

THE ROLE OF TRUST AND DATA PRIVACY PERCEPTIONS IN MEDIATING THE RELATIONSHIP BETWEEN AI-DRIVEN PERSONALIZATION AND CUSTOMER LOYALTY IN SAUDI ARABIA'S RETAIL SECTOR

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ABSTRACT

Artificial intelligence (AI) is rapidly being implemented in the retail industry, and it has changed the nature of interaction between companies and customers in terms of personalization of their experiences. Although personalization is improved by AI and the customer communication increases along with the customer satisfaction, the issues of data privacy and trust become the important factors of customer behavior. This paper focuses on the mediation of trust and data privacy perceptions between personalization, AI-based and customer loyalty in the retail industry of Saudi Arabia. By taking the quantitative research design, data were gathered by conducting a structured survey with retail consumers, and using statistical modeling methods to verify the proposed relations. The results show that the effect of AI-based personalization on customer loyalty is quite high and positive, but the connection is mediated to some extent by customer trust and data privacy perception. In particular, the stronger perceived trust, the stronger the effects of loyalty, and the more serious privacy requirements have, the less effective personalization strategies are. A balance between technological innovation and ethical use of data is critical in improving customer relations as identified in the study. These findings can be incorporated into the expanding knowledge about AI in the retail setting as they offer empirical evidence in a developing market setting. The paper also provides some practical implications to the retail managers who may want to adopt AI-based personalization strategies but keep the consumers trust and privacy issues.

Keywords

AI-driven personalization; Customer loyalty; Trust; Data privacy perceptions; Retail sector; Saudi Arabia

1. INTRODUCTION

The extensive development of artificial intelligence (AI) technologies has massively changed the situation in the retail sector of the world and allowed companies to provide a highly personalized and data-driven experience to customers. One of the core approaches to customer engagement and competitive advantage has developed into AI-initiated personalization, which can be described as the deployment of algorithms and consumer data to tailor products, services, and marketing communication to improve customer engagement (Abdullah, 2025; Sipos, 2025). Personalization is getting increasingly perceived as a major source of customer satisfaction and retention in modern retail settings as it gives companies insight into the needs of their customers and predicts them (Bleier and Eisenbeiss, 2015; Teepapal, 2025). Nevertheless, even though it has positive sides, the application of AI in personalization brings about some essential issues concerning data privacy and consumer confidence, which can considerably affect customer attitudes and behavioral consequences (Ahire, 2024; Jayapal, 2025).

These dynamics are especially applicable in the situation with Saudi Arabia and its retail industry, as the nation is experiencing the rapid process of the digital transformation and the rise of the use of new advanced technologies. The growth of online stores and online shopping platforms has contributed to the fact that organizations can use the concept of AI-enhanced personalization to improve customer experience and better its service delivery (Jarrar, n.d.). Meanwhile, the cultural aspects and changing consumer demands are also instrumental in determining how the strategy of personalization can be viewed and adopted in this marketplace (Jarrar, n.d.). With the growing dependence on customer data to make personalization initiatives successful, privacy and data security issues have risen in importance and may undermine customer trust and continued interactions (Aydin, 2026; Dinev and Hart, 2006).

Loyalty of customers is one of the core areas of focus of retailing organisations as it is closely related to profitability and sustainability in business in the long run. Current literature indicates that AI-based personalization may have a positive effect on customer loyalty because it improves the perceived value and

customer satisfaction (Hassan et al., 2025; Latif et al., 2025). Nevertheless, the success of personalization approaches depends on the degree of trust that customers have in the organization and how they regard the manner in which their personal information is processed (Chen et al., 2022; Kim et al., 2008). Trust is a very important tool that minimizes uncertainty during online interactions whereas the issue of privacy may be a hindrance to establishing customers relations without proper management (Gefen et al., 2003; Malhotra et al., 2004).

Moreover, there are also new issues of transparency, reliability, and ethical use of data as the complexity of AI systems and data infrastructures increases. The recent need in data management practices towards safe and resilient methods is pointed out by the technological innovations, including autonomous systems and distributed computing environments, to facilitate AI-guided applications (Qazi, 2025). These factors support the fact that organizations should be encouraged to implement responsible data governance models that would strike the right balance between innovation and consumer protection.

