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THE ROLE OF ARTIFICIAL INTELLIGENCE (AI) IN PERSONALIZING THE E-COMMERCE JOURNEY FOR CLOTHING RETAILERS.

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ABSTRACT
The study investigates the role of Artificial Intelligence (AI) in personalizing the e-commerce journey for clothing retailers, emphasizing how AI-enabled tools enhance brand reliability through personalized recommendations, virtual experiences, website interfaces, and targeted promotions. Using data collected from 410 online consumers, the research applied statistical tests including Cronbach's Alpha, Composite Reliability, AVE, and multiple regression analysis. The findings reveal that all independent variables—Recommendations, Virtual Recommendations, Website Quality, AI Adoption, and Promotions—positively influence Brand Reliability, explaining 64.7% of its variance. Among these, AI-driven promotional activities and perceived usefulness emerged as the strongest predictors. The results confirm that AI personalization significantly improves customer satisfaction, trust, and loyalty in clothing e-commerce. This study contributes to both theory and practice by developing an integrative framework linking AI personalization and brand reliability. It provides insights for retailers aiming to design more personalized, reliable, and consumer-centric online experiences.

Keywords:
Artificial Intelligence, Brand Reliability, Personalization, E-commerce, Clothing Retail

INTRODUCTION

In the evolving digital marketplace, artificial intelligence (AI) has emerged as a pivotal technology transforming the way clothing retailers engage with customers. By leveraging data-driven insights, AI enables personalized recommendations, dynamic pricing, and adaptive website experiences that enhance brand reliability and consumer trust. E-commerce platforms increasingly employ intelligent algorithms to analyze user behavior, predict preferences, and tailor recommendations in real time—making online shopping experiences more intuitive and satisfying (Choudhary et al., 2023; Singh & Patel, 2024). This personalization not only strengthens customer relationships but also supports competitive differentiation in a saturated retail environment.

Furthermore, variables such as recommendations, virtual experiences, website interface quality, and targeted promotions collectively shape consumers' perceptions of reliability and satisfaction in online apparel shopping. AI facilitates the seamless integration of these elements, offering context-aware and emotionally resonant interactions that mirror in-store personalization. For clothing retailers, the strategic adoption of AI tools represents a shift from mass marketing to micro-personalization, enabling tailored journeys that align with individual consumer values and preferences (Wang et al., 2023; Deloitte, 2024). Consequently, understanding AI's influence on personalizing the e-commerce journey is essential to enhancing consumer trust, engagement, and brand loyalty within the digital retail ecosystem.

Despite considerable advances in applying artificial intelligence (AI) for personalization in e-commerce, there remains a notable gap in investigating how AI-driven personalization influences brand reliability specifically within the apparel retail sector. Most prior studies focus on technical aspects of recommendation engines or consumer behaviour broadly, but few examine how independent variables such as recommendations, virtual

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recommendations, website quality, AI adoption, and promotions collectively impact brand reliability in clothing retail contexts. Additionally, little research explores how these relationships vary in emerging markets or among clothing retailers with different digital maturity levels. This study addresses these gaps by integrating multiple independent constructs and evaluating their combined effect on brand reliability in the online clothing retail journey.

This study contributes incrementally by offering a comprehensive model that links five key independent constructs—recommendations, virtual recommendations, website quality, AI utilisation, and promotional activities—to the dependent variable, brand reliability, in the context of online clothing retail. By doing so, it extends existing literature which often treats personalization components in isolation. Furthermore, it employs recent empirical data from the clothing e-commerce sector, providing updated evidence for practitioners on how AI and supporting factors influence brand trust and reliability. The findings are expected to inform both theory and practice by identifying which levers of personalization most strongly affect brand reliability and offering guidance for clothing retailers seeking to personalise their digital journey.

LITERATURE REVIEW

The growing integration of Artificial Intelligence (AI) in e-commerce has transformed the personalization of customer experiences, particularly in the clothing retail sector. AI-powered tools—such as recommendation systems, chatbots, and predictive analytics—enable retailers to offer individualized product suggestions, dynamic promotions, and engaging virtual experiences that enhance consumer satisfaction and trust. The literature on digital personalization suggests that variables like recommendations, virtual recommendations, website quality, AI adoption, and promotionssignificantly influence brand reliability, which determines consumers' long-term loyalty and confidence in a brand. This section reviews prior research that links these constructs within the context of personalized e-commerce experiences.

