



Artificial Intelligence in Online Retail and Consumer Experience in India: The Mediating Roles of Customer Engagement and Perceived Value and the Moderating Role of Trust

Ms. Rameeja Behum J¹,

Assistant Professor, Department of Commerce,
Rathinam College of Arts and Science (Autonomous) Coimbatore¹

Ms P Dhanalakshimi², Karthick Ganesh S³

B. Com, UG Student, Department of Commerce,
Rathinam College of Arts and Science (Autonomous) Coimbatore^{2,3}

Abstract – Artificial intelligence is increasingly embedded in online retail through recommendation engines, conversational assistants, visual search, automated customer support and personalized product displays. These tools may improve consumer experience, but the effects depend on how shoppers engage with the platform, evaluate the value of AI-enabled services and assess the trustworthiness of automated interactions. This paper proposes an India-focused model to examine the relationship between AI-enabled online retail and consumer experience. Customer engagement and perceived value are specified as parallel mediators, while consumer trust is modelled as a moderator of the AI–experience relationship. The framework combines the Stimulus–Organism–Response perspective with technology acceptance and value-based adoption reasoning. A quantitative cross-sectional survey of Indian online shoppers is proposed, with PLS-SEM used to evaluate measurement quality, direct paths, indirect effects and moderation. The paper specifies hypotheses, construct definitions, questionnaire items and a reporting framework for demographic, measurement and structural-model results. Since primary data have not been supplied, no statistical findings are invented. The framework offers a reproducible basis for testing how AI-enabled retail features can be designed to deliver useful, engaging and trustworthy consumer experiences.

Keywords - artificial intelligence; e-commerce; consumer experience; customer engagement; perceived value; consumer trust; India; PLS-SEM

I. INTRODUCTION

Artificial intelligence has become part of the ordinary online shopping journey. Retail platforms use algorithmic recommendations to narrow product choices, conversational systems to answer questions, predictive tools to personalize promotions, and automated service functions to respond to routine requests. These applications can reduce search effort and make online shopping feel more relevant.

However, the presence of AI does not automatically result in a positive consumer experience. Irrelevant recommendations, unclear automated decisions, privacy concerns and inaccurate responses can weaken the shopper's confidence in a platform. Consumer experience is broader than technology acceptance. It includes cognitive evaluations, emotional reactions and perceptions formed before, during and after a transaction. The Stimulus–Organism–Response (S-O-R) framework helps explain how external platform features shape internal states and subsequent responses (Mehrabian & Russell, 1974). Technology acceptance research emphasizes usefulness and ease of use (Davis, 1989), while value-based adoption models highlight the balance between perceived benefits and sacrifices (Kim et al., 2007). These perspectives can be integrated to explain why AI features

may influence experience through engagement and perceived value. The supplied model article by Alshammari and Al-Mamary (2026) combines AI-enhanced e-commerce, consumer experience, customer engagement, perceived value and consumer trust. The present study retains that general theoretical architecture but proposes an India-focused research setting and a new measurement and analysis plan. It asks whether the same mechanisms are evident among Indian online shoppers, whose experiences may differ by platform familiarity, language preferences, digital confidence, purchase frequency and expectations of privacy.

This study contributes by examining two parallel psychological pathways—engagement and perceived value—and by testing whether trust changes the strength of the relationship between AI-enabled retail and consumer experience. For practitioners, the model suggests that AI design should be evaluated not only by feature adoption but also by relevance, perceived usefulness, emotional involvement, transparency and reliability.

II. RESEARCH PROBLEM AND GAP

AI-based retail features are often discussed in terms of convenience and personalization, but their influence on the



overall shopping experience is not necessarily direct or uniform. Engagement may reflect the extent to which shoppers actively interact with AI-enabled features; perceived value captures whether these features deliver benefits worth the effort, time or privacy trade-offs. Trust may determine whether shoppers feel comfortable relying on automated recommendations and service responses. The research problem is the need for a context-specific test of these relationships among Indian online shoppers, using a clearly specified mediation-and-moderation model. The study also addresses a methodological concern: an empirical paper should distinguish proposed relationships from observed findings and should report measurement validity, indirect effects and interaction effects transparently.

Objectives and research questions

- To examine the association between AI-enabled online retail and consumer experience among Indian online shoppers.
- To test customer engagement as a mediating mechanism between AI-enabled retail and consumer experience.
- To test perceived value as a second mediating mechanism.
- To assess whether consumer trust moderates the relationship between AI-enabled retail and consumer experience.
- To evaluate the measurement model and structural model using transparent PLS-SEM procedures.

RQ1: Is AI-enabled online retail positively associated with consumer experience? RQ2: Do customer engagement and perceived value explain part of this association? RQ3: Does consumer trust strengthen or weaken the AI–experience relationship? RQ4: Are the proposed relationships robust after accounting for relevant shopper characteristics?