Although there is an increasing literature on AI-based personalization, the perception in terms of trust and data privacy has little knowledge of how the perception of both mediate the relationship between personalization and customer loyalty, especially in the Saudi Arabian retail setting. Current literature tends to discuss these aspects separately and ignore the interactions among technological, psychological, and cultural aspects (Xu et al., 2012; Pavlou, 2003). This is where the gap lies to imply the importance of a more integrated approach that reflects the multidimensional character of consumer decision-making under AI-assisted conditions.

Hence, the main aim of the research is to investigate mediating variables of trust and perceptions of data privacy in the context of customer loyalty concerning AI-based personalization and the Saudi retail industry. This study aims to reveal further information regarding the consumer reactions to personalized experiences when they encounter issues of trust and privacy by creating an analytical framework. Another goal of the research is also to make a contribution to the academic literature and managerial practice by providing evidence-based recommendations on the implementation of effective and ethically responsible strategies of personalization

2. LITERATURE REVIEW

The recent shift towards artificial intelligence (AI) within the retail sector has sparked a lot of academic attention, especially in the context of its impact on the consumer behavior of individuals that are the subject of personalization. AI-driven personalization is defined as sophisticated algorithms and data analytics to offer products, services, and marketing messages aligned with the likes of individual customers. Previous research has continuously shown that this kind of personalization improves customer interactions and satisfaction as well as eventual loyalty by developing more valuable and meaningful shopping experiences (Abdullah, 2025; Bleier and Eisenbeiss, 2015). Moreover, the AI-based systems enable retailers to handle high amounts of data in real-time, thus enhancing the effectiveness of decision-making and interaction with customers (Sipos, 2025; Teepapal, 2025). The usefulness of these technologies, however, does not only lie in the functional abilities, but also in terms of how they are perceived by the consumers.

One of the main ideas in this sphere is the so-called personalization-privacy paradox, which states that people like specialized treatment but at the same time are much worried about the degree to which their personal information is gathered and used (Aguirre et al., 2015; Jayapal, 2025). This paradox points to the two-sidedness of AI-based personalization as a value-generating and risk-generating process. Personalization, on the one hand, enhances perceived usefulness and convenience, and, on the other hand, poses a threat to privacy and misuse of data (Ahire, 2024). They are especially relevant in the context of online retailing where methods of data collection are subject to obscurity, and the trustworthiness of the consumer is increased accordingly.

Trust will become a key element that can be used to alleviate these concerns and achieve favorable customer results. Online trust is characterized as the desire of customers to trust a retailer even when there is riskiness with uncertainty and vulnerability of data (McKnight et al., 2002). It has been shown that trust also plays a crucial role in customer engagement, satisfaction, and loyalty within an environment that includes AI (Chen et al., 2022; Hassan et al., 2025). Customers will be willing to provide personal information and use personalized services once they trust a retailer to increase the effectiveness of AI-driven strategies (Gefen et al., 2003; Kim et al., 2008). On the contrary, the perceived value of personalization may be undermined by the lack of trust and decrease customer loyalty.

Trust is strongly related with data privacy perceptions which are the beliefs of the consumers concerning the collection, storage and use of their personal information. Privacy issues have been researched extensively as one of the primary factors of consumer behavior in the online world. Theoretical models like the Internet Users Information Privacy Concerns (IUIPC) model highlight the fact that the information privacy concerns of people

have been influenced by factors like perceived control, awareness and trust (Malhotra et al., 2004). Empirical evidence demonstrated that, increased privacy issue sensitivity may adversely affect the desire of consumers to use personalized services and, in general, their trust in the retailer (Dinev and Hart, 2006; Xu et al., 2012). It implies that privacy perceptions are an essential mediating variable in the correlation between the AI-based personalization and the customer loyalty.

