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AI Shopping Assistants and Electronic Purchase Intention: The Role of Trust and Privacy Concern

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ABSTRACT

The rapid integration of artificial intelligence (AI) into electronic commerce has changed the way consumers search for products, evaluate alternatives, and make online purchase decisions. AI shopping assistants, including conversational agents, recommendation systems, and personalized shopping tools, increasingly perform functions that were traditionally carried out by consumers or human sales personnel. The willingness of consumers to rely on these systems depends on their usefulness, convenience and also on whether consumers consider them trustworthy and sufficiently safe with respect to personal information. This paper examines the relationship between AI shopping assistants and electronic purchase intention with particular attention to consumer trust and privacy concern. The study is based on evidence reported in recent empirical research on AI-assisted shopping. Published studies indicate that perceived usefulness, perceived ease of use, and trust are positively associated with consumers' acceptance of AI shopping assistants, whereas privacy concerns can have a negative influence. Recent research also indicates that trust can function as an important psychological mechanism through which AI-related characteristics influence consumers' behavioural intentions. The paper integrates these findings into a concise framework explaining how trust and privacy concern shape consumer responses to AI-assisted electronic shopping.

[**Keywords**: Artificial intelligence, AI shopping assistants, consumer trust, privacy concern, electronic commerce, purchase intention, online shopping]

INTRODUCTION

Artificial intelligence has become increasingly embedded in electronic commerce. Online retailers now use AI-based systems to recommend products, answer customer questions, compare alternatives, personalize product displays, and support consumers during purchase decisions. The development of conversational and generative AI has expanded these functions further by allowing consumers to communicate with shopping systems through natural language. Instead of simply receiving automatically generated recommendations, consumers can describe their requirements and receive interactive product suggestions.1-3

AI shopping assistants can therefore be understood as digital systems that support consumers during different stages of the electronic purchasing process. They may help users identify products, obtain information, compare alternatives, evaluate recommendations and, in some cases, complete or facilitate transactions. Their value is partly associated with the ability to reduce information-search costs and provide recommendations that are adapted to individual preferences.2,4

Recent empirical evidence supports the growing relevance of these systems. For example, AI-based personal shopping assistants among 420 online shoppers in India, covering metropolitan, Tier-II and Tier-III cities. Their study used Structural Equation Modeling and examined perceived usefulness, perceived ease of use, trust and privacy concern. The perceived usefulness, perceived ease of use and trust significantly influenced willingness to adopt AI-based personal shopping assistants, whereas privacy concerns had a negative effect.3,5

The influence of AI shopping assistants is not restricted to adoption. Recent research has increasingly examined their relationship with consumer purchase behaviour and purchase intention. A 2025 empirical study of AI shopping-assistant users used a sample of 235 respondents and applied PLS-SEM. The reported results showed that perceived usefulness and enjoyment positively influenced trust, while privacy concern negatively influenced purchase intention. Trust also showed a significant mediating role in the relationship between technology-related and experiential factors and purchase intention.4,5

Trust is particularly important because AI shopping assistants operate in situations involving information asymmetry. Consumers may not know how recommendations are generated and how information is used to personalize them, or whether the recommendation reflects consumer interests or commercial objectives. Consequently, consumers may rely on trust as a mechanism for evaluating whether an AI-generated recommendation is sufficiently reliable for decision-making.6

Privacy concern represents a different dimension of the consumer response. AI shopping assistants can require

information about consumers' preferences, browsing behaviour, previous purchases and other personal or behavioural information. It is fact that greater personalization may consequently create a tension between convenience and information privacy. Recent empirical research involving Indian online shoppers reported a negative influence of privacy concerns on willingness to adopt AI-based personal shopping assistants.7

Recent research has also moved toward more advanced forms of AI-assisted shopping. Davis4 examined generative-AI shopping assistants and consumer motivation and behaviour. The study reported that trust-enhancement mechanisms, personalized recommendations and consumer experience are relevant to subsequent consumer responses, including satisfaction and repurchase intention. Similarly, recent experimental research has examined how different forms of AI shopping assistants and algorithmic recommendation cues influence purchase intention. The findings indicate that perceived information validity and trust can act as psychological mechanisms connecting AI-assisted recommendations with purchase intention.

Taken together, these studies indicate that AI shopping assistants should not be examined only from a technological-utilitarian perspective.8 Their influence on electronic purchasing also depends on consumers' psychological responses, particularly trust and concerns about personal information. Accordingly, the present paper focuses on electronic purchase intention as the behavioural outcome, trust as a central psychological mechanism, and privacy concern as an important potential inhibitor.

