



Consumer Adoption of AI Shopping Assistants: The Roles of Consumer Trust and Perceived Usefulness

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Abstract

Artificial intelligence (AI) shopping assistants are reshaping how consumers search, compare, and decide across digital retail platforms; however, consumer willingness to rely on these systems varies considerably. Integrating the technology acceptance model with trust in automation theory, this study examines how perceived AI service quality influences consumer adoption of AI shopping assistants complete the mediating roles of consumer trust and perceived usefulness. Data were collected from 550 consumers in the Mysuru district of Karnataka, India, who had used AI shopping assistants in the preceding six months, and the proposed model was tested using partial least squares structural equation modelling (PLS-SEM). The results show that perceived AI service quality significantly and positively influences both consumer trust and perceived usefulness, which in turn significantly predicts consumer adoption. Both mediators partially transmit the effect of service attribute on adoption, with perceived usefulness exerting a stronger effect. The findings extend AI-retail adoption research and offer practical guidance for retailers seeking to design more trustworthy and useful AI shopping assistants.

Keywords: AI shopping assistants; perceived AI service quality; consumer trust; perceived usefulness; technology acceptance; PLS-SEM

1. Introduction

Artificial intelligence (AI) has become one of the maximum transformative forces in retail, varying how consumers exploration for information, estimatesubstitutes, and make purchase decisions(Wangdra et al., 2025). AI shopping assistants have developed as a new generation of retail technologies that interpret shopping needs, recommend products, and support purchase decisions in real time(Tsung-Yin Ou et al., 2024), and retailers are increasingly deploying them to strengthen engagement and competitive advantage; India's retail sector reflects this trend, driven by rising e-commerce, smartphone adoption, and digital payments(Bajaj, 2024).

Technology alone, though, does not guarantee acceptance; consumers differ considerably in their willingness to rely on AI-generated recommendations; therefore, favorable consumer perceptions remain essential for adoption(Koricina&Spálová, 2025). The Technology Acceptance Model (TAM) identifies perceived usefulness is strongest determinants of technology adoption, while Trust in Automation Theory suggests that users rely on automated systems only when they perceive them as competent and dependable, making consumer trust a critical psychological mechanism in AI-enabled retail (Kim & Huang, 2020).

Prior research has largely inspected trust and perceived usefulness as independent antecedents of adoption(Wijayadne, 2025), leaving limited understanding of how consumers' perceptions of AI service quality simultaneously shape both mechanisms , and empirical evidence from emerging retail markets remains scarce (Li et al., 2020). This study addresses these gaps by examining how perceived AI service quality influences consumer

adoption of AI shopping assistants through the parallel mediating roles of consumer trust and perceived usefulness, data collected from consumers in Mysuru, Karnataka, India. This study donates to the literature by (1) positioning perceived AI service quality as a multidimensional antecedent of both trust and usefulness, (2) integrating TAM with Trust in Automation Theory, and (3) providing experiential evidence from an emerging retail economy.

2. Literature Review and Hypothesis Development

2.1 AI Shopping Assistants and Perceived Service Quality

AI shopping assistants extend beyond conventional recommendation systems by offering integrated, end-to-end decision support; therefore, the mechanisms underlying their adoption may not be fully explained by findings from other AI applications, such as chatbots(Khandelwal & Singh, 2025). Perceived AI service quality is conceptualized here as a multidimensional construct comprising accuracy, reliability, responsiveness, personalization, and interaction quality(Prentice, 2023), and is a well-known antecedent of trust: consumers are more likely to develop confidence in a provider when services are perceived as accurate, reliable, and responsive to their expectations(Dimaro, 2023).

2.2 Theoretical Foundation

This study integrates TAM and Trust in Automation Theory to explain consumers' adoption of AI shopping assistants(Nofirda& Ikram, 2023). The TAM advises that individuals are further likely to adopt a technology when they trust it improves task performance; however, it offers limited perception into the role of trust when technology actively participates in decision-making (Ilmi et al., 2020). Trust in Automation Theory complements TAM by explaining users' willingness to rely on intelligent systems under uncertainty. Together, these perceptions suggest that high-quality AI services foster both functional evaluations (perceived usefulness) and psychological confidence (consumer trust), providing a conceptual foundation for the hypothesized model shown in Figure 1.