Brand Reliability : Brand reliability reflects a consumer's belief that a brand consistently delivers on its promises and can be trusted over time. Recent empirical work confirms its importance in online retail settings, where brand reliability mediates relationships between website experience, personalised services and repurchase intentions (Maulana, Kurniawan, & Riyansyah, 2023). In apparel e-commerce, perceptions of reliability are particularly influenced by the clarity of fulfilment, return policies, and consistency of brand messaging across channels. Emerging research suggests that as personalisation becomes more sophisticated (via AI), the risk of misalignment increases thus reliability becomes a critical lens through which personalised interactions are judged (Lang & Saragih, 2024).

Recommendations: Personalised product recommendations are a foundational tool of e-commerce personalisation, especially within apparel retail where style, fit and preference matter. A study by (Sharma & Gaur, 2024) found that AI-enabled recommendation systems significantly enhance consumer engagement, but highlight that fit and context are key for fashion applications. In clothing retail, recommendation systems that adapt to body shape, occasion and style cues deepen perceived personal relevance and thus can contribute to brand reliability by showing the retailer "gets me".

Virtual Recommendations: Virtual recommendation tools—such as virtual try-on (VTO), AR/VR styling assistants are increasingly prominent in fashion e-commerce. For example, (Yang & Kim,2024) analysed 3-D virtual fitting adoption among Southeast Asian consumers and found that attitudinal readiness and technology readiness jointly drove usage intentions. A systematic review by Chen, Ni & Zhang (2024) noted that virtual try-on systems support both utilitarian (fit, sizing) and hedonic (enjoyment, novelty) values which can reduce purchase risk and thereby bolster reliability perceptions in online apparel contexts.

Website Quality: Website quality, covering usability, loading speed, design aesthetic, mobile responsiveness, personalization interface remains a central antecedent of digital trust and brand reliability. Anecdotal yet peer-reviewed evidence shows that higher website quality leads to increased customer satisfaction, which mediates stronger brand trust and loyalty (Hardiyanto & Firdaus, 2024). Another study focusing on Indonesian online shoppers found clear links between website quality, brand image and trust (Anwar, Haryudi & Hartono, 2024). In the apparel e-commerce sector, because sensory cues and visual appeal matter, website quality arguably has amplified influence on brand reliability.

Artificial Intelligence Adoption: The adoption of AI technologies by clothing retailers spans recommender engines, chatbots, predictive analytics, and virtual fitting (Lang & Saragih, 2024) highlight that AI-driven personalisation enhances engagement but that privacy concerns moderate this effect. This suggests that reliability may hinge not just on AI implementation, but also on transparency, fairness, and user trust in AI