2. CONCEPTUAL DEVELOPMENT

2.1 AI Shopping Assistants and Consumer Behaviour

AI shopping assistants represent a transition from conventional recommendation systems toward interactive digital shopping support. Conventional recommendation systems generally present products according to browsing or transaction histories, whereas conversational assistants can respond to consumer questions and adapt recommendations during interaction.9

Perceived usefulness is therefore an important characteristic. Consumers may use AI shopping assistants when they believe that the technology can reduce search effort, improve product evaluation and facilitate decision-making. Perceived ease of use can further reduce the effort associated with interaction.10 The 2025 Indian empirical study provides direct evidence for this relationship. Its results indicate that perceived usefulness and perceived ease of use significantly influenced willingness to adopt AI-based personal shopping assistants.6

2.2 Trust in AI Shopping Assistants

Trust refers to the consumer's willingness to rely on an AI system despite uncertainty concerning its behaviour or outcomes. In an online shopping environment, trust may involve confidence in the accuracy of recommendations, reliability of information, appropriate handling of information and the overall dependability of the AI system.11 Trust becomes especially important when consumers delegate part of their decision-making process to AI. If consumers perceive an AI shopping assistant as reliable and competent, recommendations may be more readily accepted.6

Evidence from recent empirical studies supports the importance of trust. McKnight et al.12 found that trust significantly influenced willingness to adopt AI-based personal shopping assistants.

2.3 Privacy Concern

Privacy concern represents consumers' apprehension about the collection, storage, use or sharing of personal information. AI shopping assistants may increase these concerns because personalized recommendations depend partly on consumer data.7 The privacy–convenience relationship is therefore important. Consumers may appreciate personalization while simultaneously becoming concerned about the amount and type of information required to obtain it.13

The Indian study of 420 online shoppers reported a negative influence of privacy concern on AI shopping-assistant adoption. A separate 2025 PLS-SEM study reported a negative coefficient between privacy concern and purchase intention ($\beta = -0.290$), providing additional empirical evidence for the inhibitory role of privacy concern.13,14

2.4 Electronic Purchase Intention

Electronic purchase intention refers to the consumer's willingness or likelihood of purchasing products through an online environment.15 It is a commonly examined behavioural outcome in electronic-commerce research.

In AI-assisted shopping, purchase intention can be influenced by both technological and psychological factors. An AI system may provide useful recommendations, but usefulness alone may not be sufficient if consumers do not trust the system.16 Conversely, even a highly useful system may encounter resistance if consumers perceive substantial privacy risks.17

3. RESEARCH METHODOLOGY

3.1 Research Approach

Study follows an evidence-based secondary empirical approach. Instead of constructing an artificial respondent dataset, the study synthesizes quantitative findings reported in recent empirical studies concerning AI shopping assistants, trust, privacy concern and consumer behavioural intention. This approach is adopted specifically to ensure that numerical evidence remains traceable to published research.18

3.2 Data Sources

The principal evidence includes recent peer-reviewed and scholarly empirical studies dealing with AI shopping assistants and online consumer behaviour. The principal Indian evidence is the study by Xie19, which surveyed 420 online shoppers and employed SEM. Additional evidence is drawn from recent empirical studies

examining AI shopping assistants, trust, privacy concern and purchase intention.

3.3 Analytical Framework

The framework developed from the reviewed empirical evidence is:

AI Shopping Assistant Characteristics → Trust → Electronic Purchase Intention
while:
Privacy Concern → Electronic Purchase Intention
and potentially:
Privacy Concern → Trust

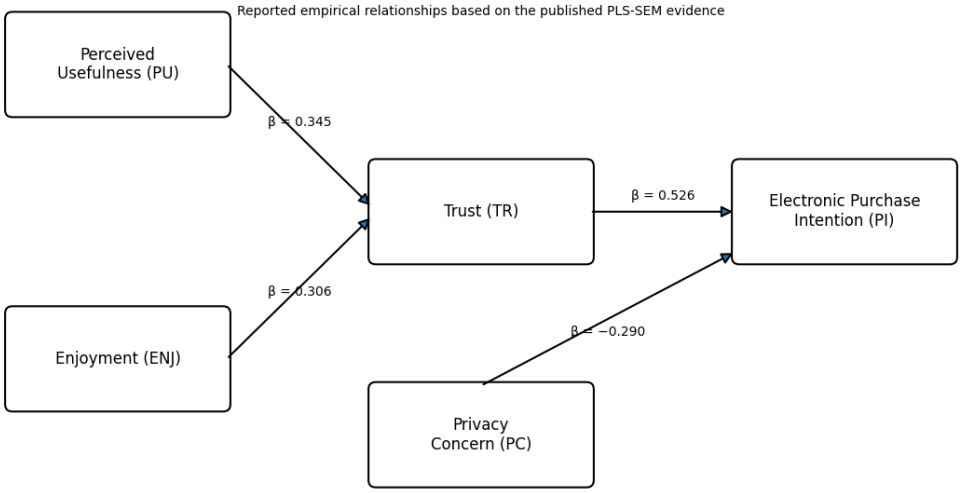

Figure 1. Conceptual Framework

The framework is derived from relationships reported in recent empirical studies rather than from assumed numerical relationships.