2.3 Hypothesis Development

Service quality, trust, and usefulness. Consumers develop confidence in AI shopping assistants when they perceive them as accurate, reliable, responsive, personalized, and capable of high-quality interaction, thereby reducing the uncertainty associated with AI-assisted decision-making (Sharma & Tandon, 2026). Also, consumers are more likely to perceive AI shopping assistants as useful when the systems consistently provide accurate recommendations and personalized, efficient assistance that simplifies product search and evaluation (Salgaonkar, 2023). Accordingly:

H1: Perceived AI service quality positively influences consumer trust.

H2: Perceived AI service quality positively influences perceived usefulness.

Trust, usefulness, and adoption. Once consumers develop confidence in an AI shopping assistant's competence and reliability, they become more willing to rely on its recommendations and incorporate it into their shopping behavior(Kim & Huang, 2020). Likewise, TAM holds that perceived usefulness is a proximal determinant of behavioral adoption, since consumers adopt technologies they believe improve decision quality and shopping efficiency. Accordingly:

H3: Consumer trust positively influences consumer adoption of AI shopping assistants.

H4: Perceived usefulness positively influences consumer adoption of AI shopping assistants.

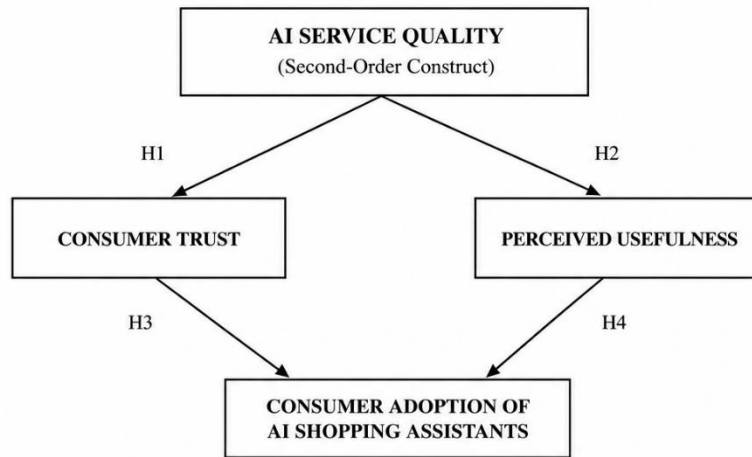
Mediating roles. Because consumers often cannot directly evaluate the algorithms underlying AI recommendations, they infer trustworthiness from the quality of services delivered; therefore, the outcome of perceived AI service

quality on adoption is predictable to operate partly through consumer trust(Koricina&Spálová, 2025). Likewise, service quality is expected to shape adoption indirectly by strengthening consumers' beliefs that the assistant simplifies product search and improves decision-making, that is, through perceived usefulness(Zulfikri& Susanto, 2024). Accordingly:

H5: Consumer trust mediates the relationship between perceived AI service quality and consumer adoption.

H6: Perceived usefulness mediates the relationship between perceived AI service quality and consumer adoption.

Figure 1. Conceptual Model



Source: Author's illustration.

3. Research Methodology

Study employed a quantitative, explanatory, cross-sectional survey design, examined using incomplete least squares structural equation modelling (PLS-SEM) in SmartPLS 4, appropriate for prediction-oriented research involving higher-order constructs and mediation(Sabol et al., 2025). Purposive sampling method used to collect data from consumers aged 18 and above in the Mysuru district of Karnataka, India, who had used an AI shopping assistant in the preceding six months; 550 valid responses were obtained. A structured questionnaire measured perceived AI service quality (a reflective-reflective second-order construct with five first-order dimensions: accuracy, reliability, responsiveness, personalization, and interaction quality), consumer trust, perceived usefulness, and consumer adoption, using multi-item, seven-point Likert scales modified from validated prior instruments and pilot-tested for content validity. Data were collected online following informed consent, with anonymity maintained throughout. The measurement model was measured via loadings, Cronbach's alpha, CR, AVE, and HTMT; the structural model via VIF, path coefficients, R^2 , f^2 , and mediation, using bootstrapping with 5,000 resamples.