III. LITERATURE REVIEW AND THEORETICAL FOUNDATION

1. AI-enabled online retail

AI-enabled online retail refers to the use of machine-learning recommendations, conversational assistants, intelligent search, automated service and personalized content within digital shopping environments. These functions can reduce the effort needed to find information and can tailor product displays to inferred needs. Their usefulness depends on accuracy, relevance, responsiveness and the extent to which shoppers understand and accept the system's role. Technology acceptance theory proposes that perceived usefulness and ease of use are important antecedents of technology-related responses (Davis, 1989).

2. Consumer experience

Consumer experience reflects the shopper's overall assessment of interactions with a retailer across search, evaluation, purchase and service stages. In digital retail, experience can include convenience, clarity, personalization, responsiveness, enjoyment and perceived control. AI can improve some dimensions while undermining others if its recommendations are inaccurate or if users feel that their data are being used without sufficient transparency. Thus, the net effect should be examined empirically rather than assumed.

3. Customer engagement as mediator

Customer engagement concerns the cognitive, emotional and behavioural involvement a customer develops during brand or platform interactions. Interactive AI can invite shoppers to ask follow-up questions, compare alternatives, refine recommendations and return to the platform. Engagement may therefore transmit some of the effect of AI-enabled retail to experience. Engagement is not synonymous with time spent: it should capture meaningful attention, interaction and involvement.

4. Perceived value as mediator

Perceived value reflects the consumer's assessment of benefits relative to sacrifices. Benefits may include time savings, relevant recommendations, ease of comparison and improved service availability. Sacrifices may include effort to correct AI errors, privacy concerns, uncertainty or the feeling of being manipulated. Value-based adoption theory suggests that consumers evaluate both benefits and costs when deciding whether a technology is worthwhile (Kim et al., 2007).

5. Consumer trust as moderator

Trust refers to confidence that a platform and its AI-enabled services will behave reliably, securely and fairly. Trust may strengthen the relationship between AI-enabled retail and experience because shoppers who expect reliable recommendations may be more willing to use automated functions. Conversely, low trust may make the same functions feel intrusive or risky. Trust is therefore proposed as a boundary condition, not simply as another positive predictor.

6. Integrated framework

The S-O-R perspective positions AI-enabled retail as a stimulus, engagement and perceived value as organismic mechanisms, and consumer experience as the response. Technology acceptance and value-based adoption provide complementary explanations for the cognitive evaluation of AI tools. Consumer trust is introduced as a moderator of the AI-enabled retail to consumer experience path.



IV. CONCEPTUAL MODEL AND HYPOTHESES

Construct role	Variable	Proposed Operational Meaning
Independent variable	AI-enabled online retail (AIOR)	Perceived availability, relevance, usefulness and quality of AI-enabled shopping functions
Mediator 1	Customer engagement (CEN)	Cognitive, emotional and behavioural involvement in AI-supported shopping
Mediator 2	Perceived value (PV)	Overall assessment of benefits relative to time, effort, privacy and other sacrifices
Moderator	Consumer trust (CT)	Confidence in the reliability, security and fairness of the platform's AI
Dependent variable	Consumer experience (CE)	Overall perceived quality of the AI-supported shopping journey
Controls	Age, gender, purchase frequency, AI-use familiarity	Shopper characteristics included where theoretically justified

- H1: AI-enabled online retail is positively associated with consumer experience.
- H2: AI-enabled online retail is positively associated with customer engagement.
- H3: Customer engagement is positively associated with consumer experience.
- H4: Customer engagement mediates the relationship between AI-enabled online retail and consumer experience.
- H5: AI-enabled online retail is positively associated with perceived value.
- H6: Perceived value is positively associated with consumer experience.
- H7: Perceived value mediates the relationship between AI-enabled online retail and consumer experience.
- H8: Consumer trust positively moderates the relationship between AI-enabled online retail and consumer experience, such that the relationship is stronger at higher trust.

V. RESEARCH METHODOLOGY

1. Research design and population

A quantitative, cross-sectional survey is proposed for adults aged 18 years or above who have purchased products through an online retail platform and have

encountered at least one AI-enabled feature, such as recommendations, chat support, intelligent search or personalized product displays. The geographic scope may be set as Tamil Nadu or broadened to multiple Indian states, depending on access and the intended population. The final manuscript must state the actual geographic scope and recruitment method.

A target of approximately 400–500 valid responses may be used for planning, but the final sample size should be justified by an a priori power analysis and the complexity of the structural model. A non-probability quota or purposive approach may be practical, but it limits population generalization. The paper should report how participants were recruited, how eligibility was checked, the fieldwork dates, response screening and the number of valid cases retained.

2. Instrument development

Use a structured questionnaire with a five- or seven-point Likert scale, anchored from strongly disagree to strongly agree. Adapt items from established literature where suitable, conduct expert review and pilot testing, and report any wording changes. The following items are illustrative starting points, not validated scales. They should be reviewed for clarity, translated where required, and tested before the main survey.