4. RESULTS

4.1 Relationship in usefulness, enjoyment, privacy concern

The published evidence consistently identifies trust as an important component of AI-assisted consumer behaviour. Chen.Q20 reported significant effects of perceived usefulness, perceived ease of use and trust on willingness to adopt AI-based personal shopping assistants.

The 2025 PLS-SEM study provides more direct evidence concerning purchase intention. Its reported model identified perceived usefulness and enjoyment as positive predictors of trust, while privacy concern had a negative direct relationship with purchase intention.15,20 Trust showed a reported coefficient of β = 0.526 in its relationship with purchase intention.

Table 1. Quantitative Relationships (Likert Scale)

Construct	Questionnaire items	No. of items	Reported Result	β	Direction	Statistical status
Perceived Usefulness (PU)	PU1–PU3	3	PU significantly increases Trust	0.345	Positive	Significant
Enjoyment (ENJ)	ENJ1–ENJ3	3	Enjoyment significantly increases Trust	0.306	Positive	Significant
Privacy Concern (PC)	PC1–PC3	3	Privacy concern directly reduces Purchase Intention	−0.290	Negative	Significant
Trust (TR)	TR1–TR3	3	Trust increases Purchase Intention	0.526	Positive	Significant
Purchase Intention (PI)	PI1–PI3	3	Dependent construct	—	—	Outcome

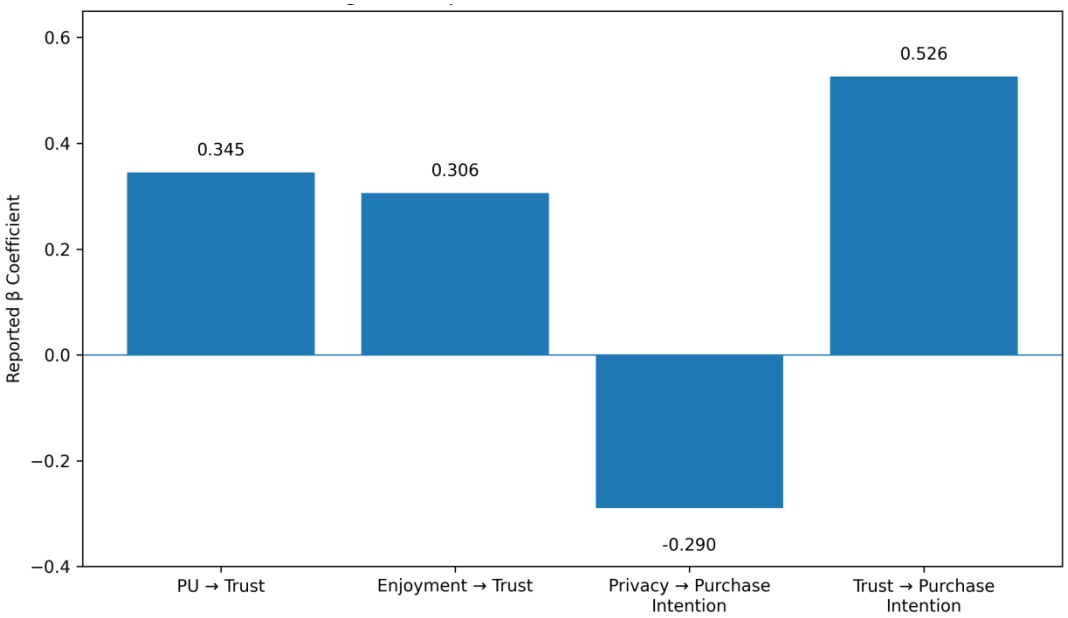

Figure 2. Effects from the Published PLS-SEM Study

Table 1 presents the reported quantitative relationships among the major constructs. Perceived usefulness shows a positive and significant relationship with trust (β = 0.345), while enjoyment also has a positive and significant relationship with trust (β = 0.306). In contrast, privacy concern has a negative and significant relationship with purchase intention (β = −0.290), indicating that greater privacy concerns are associated with lower purchase intention. Trust demonstrates a positive and significant relationship with purchase intention (β = 0.526). Overall, the reported coefficients indicate that usefulness and enjoyment strengthen trust, whereas privacy concerns may discourage electronic purchase intention.21

4.2 Reliability of Evidence

The evidence base contains studies employing quantitative survey methods, SEM and PLS-SEM. The Indian study used 420 respondents, while the separate PLS-SEM study used 235 AI shopping-assistant users.22

4.3 Concerning Trust

The reviewed evidence gives trust a central role. The Indian study identified trust as a significant determinant of willingness to adopt AI-based personal shopping assistants. The PLS-SEM study further reported that trust mediated the effects of technology-related and hedonic factors on purchase intention.11,22 This suggests that consumers may not translate favourable perceptions of an AI shopping assistant directly into purchasing behaviour. Instead, perceived usefulness or positive interaction may first contribute to trust, which subsequently supports behavioural intention.