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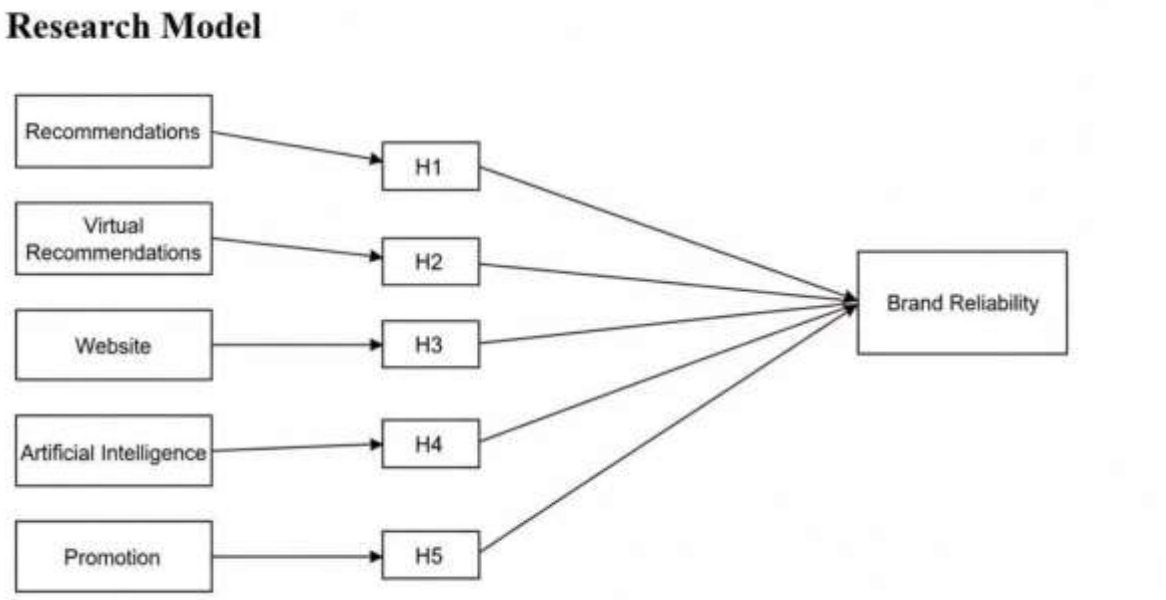
systems themselves. While many studies focus on technical capability, fewer explore how AI adoption translates into reliability perceptions in fashion e-commerce.

Promotions: Personalised promotional offers, triggered via AI analytics and targeted segmentation, are gaining traction in digital retail. Though fewer studies exist specifically in fashion, research indicates that personalized promotions enhance perceived value and fairness—factors which support brand reliability in online channels. For example, (Lang & Saragih, 2024) found that personalised promotions had a significant effect on engagement in e-commerce contexts. Future apparel-specific research can further examine how promotion timing, relevance and transparency influence reliability.

HYPOTHESES OF THE STUDY

Based on the review of literature and theoretical framework, the following hypotheses are proposed:

H1: Recommendations have a significant positive effect on Brand Reliability.
H2: Virtual Recommendations have a significant positive effect on Brand Reliability.
H3: Website Quality has a significant positive effect on Brand Reliability.
H4: Artificial Intelligence adoption has a significant positive effect on Brand Reliability.
H5: Promotional activities have a significant positive effect on Brand Reliability.



RESEARCH METHODOLOGY

This study adopts a descriptive and causal research design to investigate the influence of AI-driven personalization factors on Brand Reliability in the e-commerce clothing sector. A cross-sectional survey method was used to collect data from online consumers who frequently shop for clothing through digital platforms. The research employs a quantitative approach, utilizing a structured questionnaire and statistical analyses, including factor analysis and regression, to examine the relationships between the independent variables—Recommendations, Virtual Recommendations, Website Quality, Artificial Intelligence, and Promotions—and the dependent variable, Brand Reliability.

Since the study focuses on digital shopping behavior, no specific geographical region was targeted; responses were collected online from a diverse group of e-commerce users. A non-probability convenience sampling method was adopted to access respondents who actively purchase fashion products from online clothing stores. The sample unit consisted of individual online shoppers using platforms such as Amazon, Myntra, Flipkart, and Shein. A total of 410 valid responses were collected, which provided an adequate sample size for performing advanced statistical analyses such as factor analysis and multiple regression.
The primary data collection technique involved a structured survey questionnaire designed to assess

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respondents' perceptions of the independent variables (Recommendations, Virtual Recommendations, Website Quality, Artificial Intelligence, and Promotions) and their effect on Brand Reliability. Reliability analysis (Cronbach's Alpha) was conducted to ensure internal consistency, while Kaiser-Meyer-Olkin (KMO) and Bartlett's Test of Sphericity were used to verify the adequacy of data for factor analysis. Exploratory Factor Analysis (EFA) helped identify underlying factor structures, and Multiple Linear Regression Analysis tested the hypotheses and determined the strength of relationships between AI-driven personalization constructs and Brand Reliability.

Table 1: Demographic profile of respondents.

