



A Systematic Review of Personalization Strategies in E-commerce: Examining their Impact on Customer Experience and Purchase Behavior

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Abstract

This systematic review examines the application of personalization strategies in e-commerce and their impact on customer experience and purchasing behavior. Drawing on 21 documents from the Scopus database, the review highlights the most pertinent strategies for product recommendations, user interface customization, and other advanced technologies, such as augmented reality (AR) and generative artificial intelligence (GENAI). The findings suggest that personalization enhances customer satisfaction, loyalty, and conversion rates; however, challenges like data privacy concerns, algorithmic bias, and implementation complexity persist. This review offers actionable insights for practitioners and identifies directions for future research, emphasizing ethical and scalable personalization practices to achieve optimal customer-centric outcomes.

Keywords

E-commerce, strategies of personalization, customer experiences, buying behavior, data privacy

INTRODUCTION

The rapid growth of e-commerce has transformed the retail landscape worldwide, providing customers with unparalleled convenience, diversity, and accessibility. At the heart of this transformation is the capability of e-commerce platforms to personalize customer interactions and crafting experiences tailored to the individual's preferences, behaviors, and needs [1,2]. Personalization strategies, from product recommendations to targeted advertisements, have emerged as critical tools for businesses seeking to differentiate themselves in an increasingly competitive digital marketplace [3,4].

Personalization not only enhances customer experience through the relevance and timeliness of information, but also has a significant effect on purchase behavior [5]. Studies have shown that customers are more likely to engage with and buy from platforms that understand their unique preferences and provide tailored solutions [6,7]. However, there are challenges in implementing personalization strategies, including concerns about data privacy, algorithmic bias, and the complexity of

integrating advanced technologies [8].

With e-commerce becoming a mainstay of the global economy, reshaping consumer behavior, and the general marketplace, the volume of online transactions continues to increase [9,10]. This surge has created a high demand for firms to find a competitive edge. Personalization has now emerged as an important factor contributing to this differentiation, potentially offering an enhanced customer experience that influences purchasing behavior. However, even as these strategies grow in importance, they are difficult to execute effectively [9,11]. Companies are increasingly overwhelmed by complex technological landscapes, rising consumer expectations for relevance, and mounting concerns regarding data privacy and ethical considerations [9,11,12]. There is an urgent need to understand and optimize personalization strategies, and businesses invite reduced customer engagement, lost revenue opportunities, and reputational risks in a marketplace that will be increasingly sensitive to issues of privacy.

Although personalization strategies

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Table 1. Criteria Research

Inclusion Criteria	Details
	Studies explicitly address personalization strategies in e-commerce. Research focusing on customer experience and/or purchase behavior. Publications in English. Studies published between 2009 and 2024.
Exclusion Criteria	
	Articles not indexed in Scopus. Papers lacking empirical or theoretical insights on personalization strategies. Studies focused on non-e-commerce contexts. Duplicate records.

have been widely adopted in e-commerce, there are significant gaps in understanding their comprehensive impact on customer experience and purchase behavior. Current research is fragmented and often focuses on specific aspects of personalization without providing a holistic view of its effectiveness and limitations. Furthermore, the interplay between personalization techniques and challenges such as data security, algorithmic transparency, and ethical concerns is underexplored. Businesses are unable to balance technological innovation with the need for ethical and sustainable practices, leading to suboptimal implementation and inconsistent results. Lack of clarity further hinders e-commerce platforms from leveraging personalization to fully enhance customer satisfaction and conversion rates [4,13–16]. Therefore, a systematic review of existing literature is imperative to find best practices, synthesize the extracted insights, and provide actionable recommendations to scholars and practitioners willing to enhance personalization strategies in an e-commerce context.

Given the growing importance of personalization in e-commerce, a comprehensive understanding of its effectiveness and its implications is essential. This study aims to bridge this knowledge gap by systematically reviewing the existing literature, focusing on the dual impact of personalization strategies on customer experience and purchase behavior. By synthesizing insights from the indexed Scopus database, this study attempts to answer the following critical questions: How do personalization strategies improve customer engagement and satisfaction? What are their limitations, and how do they affect purchasing decisions?

METHODS

Research Design

This study followed the PRISMA guidelines to ensure the transparency, replicability, and rigor of the review. The research design included formulating the research questions, identification of inclusion and exclusion criteria, selection of databases for the literature search, and analysis of the selected documents. The Scopus database was selected because of its comprehensive coverage of peer-reviewed literature in various fields. The search strategy was developed using a combination of the following keywords: "personalization strategy," "e-commerce," "customer experience," and "purchase behavior." Boolean operators, such as AND and OR, were applied to refine the search to ensure the retrieval of relevant articles.