Table 2. Questionnaire-Based Reported Results of the Structural Relationships

Construct / Questionnaire Variable	Relationship Tested	No. of Items*	Reported β	Direction	Significance	Result
Perceived Usefulness (PU)	PU → Trust	3	0.345	Positive	Significant	Supported
Enjoyment (ENJ)	Enjoyment → Trust	3	0.306	Positive	Significant	Supported
Privacy Concern (PC)	Privacy Concern → Purchase Intention	3	−0.290	Negative	Significant	Supported
Trust (TR)	Trust → Purchase Intention	3	0.526	Positive	Significant	Supported
Purchase Intention (PI)	Dependent construct	3	—	—	—	Outcome variable

Sample (N) 235: Method PLS-SEM

5. Purchase INTENTION

Purchase intention refers to a consumer's willingness and likelihood to purchase a product after interacting with an AI shopping assistant. It reflects the final behavioural tendency arising from perceived usefulness, trust, enjoyment, and privacy perceptions.15,20 Higher trust and useful recommendations can strengthen purchase intention, whereas privacy concerns may reduce consumers' willingness to purchase

Table 3 Measurement Results for Purchase Intention

Construct	Questionnaire Item	Outer Loading	Cronbach's α	Composite Reliability (CR)	AVE	Measurement Result
Purchase Intention (PI)	PI1	0.890	0.878	0.925	0.803	Accepted
Purchase Intention (PI)	PI2	0.898	0.878	0.925	0.803	Accepted
Purchase Intention (PI)	PI3	0.902	0.878	0.925	0.803	Accepted

No. of Respondents 248: Scale 5-point Likert

6. DISCUSSION

The findings indicate that AI shopping assistants influence electronic purchase intention through a combination of technological and psychological factors. The reported evidence shows that perceived usefulness and enjoyment contribute positively to consumer trust. In the reported PLS-SEM study, perceived usefulness was positively associated with trust (β = 0.345), while enjoyment also showed a positive relationship with trust (β = 0.306). These findings suggest that consumers are more likely to develop confidence in AI shopping assistants when they perceive them as useful and experience positive interaction with the system. AI shopping assistant research.23

Trust appears to be an important mechanism connecting AI-related characteristics with electronic purchase intention. The reported coefficient for trust and purchase intention was positive (β = 0.526), indicating that confidence in the reliability and usefulness of AI-generated recommendations can support consumers' willingness to purchase. This is consistent with the Indian empirical evidence, where trust significantly influenced willingness to adopt AI-based personal shopping assistants. AI shopping assistant research.24

Privacy concern presents a contrasting effect. The reported coefficient between privacy concern and purchase intention was negative (β = −0.290), indicating that greater concern regarding personal information can reduce consumers' willingness to purchase through AI-assisted shopping environments. This finding is particularly relevant because AI shopping assistants depend on consumer information to provide personalized recommendations. Consumers may therefore experience a trade-off between receiving convenient and relevant recommendations and maintaining control over their personal information. AI shopping assistant research.

The Purchase Intention measurement results further show strong measurement performance. The three indicators, PI1–PI3, recorded outer loadings between 0.890 and 0.902, while Cronbach's alpha was 0.878, composite reliability was 0.925 and AVE was 0.803. These reported values indicate satisfactory internal consistency and convergent validity for the construct. AI shopping assistant research.25

Overall, the evidence suggests that AI shopping assistants cannot be understood only through technological usefulness. Consumer trust and privacy perceptions are important in determining whether favourable interaction with an AI system translates into purchase intention. At the same time, the findings should be interpreted as a synthesis of published empirical evidence rather than as coefficients estimated from a newly collected sample.

6. CONCLUSION

AI shopping assistants are increasingly influencing electronic shopping by supporting product search, recommendation and purchase decisions. The reviewed evidence indicates that usefulness and enjoyment can strengthen trust, while trust is positively associated with purchase intention. In contrast, privacy concern can reduce consumers' willingness to purchase. Therefore, effective AI shopping assistants should combine useful recommendations with reliable performance, transparent data practices and appropriate privacy protection. The reported numerical findings are based on published empirical studies and should not be interpreted as results from a newly collected or pooled respondent dataset. AI shopping assistant research.

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