

# Chapter 4


## Ai's Contribution to Predicting Consumer Behavior in Retail Stores

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### ABSTRACT

*A key component of retail marketing is the study of consumer behavior, which helps with decision-making about the layout of the product mix that is presented. In the past, retailers found it challenging to forecast customer behavior because the process was expensive and time-consuming due to the large amount of data that needed to be analyzed. However, access to consumer data has become less expensive and time-consuming due to the substantial developments in information and communications technology. Processing this data and turning it into marketing decisions that support customer requirements and aspirations has been made easier by artificial intelligence. Technologies such as machine learning, deep learning, robotics, facial recognition, and augmented reality have been used at retail points of sale by well-known brands like Adidas, Sephora, IKEA, and Amazon Go to understand and meet customer needs.*

DOI: 10.4018/979-8-3373-4392-1.ch004

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## INTRODUCTION

The field of information technology (IT) has seen considerable development since the year 2000, with the rise of cloud computing. Organizations may now archive and manage vast amounts of data for a low cost and with greater security (Singh & Gill, 2023). Cloud computing has helped firms improve the efficiency and efficacy of processing market information, resulting in a considerable increase in dependence on it in marketing. However, this has created a new challenge for businesses: ensuring information security (Alam, 2021). The IT industry kept evolving, leading to the emergence of artificial intelligence as one of the most effective tools in the field of information management. This new technology has been used in numerous scientific, academic, economic, and even medical fields. Marketing, in turn, has benefited greatly from it in market research, Predicting consumer behaviour, and marketing mix design.

The proliferation of smartphones has also made it possible to employ artificial intelligence for data collection. Smartphones are a necessary part of modern life, and people's reliance on them has grown since COVID-19 was introduced (Boutaleb, 2024). In order to handle the enormous volume of data sent by internet-connected smartphones, this situation has made it possible for computer programs and algorithms to proliferate. As a result, businesses are using this knowledge to create smartphones that satisfy the expanding internet demands and preferences of their customers (Boutaleb & Toukabri, 2024). The growing use of smartphones in a variety of scientific, medical, educational, marketing, and social domains has benefited artificial intelligence. Software has been created to recognize symptoms in order to solve problems (Çelik et al, 2024; Mantena et al 2021; Jin et al 2024) and find commercial exploitation opportunities (Kietzmann et al, 2018; Oosthuizen et al, 2021), as well as to recognize trends and influence them (Nugroho, 2025; Okeleke, 2024; Lee et al, 2022; Bharti and Dongre, 2024).

For the business, customers are essential because they are the primary source of its revenue and ensure its viability in a volatile and fiercely competitive market. This implies that a business that has a deeper understanding of its customers can create a product that fulfills their requirements and expectations, making it a competitive option (Boutaleb, 2024). Predicting consumer behaviour is critical for firms to succeed in today's competitive market. With the rapid progress of Artificial Intelligence (AI) technology, businesses are increasingly turning to AI-powered solutions to get important insights into consumer preferences and purchasing patterns (Babu et al, 2023). AI approaches have transformed consumer behavior prediction by allowing both the creation of realistic data and the extraction of useful insights from massive, unstructured datasets.

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