Chapter 6
Zalando's Use of AI to Create a Personalized Shopping Experience

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ABSTRACT

The online fashion retail sector has experienced a transformation through AI technologies which allow retailers to create tailor-made shopping experiences for each customer. Through its use of sophisticated AI technologies such as machine learning algorithms and collaborative filtering systems Zalando delivers personalized fashion suggestions that reflect both customer tastes and current style movements while analysing their online activity. This chapter examines the ways in which Zalando's recommendation systems boost customer satisfaction while increasing purchase conversion rates and strengthening brand loyalty. The chapter examines AI personalization challenges such as algorithmic bias and privacy issues while proposing methods for ethical and sustainable innovation approaches. This chapter demonstrates how AI will transform personalized online retail through an examination of real-world applications and research outcomes.

BACKGROUND

The evolution of artificial intelligence from its original 1980s rule-based systems to current deep learning models has revolutionized personalization in the e-commerce industry. The 2010s brought AI advancements and big data analytics which transformed recommender systems from basic collaborative filtering and content match-

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ing to dynamic, individualized recommendations (Islam et al., 2024). Retailers use real-time predictive personalization systems that analyses both behavioural patterns and emotional states. Europe's top online fashion retailer Zalando demonstrates this transition by applying machine learning and natural language processing (NLP) for consumer preference analysis and prediction of buying patterns at scale (Faizi, 2025). Post-2020, hyper-personalization gained momentum. The online fashion retailer Zalando implemented deep learning techniques alongside reinforcement learning and both convolutional neural networks (CNNs) and recurrent neural networks (RNNs) to produce real-time recommendations that take into account user history and adapt to fashion trends and seasonal variations (Thakur et al., 2024). The "Algorithmic Fashion Companion" provides fully personalized outfit suggestions based on user preferences (Amosu et al., 2024). To boost transparency and trust within its recommendation systems Zalando adopted explainable AI technology as noted by Adanyin in 2024. The implementation of AI personalization strategies led to a 25% boost in conversion rates and a 17% increase in average order values according to research by Islam et al. (2024). The fashion retail industry requires personalization because style choices are deeply personal and emotional (Faizi, 2025). The COVID-19 pandemic drove retailers to adopt digital technologies faster and compete by delivering seamless and personalized customer experiences. Zalando increased its investment in AI technologies to maintain customer loyalty and expand its market share (Krishnamurthy et al., 2024). AI personalization brings forth both technical obstacles and ethical issues to overcome. The primary issues being addressed today involve data privacy, algorithmic bias alongside transparency requirements. Zalando employs federated learning along with privacy-preserving AI methods to ensure its systems remain fair, secure, and scalable according to Liu et al., 2024 and Adanyin, 2024.

Focus of the Chapter

The fashion e-commerce industry has undergone major changes through AI which redefined how customers interact and receive value (Tulasi & Ahamed, 2025). Basic collaborative filtering models in traditional recommendation systems are now being supplanted by sophisticated AI platforms that combine deep learning with computer vision and real-time feedback mechanisms (Guo et al., 2023). Advanced technologies facilitate real-time shopping experiences which adapt immediately based on user actions and contextual information (Tulasi & Ahamed, 2025). Europe's biggest fashion e-commerce platform Zalando spearheads this development while serving more than 45 million customers across 23 countries (Abbas et al., 2024). The data science and AI-focused company based in Berlin produces personalized customer experiences which improve satisfaction and loyalty (Choppadandi, 2023). Zalando