4. Results

4.1 Respondent Profile

Table 1 summarizes the respondent characteristics. The sample was well disseminated across gender, age, education, occupation, income, and prior experience with AI shopping assistants, indicating adequate representation of consumers with relevant AI-assisted shopping experience.

Table 1. Respondent Profile (N = 550)

Characteristic	Category	Freq.	%
Gender	Male	302	54.9
	Female	248	45.1
Age (years)	18-25	146	26.5
	26-35	211	38.4
	36-45	118	21.5
	Above 45	75	13.6
Education	Undergraduate	138	25.1
	Postgraduate	309	56.2
	Doctoral	46	8.4
	Others	57	10.3
Occupation	Student	98	17.8
	Private employee	247	44.9
	Govt. employee	79	14.4
	Self-employed	84	15.3
	Others	42	7.6
Monthly income (₹)	Below 25,000	126	22.9
	25,001-50,000	208	37.8
	50,001-75,000	127	23.1
	Above 75,000	89	16.2
Shopping frequency	Weekly	172	31.3
	Monthly	246	44.7
	Occasionally	132	24.0
AI assistant experience	Less than 1 year	201	36.5
	1-2 years	219	39.8

	More than 2 years	130	23.7
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Source: Authors' analysis.

4.2 Measurement Model Assessment

Table 2, shows all constructs met the recommended reliability and validity thresholds: outer loadings exceeded 0.79, Cronbach's alpha and composite reliability exceeded 0.87 and 0.92, respectively, and AVE exceeded 0.50 (Hair et al., 2021).

Table 2. Reliability and Convergent Validity

Construct	Items	Loading range	α	CR	AVE
Accuracy	4	0.812-0.901	0.886	0.92	0.74
Reliability	4	0.798-0.895	0.879	0.92	0.74
Responsiveness	4	0.806-0.913	0.891	0.93	0.76
Personalization	4	0.823-0.914	0.898	0.93	0.77
Interaction Quality	4	0.817-0.908	0.892	0.93	0.76
Consumer Trust	4	0.836-0.918	0.906	0.93	0.78
Perceived Usefulness	4	0.842-0.921	0.912	0.94	0.79
Consumer Adoption	4	0.827-0.916	0.901	0.93	0.77

Source: Authors' analysis.

4.3 Discriminant Validity

Discriminant validity was evaluated using the heterotrait-monotrait ratio (HTMT). Table 3, presented all HTMT values were below the 0.85 threshold, confirmative that each construct was empirically distinct (Roemer et al., 2021).

Table 3. Discriminant Validity (HTMT)

Construct	ACC	REL	RES	PER	IQ	CT	PU	CA
Accuracy	-							
Reliability	0.68	-						
Responsiveness	0.71	0.73	-					
Personalization	0.67	0.70	0.72	-				
Interaction Quality	0.69	0.71	0.74	0.80	-			

Consumer Trust	0.63	0.66	0.69	0.70	0.70	-		
Perceived Usefulness	0.60	0.64	0.66	0.70	0.70	0.70	-	
Consumer Adoption	0.58	0.61	0.64	0.70	0.70	0.80	0.80	-

Source: Authors' analysis.

4.4 Structural Model Assessment

Multicollinearity was measured using VIF; all values were below 3.3. Table 4, presented all hypothesized paths were positive and statistically significant ($p < 0.001$), supporting H1–H4. Perceived AI service quality strongly predicted consumer trust ($\beta = 0.708$) and perceived usefulness ($\beta = 0.664$); both, in turn, significantly predicted consumer adoption ($\beta = 0.347$ and $\beta = 0.441$), with perceived usefulness showing the stronger direct effect. Table 5, shows the model explained 50.1% of the variance in trust, 44.1% in perceived usefulness, and 62.8% in consumer adoption.

Table 4. Structural Model Results

Hyp.	Structural Path	β	t-value	p-value	f ²	Decision
H1	AI Service Quality → Consumer Trust	0.708	21.86	<0.001	1.006	Supported
H2	AI Service Quality → Perceived Usefulness	0.664	18.75	<0.001	0.788	Supported
H3	Consumer Trust → Consumer Adoption	0.347	8.52	<0.001	0.168	Supported
H4	Perceived Usefulness → Consumer Adoption	0.441	10.28	<0.001	0.274	Supported

Source: Authors' analysis.