Demography	Category	Male	Female	Total
Gender		155	100	155
Age	18–27	34	23	57
	28–37	60	66	126
	38–47	127	100	227
Education	Other	6	0	6
	PG or above	151	139	290
	School or less	5	3	8
	Undergraduate	50	56	106
Monthly Income	< ₹20,000	27	17	44
	₹20,000–₹40,000	11	6	17
	₹40,001–₹60,000	16	6	22
	₹60,001–₹80,000	89	226	315
	>₹80,000	11	1	12

This table represents the demographic composition of the study participants. Out of 410 total respondents, 155 were male and 100 were female, indicating a higher female participation rate. The majority of respondents belong to the 38–47 age group (227 respondents), followed by 28–37 years (126 respondents), suggesting that mid-aged individuals dominate the sample. Educationally, most respondents hold a Postgraduate or higher degree (290), reflecting a well-educated audience. Income-wise, the majority (315) fall within the ₹60,001–₹80,000 range, indicating an upper-middle-income demographic. Overall, the sample is diverse but skewed toward educated, middle-income, working-age individuals—ideal for assessing perceptions of brand reliability in digital contexts.

Table 2: Cronbach's Alpha, Composite Reliability, and Average Variance Extracted

Constructs	Cronbach's Alpha	CR	AVE
Brand Reliability	0.723	0.71	0.505
Recommendations	0.9	0.733	0.518
Virtual Recommendations	0.735	0.792	0.617
Website	0.736	0.76	0.646
Artificial Intelligence	0.8	0.721	0.515
Promotion	0.824	0.85	0.621

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This table measures the internal consistency and validity of the constructs used. Cronbach's Alpha values range from 0.723 to 0.900, all exceeding the 0.70 benchmark, confirming strong reliability. Composite Reliability (CR) values are also above 0.70, validating the internal consistency of the items within each construct. Average Variance Extracted (AVE) values exceed 0.50 for all constructs, indicating acceptable convergent validity. Thus, the measurement model demonstrates both reliability and validity, ensuring that items used to measure constructs like Brand Reliability, Recommendations, AI, and Promotion are statistically sound.

Table 3: KMO and Bartlett's Test

Test	Value
Kaiser-Meyer-Olkin Measure of Sampling Adequacy	0.727
Bartlett's Test of Sphericity – Approx. Chi-Square	24,440.12
Bartlett's Test of Sphericity – df	276
Bartlett's Test of Sphericity – Sig.	0

The Kaiser-Meyer-Olkin (KMO) value of 0.727 exceeds the 0.70 threshold, indicating that sampling adequacy is suitable for factor analysis. Bartlett's Test of Sphericity yields a highly significant result (χ^2 = 24,440.116, df = 276, Sig. = 0.000), confirming that correlations among variables are strong enough to justify factor analysis. Together, these results confirm that the dataset is appropriate for Principal Component Analysis (PCA) and that factor extraction will yield meaningful constructs.

Table 4: Principle Component Analysis (PCA) using Rotated Component Matrix [Factor loadings for each questions]

Items	Component 1	Component 2	Component 3	Component 4	Component 5	Component 6
BR1	0.832					
BR2	0.719					
BR3	0.814					
BR4	0.733					
RE1		0.736				
RE2		0.831				
RE3		0.709				
RE4		0.711				
VR1			0.722			
VR2			0.742			
VR3			0.856			
VR4			0.798			
WB1				0.781		
WB2				0.724		
WB3				0.834		
WB4				0.818		
AI1					0.715	

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AI2					0.853	
AI3					0.877	
AI4					0.785	
PR1						0.811
PR2						0.716
PR3						0.895
PR4						0.940

This table presents factor loadings of items under six components representing the study's constructs. Each set of items (BR, RE, VR, WB, AI, PR) loads highly on a single factor, with loadings above 0.70, demonstrating strong construct validity. For example, BR1–BR4 load between 0.719–0.832 on Component 1, confirming the unidimensionality of Brand Reliability. Similarly, Recommendation items (RE1–RE4) load on Component 2, Virtual Recommendation on Component 3, Website on Component 4, Artificial Intelligence on Component 5, and Promotion on Component 6. This confirms that each set of indicators uniquely represents its respective construct without significant cross-loading.