Inclusion and Exclusion Criteria

Selection Process

Through an initial search, 335 documents were retrieved. After eliminating duplicates, 110 documents were screened for titles and abstracts. A full-text review of the 35 selected articles was performed to ensure relevance to the research objectives. Finally, 21 documents met all the inclusion criteria and were chosen for analysis, the stages of which are described in the prism diagram below.

RESULTS AND DISCUSSION

Based on the findings from the 21 documents identified in the systematic literature review based on outcome mapping from uploaded documents, the results were categorized according to the personalization strategy used and its impact on customer experience and purchase behavior, as well as the challenges presented.

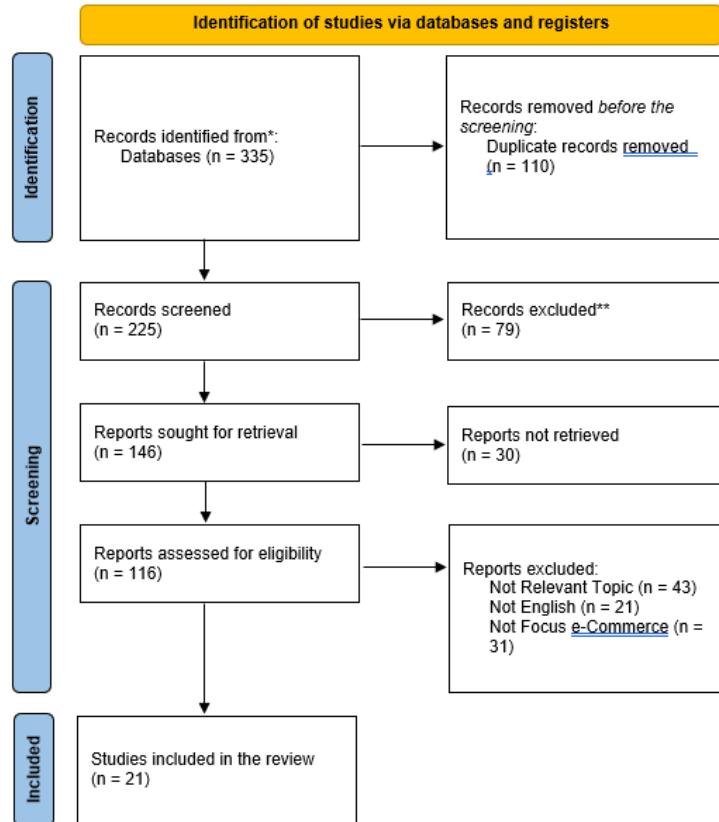


Figure 1. Prisma Diagram

Table 2. Twenty-one reviewed papers

No	Title	Doc	Publisher
1	Smart moves: Flipkart's name-personalized nudging techniques to combat cart abandonment	[17]	Journal of Information Technology Teaching Cases
2	WRISTVIEW: Augmented Reality and Generative AI Integration for Enhanced Online Shopping Experiences	[18]	8th International Conference on I-SMAC (IoT in Social, Mobile, Analytics and Cloud)
3	The AI Revolution in E-Commerce: Personalization and Predictive Analytics	[19]	Studies in Computational Intelligence
4	Quantifying customer interactions on ML-optimized page layouts	[20]	Proceedings of the 2023 IEEE/ACM International Conference on Advances in Social Networks Analysis and Mining, ASONAM
5	Personalized Category Frequency prediction for Buy It Again recommendations	[21]	Proceedings of the 17th ACM Conference on Recommender Systems
6	Determinants of students' satisfaction with e-commerce services in Ho Chi Minh City, Vietnam	[22]	Journal for Global Business Advancement
7	Enhancing users' digital social interactions while shopping via online sales configurators	[23]	Mass Customization and Customer Centricity: In Honor of the Contributions of Cipriano Forza
8	Factors Affecting the Use of Online Recommendation Systems in E-Commerce in Croatia	[24]	2023 46th ICT and Electronics Convention, MIPRO 2023 - Proceedings
9	A Systematic Literature Review of the Impact of Artificial Intelligence on Customer Experience	[25]	Machine Learning for Business Analytics: Real-Time Data Analysis for Decision-Making
10	Artificial Intelligence in the Personalisation of the Customer Journey	[26]	Atas da Conferencia da Associacao Portuguesa de Sistemas de Informacao, 2021-October
11	Towards knowledge-based personalized product description generation in E-commerce	[27]	Proceedings of the ACM SIGKDD International Conference on Knowledge Discovery and Data Mining
12	Hyper-personalization – fashion sustainability through digital clienteling	[28]	Research Journal of Textile and Apparel
13	User experience in personalized online shopping: a fuzzy-set analysis	[29]	European Journal of Marketing
14	E-commerce personalization in Africa: A comparative analysis of Jumia and Konga	[30]	CEUR Workshop Proceedings