Table 5. Coefficient of Determination (R²)

Endogenous Construct	R ²	Interpretation
Consumer Trust	0.501	Moderate
Perceived Usefulness	0.441	Moderate
Consumer Adoption	0.628	Substantial

Source: Authors' analysis.

4.5 Indirect Effects Analysis

Mediation analysis (Table 6) confirmed that both consumer trust ($\beta = 0.250$, $p < 0.001$) and perceived usefulness ($\beta = 0.290$, $p < 0.001$) significantly and positively mediated the result of perceived AI service quality on adoption, thus supporting H5 and H6.

Table 6. Indirect Effects Analysis

Hyp.	Indirect Path	β	t-value	p-value	95% CI	Decision
H5	AI Service Quality → Trust → Adoption	0.250	7.84	<0.001	0.185-0.309	Supported
H6	AI Service Quality → Usefulness → Adoption	0.290	8.97	<0.001	0.229-0.360	Supported

Source: Authors' analysis.

5. Discussion

The results show that consumers' evaluations of AI service quality play a essential role in shaping the implementation of AI shopping assistants. Consistent with Trust in Automation Theory, consumers are more likely to trust AI shopping assistants when they perceive the service as accurate, reliable, responsive, personalized, and interactionally rich, supporting H1. Perceived AI service quality also significantly enhanced perceived usefulness (H2), consistent with TAM's premise that favorable technology characteristics strengthen beliefs about practical benefits. Both consumer trust and perceived usefulness significantly predicted adoption (H3, H4); the stronger effect of perceived usefulness suggests that consumers primarily adopt AI shopping assistants because they improve shopping efficiency and decision quality, while trust functions as a complementary mechanism that reduces perceived risk. The significant indirect effects (H5, H6) confirm that high-quality AI services influence adoption not only directly but also indirectly, by building trust and reinforcing perceived usefulness, extending prior technology-adoption research by showing that service quality is an important shared antecedent of both cognitive and relational evaluations in AI-assisted retail.

6. Conclusion and Implications

This study integrated the TAM and Trust in Automation Theory to explain consumer adoption of AI shopping assistants, conceptualizing perceived AI service quality as a multidimensional higher-order construct comprising accuracy, reliability, responsiveness, personalization, and interaction quality. The results demonstrate that this construct enhances both consumer trust and perceived usefulness, which act as complementary pathways translating service quality into adoption. Theoretically, this study extends AI-retail adoption research by showing that service quality, rather than technological sophistication alone, underlies both the cognitive and relational routes to adoption. Practically, retailers and AI solution providers should prioritize improving the accuracy, reliability, responsiveness, personalization, and interaction quality of AI shopping assistants and ensure that recommendations remain transparent and contextually relevant, then these funds are likely to strengthen trust, increase perceived usefulness, and encourage sustained adoption.

7. Limitations and Future Research

Study has several limitations. Its cross-sectional design limits causal inference: longitudinal designs could capture how perceptions evolve as AI shopping technologies mature. The sample was drawn exclusively from Mysuru district, Karnataka, which may limit generalizability; therefore, replication across regions and countries is encouraged. The study examined only trust and usefulness as mediators; future research could incorporate perceived risk, algorithmic transparency, privacy concerns, or consumer innovativeness. Lastly, relative studies across dissimilar AI-enabled retail platforms and product categories may proposal further visions into consumer responses to emerging AI technologies.

