to generate product descriptions, promotional content, advertising copy, customer responses, and other forms of communication. However, the increased ability to automate personalized communication also increases the importance of maintaining accuracy, transparency, and appropriate human oversight.

#### IV. AI AND CUSTOMER ENGAGEMENT

Customer engagement refers to the cognitive, emotional, and behavioural involvement of consumers with a brand or business. AI can support engagement by making interactions faster, more relevant, and more responsive. Recommendation systems, personalized content, chatbots, sentiment analysis, and predictive customer-service tools can help businesses respond to consumer needs. Sentiment analysis is particularly useful for identifying consumer reactions expressed through reviews, comments, surveys, and social-media interactions. AI systems can analyse large volumes of textual information and identify positive, negative, or mixed sentiment. Businesses can use such information to identify customer concerns and improve products or services.

AI can also contribute to customer retention by identifying patterns that may indicate declining engagement. Predictive models can analyse customer behaviour and help businesses identify consumers who may require additional engagement. Such applications allow firms to move from reactive customer service toward more proactive relationship management. However, customer engagement depends on more than technological efficiency. Consumers must perceive AI interactions as useful and trustworthy. If automated systems provide inaccurate responses or make consumers feel that they are being excessively monitored, the technology may negatively affect the customer experience. Responsible AI therefore requires businesses to balance personalization with consumer expectations regarding privacy and autonomy.

#### V. AI AND BUSINESS PERFORMANCE

Business performance represents another major dimension of AI adoption. AI can influence performance by improving operational efficiency, reducing repetitive work, supporting marketing decisions, enhancing customer service, and generating data-driven business insights. One of the most significant benefits of AI is automation. Routine tasks such as customer queries, product categorization, basic data analysis, inventory monitoring, and certain administrative processes can be partially automated. This can allow employees to focus on tasks requiring

creativity, judgment, relationship management, and strategic thinking.

AI can also support demand forecasting. Businesses can analyse historical sales data, seasonal trends, customer behaviour, and market information to estimate future demand. Better forecasting can potentially reduce stock shortages and excess inventory. This is particularly relevant to e-commerce businesses where inventory management and delivery efficiency can directly affect customer satisfaction.

Marketing performance can also be improved through AI-based analytics. Businesses can examine customer acquisition, engagement, conversion, retention, and campaign performance to determine which marketing activities generate stronger outcomes. A 2024 review of AI marketing in e-commerce reported that tools such as chatbots, personalization engines, and predictive analytics have been associated with improvements in areas including customer acquisition and conversion. Recent empirical research also provides evidence linking AI applications with business processes and performance. A 2026 study involving consumer-oriented businesses in Jordan found relationships between AI applications, customer-service efficiency, business processes, and business performance. These findings suggest that the impact of AI can extend beyond marketing into broader organizational performance.

## VI. AI AND E-COMMERCE

E-commerce has become one of the major environments in which AI technologies are implemented. Online businesses generate large quantities of behavioural data that can be analysed using machine learning and other AI technologies. This makes e-commerce particularly suitable for AI-based recommendation, personalization, customer-service automation, fraud detection, demand forecasting, and customer analytics. AI can improve product search by understanding customer queries and matching them with relevant products. Recommendation systems can then provide additional products that may be relevant to the consumer. Dynamic pricing systems can use market and demand information to support pricing decisions, although such practices require careful governance to avoid unfair or discriminatory outcomes.

AI can also improve fraud detection. Digital commerce involves large numbers of transactions, making manual identification of suspicious activity difficult. AI systems can identify unusual patterns and flag potentially fraudulent transactions for further investigation. This can contribute to transaction security while protecting businesses and consumers. Customer satisfaction is another area in which AI can contribute. Machine-learning models can analyse information such as delivery time, order value, location, and customer feedback to predict satisfaction. Research using large e-commerce datasets has examined machine-learning and deep-learning approaches for forecasting customer satisfaction.

## VII. PRIVACY, TRUST, AND ETHICAL CONCERNS

The increasing use of AI in commerce creates important ethical considerations. AI systems frequently depend on large quantities of consumer data, including behavioural and transactional information. Consumers may not always understand how their data are collected, analysed, and used for personalization. Transparency is therefore essential for maintaining trust.

Algorithmic bias represents another concern. AI systems learn from data, and biased or incomplete datasets can produce biased outputs. If an AI system recommends products, determines prices, evaluates customers, or prioritizes certain consumers based on problematic data patterns, it may create unfair outcomes. Consumer autonomy is also an important consideration. Personalization can improve relevance, but highly targeted marketing may influence consumers in ways they do not fully understand. The distinction between helpful recommendation and excessive persuasion therefore becomes increasingly important in AI-mediated commerce.

Recent research emphasizes the importance of trust and transparency in AI-driven marketing. Research on AI advertising indicates that transparency can contribute to credibility, while perceived relevance is strongly connected with consumer engagement. Therefore, businesses should not focus solely on maximizing personalization; they should also ensure that consumers understand and trust the systems interacting with them.