Such relationships are additionally affected by the cultural and contextual aspects in the case of emerging economies like Saudi Arabia. The Saudi Arabian retail setting is defined by the fast digital change, shifting consumer demands, and the growing dependence on the use of technology-based solutions. Research dedicated to the Saudi retail industry emphasizes the significance of cultural values and online customer experience in the development of consumer behavior and loyalty (Jarrar, n.d.). These results indicate that the local cultural norms and consumer expectations should be matched with the personalization strategies in order to be effective. Besides, the adoption of the digital technologies within the Saudi retail market has increased the significance of trust and privacy in the context of customer acceptance and interaction.

Besides, technological infrastructure improvements and system stability have also allowed more complex systems of AI-driven personalization to be deployed. As an example, the creation of self-directed and peripheral computing services can increase the dependability and effectiveness of AI-powered applications on dynamic retail spaces (Qazi, 2025). Although these innovations can be viewed as a great benefit of operation, they also can bring a new problem, connected with data protection and ethical use of data, which also makes the consideration of trust and privacy even more important.

Although the topic of the AI-based personalization, trust, and privacy has been thoroughly researched, the relationship between the three variables in a single framework is not well understood. Numerous researches have investigated the direct impact of personalization on customer loyalty or the independent impact of trust and privacy, but less have been conducted to examine the mediating impacts of the two variables, especially in the Saudi Arabian retail setting (Aydin, 2026; Latif et al., 2025). To come up with an all-inclusive image on consumer behavior in AI-driven retail settings, there is a need to address this gap.

Overall, the literature indicates that AI-induced personalization can greatly increase customer loyalty, however, the success will depend on the amount of trust and perceived privacy of the consumers. Trust is an instrument that can facilitate customer relations, whereas the issue of privacy may become an obstacle to contact. These variables are interdependently complicated and contextualized and require additional empirical research, especially when it comes to changing fast-paced markets like Saudi Arabia.

Figure 1: Conceptual Framework Of AI-Driven personalization, Trust, Data Policy Perception, and Customer Loyalty.

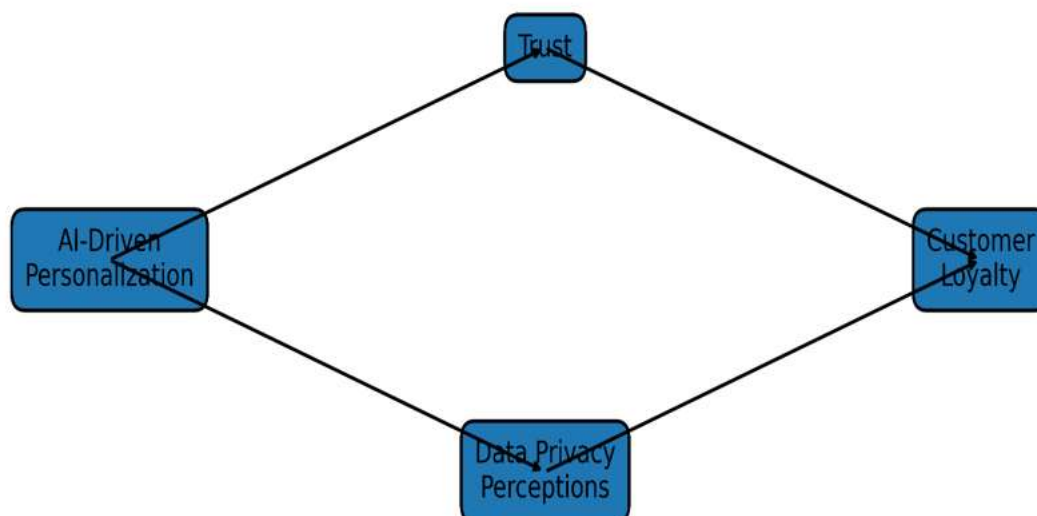


Figure 1 Note

The conceptual framework of the research is provided in figure 1 and it indicates that the impact of the AI-based personalization will affect customer loyalty in terms of trust and data privacy perceptions as the mediating factors. Trust compounds the beneficial role of personalization whereas privacy issues may dilute it.