References

- Bajaj, A. (2024). Navigating The Digital Shift: Challenges And Opportunities For Traditional Retailers In India's Evolving Marketplace. *IOSR Journal of Business and Management*, 26(10), 32–35. <https://doi.org/10.9790/487x-2610113235>
- Dimaro, M. E. (2023). Service Quality for Customers' Satisfaction: A Literature Review. *European Modern Studies Journal*, 7(1), 267–276. [https://doi.org/10.59573/emsj.7\(1\).2023.24](https://doi.org/10.59573/emsj.7(1).2023.24)
- Ilmi, M., Setyo Liyundira, F., Rachmawati, A., Juliasari, D., & Habsari, P. (2020). Perkembangan Dan Penerapan Theory Of Acceptance Model (TAM) Di Indonesia. *Relasi: Jurnal Ekonomi*, 16(2), 436–458. <https://doi.org/10.31967/relasi.v16i2.371>
- Khandelwal, A., & Singh, P. (2025). Artificial Intelligence in Online Retail A Review of Consumer Perception and Adoption. *International Journal of Academic Excellence and Research*, 01(04), 21–28. <https://doi.org/10.62823/ijaer/2025/01/04.111>
- Kim, M., & Huang, R. (2020, December 28). *The Study of Humans-Artificial Agents Relationships in Retailing Contexts: The Role of Trust*. <https://doi.org/10.31274/itaa.12116>
- Koricina, J., & Spálová, L. (2025). How Trust in AI Recommendations Emerges: Insights from Experimental Studies. *Media & Marketing Identity*, 410. <https://doi.org/10.34135/mmidentity-2025-37>
- Li, C., Pan, R., Xin, H., & Deng, Z. (2020). Research on Artificial Intelligence Customer Service on Consumer Attitude and Its Impact during Online Shopping. *Journal of Physics: Conference Series*, 1575(1), 012192. <https://doi.org/10.1088/1742-6596/1575/1/012192>
- Nofirda, F. A., & Ikram, M. (2023). *The Use of Artificial Intelligence on Indonesia Online Shopping Application in Relation to Customer Acceptance* (pp. 642–651). Atlantis Bv. https://doi.org/10.2991/978-94-6463-158-6_56
- Prentice, C. (2023). *Developing a Scale to Measure Artificial Intelligence Service Quality* (pp. 105–123). Springer Nature Singapore. https://doi.org/10.1007/978-981-99-1865-2_8
- Roemer, E., Schubert, F., & Henseler, J. (2021). HTMT2—an improved criterion for assessing discriminant validity in structural equation modeling. *Industrial Management & Data Systems*, 121(12), 2637–2650. <https://doi.org/10.1108/imds-02-2021-0082>
- Sabol, M. A., Winton, B. G., & Legate, A. E. (2025). Criteria for selecting and reporting mediation effects sizes. *Organization Management Journal*, 1–15. <https://doi.org/10.1108/omj-08-2024-2291>
- Salgaonkar, K. A. (2023). Investigating The Impact of Artificial Intelligence in Personalized Virtual Shopping Assistants: Enhancing Customer Experience and Decision-Making. *Recent Trends in Management and Commerce*, 4(1), 29–34. <https://doi.org/10.46632/rmc/4/1/4>
- Sharma, N., & Tandon, U. (2026). Investigating AI-based service quality in online shopping: a dual lens of perceived value and need for cognition. *Journal of Systems and Information Technology*, 1–24. <https://doi.org/10.1108/jsit-06-2025-0261>
- Tsung-Yin Ou, T.-Y. O., Tsung-Yin Ou, Y.-T. L., Yu-Tung Liu, M.-K. Y., Ming-Kuei Yeh, Y.-C. L., & Yu-Chih Line, W.-L. T. (2024). Enhancing Retail Competitiveness with an Intelligent Shopping Assistant System. *電腦學刊*, 35(6), 073–084. <https://doi.org/10.53106/199115992024123506006>
- Wangdra, Y., Tukino, T., & Wangdra, R. (2025). Application of Artificial Intelligence in Marketing Strategy: A Case Study in the Retail Industry. *International Journal of Analysis and Applications*, 23, 125. <https://doi.org/10.28924/2291-8639-23-2025-125>

Wijayadne, D. R. (2025). Bridging Innovation and Adoption: The Mediating Role of Trust in The Influence of Personal Innovativeness and Perceived Usefulness on Intention to Use. *Psikoborneo: Jurnal Ilmiah Psikologi*, 13(2), 321. <https://doi.org/10.30872/psikoborneo.v13i2.20786>

Zulfikri, H. F. H., & Susanto, H. (2024). Factors Influencing Consumers' Intention to Use Over-the-Top (OTT) Services: A Study in Brunei Darussalam. *ASEAN Journal on Science and Technology for Development*, 41(1). <https://doi.org/10.61931/2224-9028.1568>