## VIII. CHALLENGES IN AI ADOPTION

Although AI provides substantial opportunities, businesses may encounter several barriers when implementing AI technologies. The first challenge is cost. Advanced AI systems can require investment in software, infrastructure, data management, employee training, and technical expertise. Smaller businesses may find these investments difficult to make. The second challenge concerns data quality. AI systems depend heavily on accurate and relevant data. Incomplete, outdated, duplicated, or biased data can reduce the quality of AI-generated recommendations and predictions. The third challenge is the shortage of AI-related skills. Organizations need employees who understand data analytics, AI systems, cybersecurity, digital marketing, and business strategy. Training and upskilling are therefore important components of successful AI implementation.

The fourth challenge is organizational resistance. Employees may be concerned that AI will replace existing jobs or alter established work practices. Businesses should therefore emphasize human-AI collaboration and provide employees with opportunities to develop skills that complement AI technologies. The final challenge is governance. Organizations require clear policies regarding data protection, transparency, algorithmic accountability, human oversight, and responsible AI usage. Without appropriate governance, technological efficiency may create new operational and reputational risks.

## IX. RESEARCH METHODOLOGY

A quantitative research design can be employed to examine the impact of Artificial Intelligence on consumer decision-making, personalised marketing, and business performance. The target population may consist of consumers who regularly use digital commerce platforms and business professionals involved in digital marketing or e-commerce operations. A structured questionnaire can be used to collect primary data through a five-point Likert scale ranging from strongly disagree to strongly agree.

The questionnaire can measure AI-based recommendation effectiveness, perceived personalization, consumer trust, consumer decision-making, customer engagement, and perceptions of business performance. Consumer decision-making

can be measured through indicators such as product consideration, purchase intention, recommendation influence, and confidence in digital purchasing. Personalised marketing can be examined through targeted advertising, product recommendations, personalized communication, and perceived relevance. Business performance can be measured through customer engagement, conversion, customer retention, operational efficiency, and perceived sales performance.

Descriptive statistics can be used to summarize respondents' perceptions, while correlation analysis can identify relationships between AI adoption, personalization, consumer decision-making, and business performance. Multiple regression analysis can be used to examine whether AI-related factors significantly explain variations in consumer decision-making and business performance. Reliability testing using Cronbach's Alpha can also be conducted to assess the internal consistency of the measurement scales.

## X. DISCUSSION

The increasing integration of AI into commerce suggests that the traditional relationship between businesses and consumers is undergoing significant transformation. Instead of simply presenting products to consumers, businesses can now use AI systems to predict preferences, personalize communication, recommend products, and automate interactions. This transformation can reduce information overload for consumers while simultaneously providing businesses with detailed insights into customer behaviour.

Personalization appears to be one of the central mechanisms connecting AI technology with consumer engagement. When consumers receive recommendations that are relevant to their interests, they may perceive the shopping experience as more useful and convenient. However, personalization has limits. Excessive targeting can create privacy concerns or perceptions of surveillance. Therefore, the effectiveness of AI personalization depends on achieving an appropriate balance between relevance and consumer comfort.

AI can also influence business performance by connecting customer-level insights with organizational decision-making. Information obtained through consumer interactions can support product

development, inventory planning, marketing strategy, customer service, and demand forecasting. Consequently, AI should not be viewed merely as a marketing tool but as a technology capable of supporting multiple areas of commerce.

## XI. SUGGESTIONS

Businesses should adopt AI strategically rather than implementing AI technologies solely because of technological trends. Organizations should first identify specific business problems and then select AI applications that address those problems. Businesses should also invest in employee training so that employees can effectively work with AI systems and interpret AI-generated information. Consumer privacy should remain an important component of AI-based marketing. Businesses should communicate clearly about data collection and use appropriate safeguards for customer information. Personalized marketing should focus on relevance and customer value rather than excessive targeting.

Organizations should also maintain human oversight of important AI-driven decisions. AI can provide predictions and recommendations, but human judgment remains important when decisions involve complex customer needs, ethical considerations, or significant financial consequences. Businesses should continuously evaluate the performance of AI systems. Measures such as customer satisfaction, conversion rates, retention, marketing efficiency, operational cost, and customer complaints can help organizations determine whether AI is creating meaningful value.

## XII. CONCLUSION

Artificial Intelligence is transforming commerce by influencing consumer decision-making, personalised marketing, customer engagement, and business performance. AI-powered recommendation systems can assist consumers in discovering and evaluating products, while predictive analytics can help businesses understand customer behaviour and anticipate market demand. Personalised marketing enables businesses to provide more relevant advertisements, recommendations, and customer communication at scale.

The impact of AI, however, extends beyond personalization. Automation, predictive analytics,

intelligent customer service, fraud detection, demand forecasting, and data-driven decision-making can contribute to broader improvements in business operations. Recent research provides evidence that AI applications are increasingly associated with consumer engagement, marketing effectiveness, operational efficiency, and business performance.

At the same time, successful AI adoption requires attention to privacy, transparency, trust, algorithmic bias, data quality, cybersecurity, and human oversight. The future of AI in commerce will therefore depend not simply on how much AI businesses adopt, but on how responsibly and effectively they integrate it into their relationships with consumers and their broader business strategies. AI has the potential to make commerce more responsive, data-driven, and personalized, but sustainable value will depend on maintaining an appropriate balance between technological efficiency and consumer trust.

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