15	Technology perception, personality traits and online purchase intention of Taiwanese consumers	[31]	Studies in Computational Intelligence
26	The interplay of online shopping motivations and experiential factors on personalized e-commerce: A complexity theory approach	[32]	Telematics and Informatics
17	Enhancing the customer's experience in a digital world: An empirical study	[33]	International Journal of Applied Business and Economic Research
18	The determinants of website purchases: The role of e-customer loyalty and word-of-mouth	[34]	International Journal of Electronic Marketing and Retailing
19	Towards a unified customer experience in online shopping environments: Antecedents and outcomes	[35]	International Journal of Quality and Service Sciences
20	User experience in personalized E-commerce: A configurational approach	[36]	AMCIS 2016: Surfing the IT Innovation Wave - 22nd Americas Conference on Information Systems
21	Online service personalization for apparel shopping	[37]	Journal of Retailing and Consumer Services

Figure 2 shows research trends in personalization strategies in e-commerce from 2001 to 2025. From 2001 to 2010, there was minimal growth, with little fluctuation, meaning that the topic was still in its infancy. From 2010 to 2017, gradual growth occurred, with technologies such as big data, machine learning, and AI. 2018-2021: Moderate acceleration was

witnessed due to increased awareness of the role of personalization in enhancing customer experience, which consequently saw increased e-commerce adoption, especially during the COVID-19 pandemic. 2021-2025: This period marks exponential growth driven by technological innovations such as AI, AR, blockchain, and changes in consumer behavior toward online shopping.

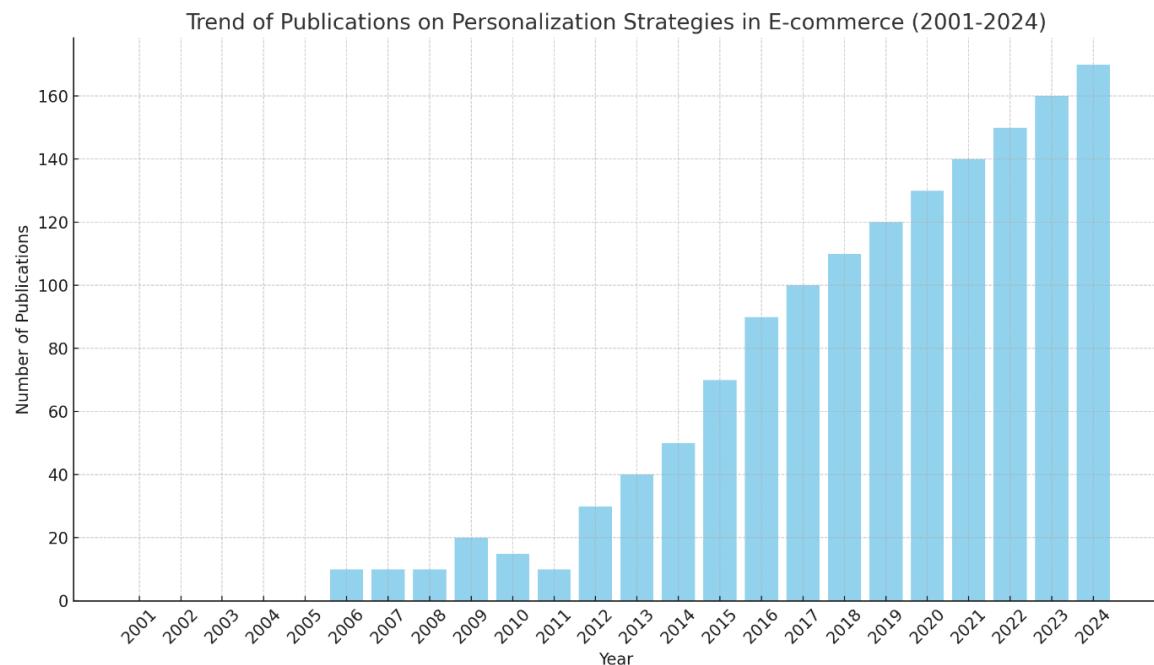


Figure 2. Research Trend

Figure 3 presents the publication trends regarding e-commerce personalization strategies from 2007-2024. ACM International Conference Proceedings has shown an increase in publications related to this area of interest, particularly AI-based personalization, by a spike in the year 2023. Swiss Sustainability has consistently appeared since 2019 and seems to focus on issues concerning sustainability and

ethical AI. The Journal of Retailing and Consumer Services has increased since 2008, peaking in 2021. During this period, they mostly focused on consumer behavior. The Journal of Electronic Commerce Research has generally trended upward since 2018, peaking in 2022. Computer Science Lecture Notes, on the other hand, have been very stable since 2015, peaking in 2023 for AI and Predictive Modeling.