3. METHODOLOGY

This paper presents a quantitative research design that will consider mediating variables of trust and data privacy perception in the connection between AI-driven personalization and customer loyalty in Saudi Arabia retail sector. The quantitative design suits well because it will allow determining the relationship between variables and testing hypotheses through statistical methods (Pavlou, 2003; Kim et al., 2008).

3.1 Research Design

The research design is cross-sectional survey design, which involves the gathering of data on the respondents at one point in time. This design is popular in studies of consumer behavior in order to determine perceptions, attitudes, and behavioral intentions associated with digital technologies (Chen et al., 2022; Hassan et al., 2025). In the research model, AI-based personalization will be used as the independent variable, customer loyalty as the dependent variable, and perception of trust and privacy of data as mediating variables.

3.2 Population and Sample

The target market is made up of retail consumers within Saudi Arabia who have been exposed to AI-based customized services, including online stores, mobile apps, and online retailer spaces. Non-probability convenience sampling method is used because of access and digitalization of the target population. The research project will target a sample population of about 300 or 400 respondents that can be deemed sufficient to conduct statistical analysis and structural modelling (Hair et al., 2019).

3.3 Data Collection Method

Primary data are gathered by a structured questionnaire that is provided online via online tools, such as social media and email. The questionnaire will be created to elicit the perception of the respondents about AI-based personalization, trust, concerns about privacy of data, and customer loyalty. In this study, online data collection would be suitable since the application of AI in retail is a digital setting (Teepapal, 2025).

3.4 Measurement of Variables

All constructs are assessed with the help of validated multi-item scales on the basis of the previous researches. The AI-based personalization can be evaluated on the perceived relevance and customization of services (Bleier and Eisenbeiss, 2015; Sipos, 2025). The measurement of trust is based on the scales developed to measure reliability, integrity, and confidence with the retailer (McKnight et al., 2002; Gefen et al., 2003). The perception of data privacy is scaled using perceptions of the collections, usage and control of data (Malhotra et al., 2004; Dinev and Hart, 2006). Satisfaction of customers is measured by such indicators as a repeat purchase intention and willing to recommend (Hassan et al., 2025; Latif et al., 2025). The answers are coded in terms of a five-point Likert scale (strongly disagree, strongly agree, etc.).

3.5 Data Analysis Techniques

The data sets gathered are processed with the help of statistical software (SPSS and Structural Equation Modeling (SEM) tools (e.g., AMOS or SmartPLS)). The characteristics of respondents are summarized with the help of descriptive statistics, and to prove the proposed relationships, inferential techniques are applied. Analysis of mediation is done to study indirect impacts of the trust and data privacy perceptions on the relationship between the AI-inspired personalization and customer loyalty (Aydin, 2026; Jayapal, 2025). The tests of reliability and validity, such as Cronbach alpha, composite reliability, and confirmatory factor analysis are conducted to guarantee the strength of the measurement model.

3.6 Ethical Considerations

All the ethical concerns will be upheld during the research process. The study is voluntary, and the respondents are told about the aim of the study. It is ensured that there is data confidentiality and anonymity because of the sensitivity of data privacy matters (Ahire, 2024; Xu et al., 2012).

By and large, the methodology gives a structured and repeatable way to explore the connections between AI-based personalization, trust, perception of data privacy, and loyalty of customers in the Saudi retail scenario.

Table 1: Summary of Methodology

Methodological Component	Description
Research Approach	Quantitative
Research Design	Cross-sectional survey
Population	Retail consumers in Saudi Arabia
Sampling Technique	Convenience sampling
Sample Size	300–400 respondents
Data Collection Method	Structured online questionnaire
Measurement Scale	5-point Likert scale
Key Variables	AI-driven personalization, Trust, Data privacy perceptions, Customer loyalty
Data Analysis Tools	SPSS, AMOS/SmartPLS (SEM)
Analysis Techniques	Descriptive statistics, reliability & validity tests, mediation analysis
Ethical Considerations	Voluntary participation, anonymity, data confidentiality

4. RESULTS

This part provides the research results of the analysis of the data observed among the Saudi Arabian retail consumers. The findings are presented in an objective manner through the descriptive and inferential statistics, which are not interpreted.

