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Assessing Consumer Willingness to Adopt Ai-Based Personal Shopping Assistants

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Abstract

Artificial Intelligence (AI)–based personal shopping assistants (APSAs) are rapidly emerging as innovative tools in online retail and mobile commerce. By simulating human-like guidance through chatbots, recommendation engines, and personalized conversational agents, APSAs aim to enhance shopping convenience, decision-making efficiency, and overall satisfaction. This study investigates

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Indian consumers' willingness to adopt AI-based personal shopping assistants (WTA-APSA) and explores the factors that influence adoption, such as perceived usefulness (PU), perceived ease of use (PEOU), trust (TR), and privacy concerns (PC). Using a survey-based approach, responses were collected from 420 online shoppers across metropolitan, Tier-II, and Tier-III cities in India. Structural Equation Modeling (SEM) was employed to test hypothesized relationships. Results reveal that PU, PEOU, and trust significantly influence willingness to adopt, while privacy concerns exert a negative effect. Findings contribute to adoption theory extensions in AI retail contexts and provide practical implications for e-commerce platforms seeking to integrate APSAs effectively.

Keywords: AI personal assistants, adoption, willingness to adopt, trust, privacy, e-commerce, India

1. Introduction

The rapid expansion of e-commerce in India has ushered in a wave of AI-driven innovations, including chatbots, personalized recommendation systems, and conversational agents. Among these, AI-based personal shopping assistants (APSAs) have become central to enhancing customer journey experiences by mimicking human-like shopping advice, facilitating product discovery, and offering tailored deals.

According to India Brand Equity Foundation (IBEF, 2023), India's e-commerce market is projected to reach USD 200 billion by 2026, creating opportunities for AI-driven solutions to improve consumer decision-making efficiency. While personalization and recommender systems have been widely researched (Davenport et al., 2020), the adoption of AI-led personal shopping assistants remains underexplored in the Indian market context, especially given the diversity in digital literacy, trust orientations, and privacy concerns.

This study investigates factors shaping consumer willingness to adopt APSAs and evaluates adoption drivers through a modified Technology Acceptance Model (TAM) framework with extensions for trust and privacy.

2. Originality of the Study

Past studies on AI adoption mostly examined Western contexts focusing on chatbots in customer service (Gnewuch et al., 2017) or recommender systems in streaming services (Gómez-Uribe & Hunt, 2016). In India, research has largely focused on e-commerce service quality (Mahadevan & Joshi, 2022) and consumer trust in online platforms (Bhat & Darzi, 2020). However, there is limited empirical evidence on whether Indian consumers are willing to accept autonomous, AI-driven shopping assistants and what specific factors motivate or hinder adoption.

This study contributes originality by:

- Investigating *willingness to adopt* APSAs as a distinct construct.
- Integrating trust and privacy concerns as adoption determinants beyond traditional TAM constructs.
- Focusing on Indian consumers in diverse city tiers, reflecting demographic and literacy variations.

3. Review of Literature and Hypotheses

Perceived Usefulness (PU)

Davis et al. (1989) identified perceived usefulness as a central determinant of technology adoption. In APSAs, usefulness indicates time efficiency, personalized assistance, and improved decision quality (Davenport et al., 2020).

H1: Perceived usefulness positively influences willingness to adopt APSAs.

Perceived Ease of Use (PEOU)

Ease of use determines adoption by lowering barriers in understanding and interacting with AI tools. Research confirms that user-friendly interfaces enhance adoption intent (Venkatesh & Bala, 2008).

H2: Perceived ease of use positively influences willingness to adopt APSAs.

Trust (TR)

Trust is critical in AI adoption where human interaction is substituted by machine-driven advice. Gefen et al. (2003) argued that trust fosters acceptance when uncertainty is high.
H3: Trust positively influences willingness to adopt APSAs.

Privacy Concerns (PC)

AI assistants rely on personal data, raising consumer concerns about data misuse. Xu et al. (2011) noted that privacy fears undermine adoption in digital platforms.
H4: Privacy concerns negatively influence willingness to adopt APSAs.

Willingness to Adopt AI-based Personal Shopping Assistants (WTA-APSA)

Adoption intention reflects consumers' probability to try, continue, and recommend APSAs once introduced. This construct integrates the effects of PU, PEOU, TR, and PC.

4. Objectives of the Study

- To assess the impact of perceived usefulness, ease of use, trust, and privacy concerns on willingness to adopt APSAs.
- To evaluate the relative strength of these predictors in shaping willingness.
- To provide practical insights for e-commerce platforms deploying AI shopping assistants.