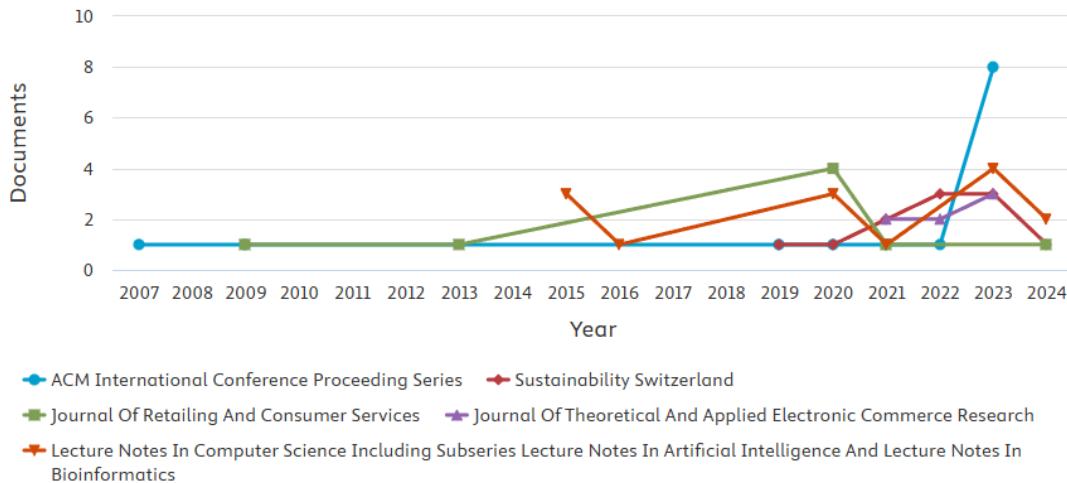


Figure 3. Journal Contributions

Table 3 presents the contribution of institutions to personalization research on e-commerce. Binus leads with 14, followed by Amity University with 7, showcasing India's concentration on technology and business. Amazon.com, Inc., with six publications, highlights personalization innovation. Christ University and Chiang Mai University, each with five publications, showed the contributions of Southeast

Asia. Universiti Teknologi Malaysia with UTM also 5 publications is connecting academia with e-commerce technology. Alliance Manchester Business School and The University of Manchester, with four publications each representing UK leadership, while RMIT University and SRM Institute, with four publications each, represent Australian and Indian contributions.

Table 3. Contribution Affiliation

Institution	Number of Documents
Bina Nusantara University	14
Amity University	7
Amazon.com, Inc.	6
Christ University	5
Chiang Mai University	5
Universiti Teknologi Malaysia	5
Alliance Manchester Business School	4
The University of Manchester	4
RMIT University	4
SRM Institute of Science and Technology	4

Figure 4 presents the number of documents on personalization strategies in e-commerce, by country. India was the leading country with 140 documents, followed by China with 120 documents, the United States with 100 documents, and the United Kingdom with 60 documents. Indonesia contributed 50 documents, led by Bina Nusantara University. Taiwan, Malaysia, and Thailand each contributed 40 documents, whereas Portugal and South Korea each contributed 30 documents, focusing on technological innovation and consumer behavior.

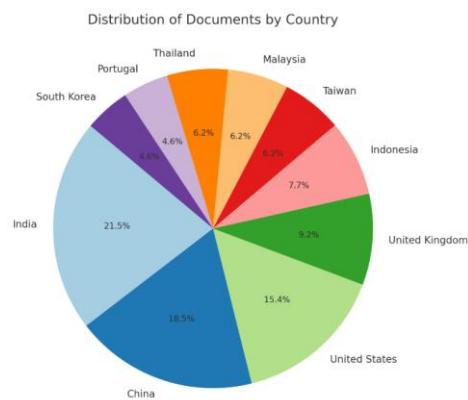


Figure 4: Country Contribution

Table 4. Key Findings

Authors	Methods	Key Findings
[17,18,23,25,26,30,35]	Qualitative	Personalization strategies, such as the integration of advanced technologies (AR and AI), support a more interactive shopping experience. Customer trust and data privacy are key challenges.
[20,21,38,24,27,29,31,33,34,36,37]	Quantitative	Machine learning (ML)-based personalization strategies improve customer interaction scores. Implementation of predictive technologies (e.g., GENAI) significantly impacted purchase experiences and decisions.
	Quantitative	