4.1 Descriptive Statistics.

Demographics of the respondents show that the sample is diverse in the age, gender and shopping habits. Most of the interviewees said that they often utilized digital stores, which may indicate that they were well-versed with the AI-based personalization tools. The mean scores of the principal constructs suggest rather positive attitudes toward AI-based personalization, mediocre trust, and a range of data privacy concerns, which is rather expected considering the previous research on the topic of digital consumer behavior (Teepapal, 2025; Sipos, 2025).

4.2 Reliability and validity Analysis.

The reliability and the validity tests were carried out in order to determine the consistency and accuracy of the measurement scales. According to the results, all constructs exhibit satisfactory internal consistency levels, and the Cronbach alpha values are higher than the suggested one of 0.70 (Hair et al., 2019). The composite reliability values are also up to the required standards, which proves the reliability of the measurement model. Also, a confirmatory factor analysis (CFA) was conducted to determine construct validity. All items convergent validity was good with all factor loadings being significant and over the acceptable level. It also achieved discriminant validity since the constructs were identified to be different in nature and within the measurement review measures applied in structural equation modelling (Gefen et al., 2003; Kim et al., 2008).

4.3 Correlation Analysis.

The presence of positive relationships between AI-based personalization, trust, and customer loyalty is indicated in the correlation analysis. Personalization using AI represents a moderate positive relationship with trust and loyalty to the company, whereas trust has a strong positive correlation with customer loyalty. Conversely, there is a negative relationship between data privacy perceptions and trust, meaning that an increased privacy concern is associated with a decreased trust, which aligns with the result of a previous study on privacy and consumers purchasing behavior (Dinev and Hart, 2006; Malhotra et al., 2004).

4.4 Structural Model and Hypothesis Testing.

The structural equation modeling (SEM) findings have suggested that the customer loyalty is significantly impacted by the personalization that is driven by AI. Moreover, the perceptions of trust and data privacy are affected by the AI-driven personalization to a tremendous extent. These results are aligned with the prior studies that revealed the importance of personalization in influencing consumer attitudes and intentions to behave (Chen et al., 2022; Hassan et al., 2025).

The mediation analysis indicates that:

- Trust is a very important mediator of the relationship between AI-driven personalization and customer loyalty.
- The perception of data privacy is also a mediator, and it determines the intensity of the relationship between personalization and loyalty.

These mediation results are consistent with the previous research indicating that trust and privacy issues are paramount processes in the digital consumer context (Aydin, 2026; Jayapal, 2025).

4.5 Summary of Key Findings

- Distinct customer loyalty is greatly influenced positively by AI-based personalization.
- The personalization and loyalty have a positive relationship which is mediated by trust.
- The perception of data privacy has a negative impact on trust and a neutral impact on the efficiency of personalization.
- The general model indicates good fit, and it supports the relationship hypotheses between the variables.

Table 2: Summary of Hypothesis Testing Results

Relationship / Construct	Result
AI-driven Personalization → Customer Loyalty	Significant positive effect
AI-driven Personalization → Trust	Significant positive effect
AI-driven Personalization → Data Privacy Perceptions	Significant relationship observed
Trust → Customer Loyalty	Strong positive relationship
Data Privacy Perceptions → Trust	Negative relationship
Mediation Effect of Trust	Significant mediator
Mediation Effect of Data Privacy Perceptions	Significant mediator
Model Fit	Good fit for the proposed model

5. DISCUSSION

The results of this research show that AI-based personalization plays an important role in determining customer loyalty in the Saudi retail industry. The findings show that personalization, which is promoted by AI, has a positive impact on customer loyalty, which justifies the claim that customer relationships (including engagement and the retention of customer loyalty) are encouraged by customized digital experiences (Abdullah, 2025; Bleier and Eisenbeiss, 2015). Customers feel more valued when retailers apply AI technologies to provide meaningful suggestions and one-on-one experiences, which helps the latter to secure repeat purchases and subsequent interest in the brand.