5. Research Methodology

The study employed a quantitative survey design, supplemented with expert interviews conducted with AI developers to ensure the validity and relevance of the constructs. A structured questionnaire was administered to 420 online shoppers, selected through stratified random sampling from metropolitan, Tier-II, and Tier-III cities in India. All respondents had prior experience with online shopping and exposure to AI-enabled features such as personalized recommendations and chatbots. The measurement framework drew on established scales, with Perceived Usefulness (three items) adapted from Davis et al. (1989), Perceived Ease of Use (three items) from Venkatesh and Bala (2008), Trust

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(three items) from Gefen et al. (2003), and Privacy Concerns (three items) from Xu et al. (2011). Willingness to Adopt AI-Powered Shopping Applications (APSAs) was assessed using four items designed on the basis of Technology Adoption literature. All constructs were measured on a five-point Likert scale ranging from 1 ("strongly disagree") to 5 ("strongly agree").

6. Data Analysis

Table 1: Reliability and Validity of Constructs

Construct	Cronbach's α	CR	AVE
Perceived Usefulness (PU)	0.85	0.88	0.67
Perceived Ease of Use (PEOU)	0.82	0.86	0.62
Trust (TR)	0.83	0.87	0.64
Privacy Concerns (PC)	0.79	0.83	0.58
Willingness to Adopt APSAs (WTA)	0.87	0.90	0.69

Interpretation: All constructs meet reliability (α > 0.70) and convergent validity (AVE > 0.50).

Figure 1 : SEM Path : AI Shopping Assistant Adoption

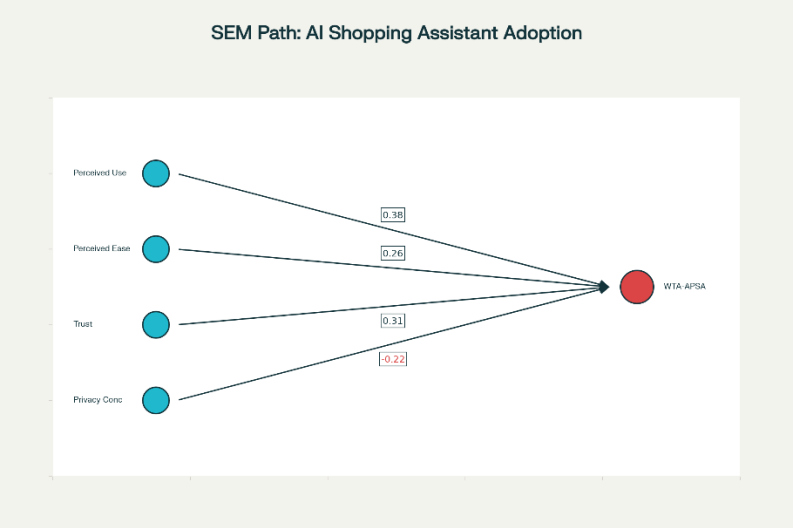

Table 2: Structural Model Estimates

Path	Std. Beta	p-value	Result
PU → WTA	0.38	<0.001	Supported (H1)
PEOU → WTA	0.26	0.002	Supported (H2)
TR → WTA	0.31	<0.001	Supported (H3)
PC → WTA	-0.22	0.005	Supported (H4)

Interpretation: All hypotheses are supported. PU is the strongest predictor, followed by trust, PEOU, and a negative effect from privacy concerns.

7. Results and Discussion

SEM results indicate that perceived usefulness and trust are the strongest drivers of adoption willingness, highlighting that Indian consumers value APSAs mainly when they deliver tangible shopping benefits and reliable experiences. Perceived ease of use also influenced adoption, consistent with TAM literature, underscoring the need for intuitive designs. Privacy concerns negatively influenced adoption, suggesting that transparent data policies are essential to overcome consumer hesitation.

8. Theoretical Implications

This study extends the Technology Acceptance Model by incorporating trust and privacy concerns into the AI shopping assistant adoption framework. It demonstrates that beyond usability, *psychological assurance (trust) and contextual barriers (privacy fears)* significantly shape consumer willingness in emerging markets.

9. Managerial Implications

- Highlight benefits: Platforms should communicate the convenience and efficiency gains from APSAs.
- Build trust: Use transparent algorithms, customer testimonials, and explainable AI features to foster confidence.
- Simplify interactions: Mobile-first, multilingual, and voice-based interfaces can improve ease of use.
- Address privacy: Clear opt-in policies, data anonymization, and secure transactions help reduce concerns.

10. Limitations and Future Research

- The study uses cross-sectional survey data, limiting causal conclusions.
- Only four adoption factors were considered; future studies could include social influence or cultural barriers.
- The scope is limited to India; cross-country comparisons could enhance generalizability.

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