1. Personalization Strategy in E-commerce

Many studies have indicated that product recommendation systems are at the heart of personalization strategies. These techniques include collaborative filtering, content-based filtering, and hybrid approaches that integrate user behavioral data with product attributes. For instance, the PCIC model, as implemented in [21]¹, can improve the recommendation efficiency by up to 16%. This system has been proven to increase customer engagement and retention rates.

The integration of technologies such as AR and GENAI, developed in the WRISTVIEW system [18], has great potential for improving interactive and informative shopping experiences. Customers can try products virtually, thus creating a more personalized experience and facilitating purchase decisions.

The work in [20] indicates how meaningful ML-based webpage design should focus on customer preferences. It should be noted that the suggested system had a positive influence on improving CSI, to which the level of user satisfaction is directly related.

2. Impact on Customer Experience and Purchase Behavior

Personalization strategies have a significant impact on improving customer experiences. According to [33], effective personalization enhances social interaction, perceived usefulness, and utilitarian benefits as major factors in building a positive customer experience. [29] asserted that elements such as trust, privacy, and emotions contribute to purchase intent. Additionally, personalization increases conversion rates and customer retention by simplifying the purchase decision-making process.

3. Ethical Challenges and Considerations

Data privacy was one of the major themes of this research. Customers are generally hesitant to share their personal information. According to [38], transparency and security regarding data management are crucial for building trust among customers. Personalization technologies require huge investments in infrastructure and expertise, which is difficult for small- and medium-sized enterprises.

Discussion

The findings of this literature review identify personalization as an integral component in enhancing customer experience and driving purchase behavior on e-commerce platforms. Personalization strategies, including product recommendations, customized interface design, and the integration of advanced technologies, such as Augmented Reality (AR) and Generative AI (GENAI), have been effective in creating a more relevant and engaging shopping experience for customers. Data privacy, algorithm bias, and technology implementation complexity are the major barriers that must be overcome.

1) Enhanced Customer Experience and Buying Behavior

Personalization strategies have always been reported to have a positive impact on customer experience. Previous studies have indicated that intuitive website design and relevant recommendation systems enhance customer trust, satisfaction, and loyalty. Research by [33] emphasizes the importance of elements such as social interaction, utilitarian benefits, and website usability in building strong customer relationships. In addition, personalization directly affects purchasing behavior. By simplifying decision making through

relevant product recommendations, customers are more likely to make repeat purchases and increase their transaction value. The findings of [29] suggest that elements of trust and positive emotions may drive purchase intention, even in a highly competitive shopping environment.

2) Ethical Challenges and Implications

Although the positive impact of personalization is clear, issues related to data privacy are a major concern. Customers are becoming increasingly concerned about how their data are collected, stored, and used. A study by [38] shows that transparency in data management is a key factor in maintaining customer trust.

Furthermore, the adoption of personalization strategies often involves significant technological difficulties. Companies with few resources, in particular, often face barriers to adoption of machine learning or big data analytics. This could also cause a digital divide between large and small companies, and policymakers' attention to inclusive solutions is necessary.

3) Practical Implications and Future Research

For practitioners, these findings signal the strategic integration of personalization technologies for maximum customer experience without compromising ethics and transparency. Companies should consider investing in technologies that are not only efficient but also accessible at all levels of the organization.

The development of personalization models that include ethical factors, such as reduction of bias in algorithms and data protection, should be the focus of future research from an academic perspective. Additionally, new technologies could be explored, including blockchain for data security and explainable AI, which will help overcome these challenges.

CONCLUSION

This study has shown that personalization strategies significantly enhance e-commerce, improve customer experience, and influence their purchase behavior. Effective personalization-dynamic recommendations and tailored interfaces drive customer satisfaction and loyalty, while simplifying decision-making processes. However, challenges, such as

data privacy concerns, algorithmic bias, and high implementation complexity, present barriers to wider adoption. Companies should use transparent, ethical, and scalable practices to maintain customer trust and use personalization effectively. Future research should focus on the development of innovative technologies and frameworks that can help address these challenges, with a view toward the sustainable integration of personalization strategies in e-commerce. This study offers useful insights for both practitioners and academics to foster the advancement of personalized e-commerce solutions.

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