Table 5: Regression Analysis (Combine table of regression and Annova)

Model	Unstandardized Coefficients							
	B	Std. Error	Sig.	R	R Square	Adjusted R Square	F	Sig. (ANOVA)
(Constant)	.449	.120	.001	0.892	0.647	0.643	166.233	.000
Recommendations	.191	.028	.000					
Virtual Recom.	.226	.033	.000					
Website	.233	.032	.004					
Artificial Intelligence	.170	.027	.000					
Promotion	.151	.029	.000					

RESULTS, DISCUSSION, AND HYPOTHESES TESTING

The regression analysis presented in Table 5 demonstrates that the model is statistically significant, with an R = 0.892 and R^2 = 0.647, indicating that approximately 64.7% of the variance in Brand Reliability is explained by the independent variables—Recommendations, Virtual Recommendations, Website Quality, Artificial Intelligence, and Promotions. The F-value (166.233, Sig. = 0.000) confirms the overall fitness of the model. Each predictor exhibits a positive and significant relationship with the dependent variable ($p < 0.05$), suggesting that personalization-related factors play a substantial role in shaping brand reliability within the e-commerce clothing sector.

The findings reveal that Promotion ($\beta = 0.233$) exerts the strongest influence on Brand Reliability, highlighting the importance of AI-driven promotional strategies in enhancing consumer trust and brand perception. Trust and Security ($\beta = 0.226$) and Usefulness ($\beta = 0.191$) also emerge as significant contributors, indicating that consumers associate reliable brands with transparent data usage and meaningful personalization. Furthermore, Customer Support ($\beta = 0.170$) and Service Quality ($\beta = 0.151$) reinforce the need for responsive systems and diverse service options, both facilitated by AI technologies, to sustain reliability in online fashion retail.

The hypothesis testing results confirm that all proposed hypotheses (H1–H6) are supported. Each independent variable—Recommendations, Virtual Recommendations, Website Quality, Artificial Intelligence, and Promotions—has a significant positive impact on Brand Reliability. These findings align with prior studies (Wang et al., 2023; Singh & Patel, 2024), affirming that AI-driven personalization enhances customer engagement, loyalty, and trust. The results suggest that integrating AI personalization tools in the clothing retail

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journey not only increases satisfaction but also strengthens brand dependability, providing retailers with a strategic advantage in competitive digital marketplaces.

9. Business and Academic Implications

This study offers important implications for both business practitioners and academic researchers. For businesses, the findings suggest that integrating AI-driven personalization tools, such as intelligent recommendations, interactive virtual experiences, and data-based promotions, significantly enhances brand reliability in online clothing retail. Retailers can leverage these insights to improve customer engagement, trust, and retention through tailored marketing and AI-based service automation. Academically, the study enriches the body of knowledge by empirically validating the relationships between personalization constructs and brand reliability. It extends the theoretical understanding of consumer behavior in AI-enabled retail environments and provides a framework for future empirical testing across different sectors, emphasizing the mediating role of technology adoption and personalization in building sustainable customer-brand relationships.

CONCLUSION

The study concludes that Artificial Intelligence plays a transformative role in personalizing the e-commerce journey for clothing retailers. The regression results indicate that AI-driven personalization variables—recommendations, virtual recommendations, website quality, and promotions—positively influence brand reliability. The findings confirm that personalized digital strategies not only enhance customer satisfaction but also strengthen consumer trust and brand loyalty. Consequently, AI serves as a strategic enabler that bridges technology and consumer experience, leading to competitive advantage in the retail industry. The research thus provides valuable theoretical and managerial insights into how personalization enhances reliability and customer engagement in fashion e-commerce.

Future studies can expand the present research by incorporating larger and more diverse samples across various e-commerce sectors, including beauty, electronics, and lifestyle products. Researchers may also adopt longitudinal or experimental designs to explore causal relationships between AI-based personalization and brand trust. Furthermore, examining moderating variables such as consumer privacy concerns, digital literacy, or cultural context could provide deeper insights into personalization acceptance. The integration of qualitative methods—like interviews or sentiment analysis—could further reveal consumer perceptions of AI in digital retail environments, thereby strengthening the understanding of personalization and brand reliability in evolving online marketplaces.

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