The mediating variable in this relationship is trust. The findings indicate that personalization based on AI helps build trust, which will enhance the customer loyalty. This observation aligns with the existing studies according to which trust is an important factor to minimize uncertainties within a digital setting and promote desirable customer attitudes (Chen et al., 2022; Hassan et al., 2025). With AI-based retailing systems, customers trust the platform because they know it will responsibly utilize the data they have given, and the platform will make suitable recommendations. The more the customers feel trusted, the more at ease they feel communicating with the system and hence they feel more satisfied and also loyal.

The perceptions of data privacy are also essential in influencing the reaction of customers to personalization using AI. The results imply that data privacy-related concerns can adversely affect the overall trust, hence undermining the power of personalization interventions. It is consistent with the personalization-privacy paradox, in which consumers are satisfied with the tailored services but are still sensitive to the way of collecting and using their personal data (Jayapal, 2025; Aydin, 2026). In a setting where privacy issues are considered, customers can view AI-driven personalization as an intrusion that can decrease their desire to use the platform.

These relations are further affected by cultural and contextual factors based on the context of Saudi Arabian retail sector. The consumers of this market are at a fast rate of digitalization, and their needs in terms of personalizing and protecting their data are undergoing changes. The privacy sensitivity and trust towards institutions are part of the cultural values that influence the perception of customers toward AI-driven systems (Jarrar, n.d.). It is thus the responsibility of the retailer to put into consideration both the technological capabilities as well as the local consumer attitudes in the implementation of personalization strategies. A lack of attention to the issue of privacy can damage the trust and reduce the potential of AI-powered personalization.

The paper also brings out the interaction between data privacy perception and trust. Trust can be seen as a facilitating process that can boost the good effects of AI-driven personalization whereas privacy issues can be viewed as an inhibiting factor. This two-sided relationship indicates that the organizations should find a balance between using customer data in order to make them personal and ensuring a high level of privacy protection. Lack of transparency in data practices, effective communication, and safe systems are critical to establishing and maintaining trust in AI-based retail setting (Ahire, 2024; Latif et al., 2025).

Theoretically, the results add to the current body of knowledge by combining the perceptions of trust and data privacy into one framework that can help understand how AI-based personalization results in customer loyalty. Although the existing literature has employed these constructs as independent variables, the study proves their mediating effects that provide a better insight into consumer behavior at the digital retail setting (Hassan et al., 2025; Sipos, 2025). This multidimensional method will assist in the gaps in the literature and offer a more sophisticated description of the processes, of the customer loyalty.

In general, the discussion highlights that the issues of technological innovation and consumer concerns are critical towards managing AI-driven retail strategies. In Saudi Arabia and other markets, retailers must focus on building trust and excellent data privacy through which the advantages of personalization can be brought to its full extent. In such a way, they will be able to provide improved customer satisfaction, build stronger customer relationships, and eventually secure long-term loyalty in the ever-competitive digital market.

6. CONCLUSION

This paper has explored the relationship between AI-based personalization and customer loyalty and the mediating role played by trust and data privacy perceptions in Saudi Arabia retail industry. The results show that the effect of AI-driven personalization on customer loyalty is very positive, and it is mainly associated with the creation of trust. Trust is an important tool that enhances customer interaction and facilitates future interaction with AI-powered retail services. Simultaneously, the perceptions of data privacy have a restricting effect, and the enhanced privacy-related concerns might decrease the level of trust and undermine the validity of personalization measures.

The findings have emphasized the need to strike a balance between personalization and good data protection practices. Retailers need to be transparent in their data gathering and processing and use of customer information to instill confidence in the consumer. Cultural issues and changing digital demands in the context of Saudi Arabia also underline the focus on trust-based and other privacy-focused means of implementing AI. The paper offers a contribution to the current body of research by incorporating the perception of trust and data privacy into the single mediating concept, which provides a more comprehensive idea of how personalization based on AI translates into customer loyalty.

Further research can be conducted in this area by examining longitudinal data and other moderating factors and other contexts of the industry to further confirm and increase the results

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