Construct	Illustrative questionnaire items
AI-enabled online retail	The platform's AI recommendations are relevant to my needs; AI tools help me find products efficiently; AI-enabled support responds usefully to my questions.
Customer engagement	I actively interact with AI-enabled shopping features; these features hold my attention; I feel involved when using these functions.
Perceived value	AI features make online shopping more worthwhile; the benefits justify the time and effort involved; the features improve the value I receive from the platform.
Consumer trust	I believe the platform uses AI in a dependable way; I feel confident in the reliability of AI-generated assistance; I believe the platform handles my information responsibly.
Consumer experience	My overall experience with AI-enabled shopping is positive; the shopping process feels convenient; the AI-supported journey meets my expectations.



3. Data collection and ethics

Participation should be voluntary and based on informed consent. Avoid collecting unnecessary personal identifiers. Explain the purpose of the study, data handling, confidentiality and the participant's right to stop. Obtain the required institutional approval before recruitment. Remove duplicate or ineligible responses using predeclared rules and report the screening process.

4. Analysis technique

- Use descriptive statistics to summarize respondent characteristics and construct-level distributions.
- Evaluate indicator loadings, Cronbach's alpha, composite reliability and rho_A where appropriate.
- Assess convergent validity using average variance extracted (AVE) and discriminant validity using HTMT, supported by the theoretical distinctiveness of constructs.
- Check collinearity using VIF and report the method used to assess potential common-method bias; do not rely on a single diagnostic as definitive proof.
- Estimate the structural paths and confidence intervals using bootstrapping, preferably with at least 5,000 resamples.
- Test the indirect effects through engagement and perceived value using bootstrapped confidence intervals.
- Test moderation using the AIOR $\times$ CT interaction; probe the interaction with simple slopes or predicted values at meaningful trust levels.
- Report R^2 , effect sizes (f^2), predictive relevance (Q^2 or an appropriate out-of-sample procedure) and model-fit indices where suitable for the chosen PLS-SEM approach.

VI. ANALYSIS TABLES AND INTERPRETATION

The tables below are designed for reporting actual survey results. Bracketed entries must be replaced after data collection and SmartPLS or equivalent analysis. They are not empirical findings. Interpretation statements describe how results should be discussed if the stated evidence is observed.

Table 1. Respondent profile

Characteristic	Category
Age	18–24
Age	25–34
Age	35–44
Age	45 and above

Gender	Category as collected
Online purchase frequency	Occasional / monthly / weekly or more
AI feature familiarity	Low / moderate / high
Geographic area	State/region categories
Total valid respondents	—

Interpretation: Describe the composition of the sample and whether it covers the intended range of online shoppers. Do not claim that the sample represents all Indian consumers if recruitment was non-probability based.

Table 6. Mediation analysis

Indirect pathway	Indirect effect	Bootstrapped 95% CI	Conclusion
AIOR $\rightarrow$ CEN $\rightarrow$ CE	[LU]	[LL, UL]	Mediation supported if CI excludes zero
AIOR $\rightarrow$ PV $\rightarrow$ CE	[LLU]	[LL, UL]	Mediation supported if CI excludes zero

Interpretation: If the confidence interval for an indirect effect excludes zero, evidence supports mediation under the specified model. Compare direct and indirect paths to describe the pattern, but do not label mediation as full or partial without reporting the direct effect and the estimation approach.

Table 8. Robustness and alternative checks

Check	Specification	Interpretation
Control variables	Add age, purchase frequency and AI familiarity	Compare coefficient stability
Alternative outcome measure	Use a clearly defined alternate experience score	Check directional consistency
Subgroup analysis	Compare relevant shopper groups if justified	Test differences formally
Common-method sensitivity	Report procedural and statistical checks	Treat diagnostics cautiously
Sample sensitivity	Re-estimate after documented screening changes	Report N and any shifts

Interpretation: Robustness is stronger when the direction and practical size of focal effects remain similar across defensible specifications. Explain changes in sample size and uncertainty; do not selectively report only favourable models.



Discussion framework

The final discussion must follow the actual results. If AI-enabled retail is positively associated with experience, discuss which features may reduce friction or improve relevance, while avoiding a claim that every AI application is beneficial. If the direct path is weak but indirect paths are supported, the findings may suggest that AI features influence experience primarily by creating engagement or perceived value. If the indirect effects are not supported, the selected mediators may not explain the relationship in this sample.

For moderation, interpret consumer trust as a boundary condition only if the interaction and simple-slope results support that conclusion. A non-significant interaction should be reported transparently. Differences by age, purchase frequency or AI familiarity should be discussed only when they were specified and tested appropriately.

Managerial implications

Online retailers should evaluate AI features using customer outcomes rather than implementation counts alone. Recommendation systems should be relevant and allow correction; conversational assistants should signal uncertainty and provide escalation to human support; personalized experiences should explain data use in understandable language. Engagement should be measured by meaningful interaction, while perceived value should account for time saved and the costs consumers associate with privacy or errors.

Trustworthy design includes reliable performance, appropriate data minimization, clear explanations, secure handling of information and practical routes to contest automated recommendations. These are design implications consistent with the proposed framework; their prioritization should be refined using the eventual empirical results.

Limitations and future research

A cross-sectional self-report survey cannot establish strong causal claims and may be affected by recall, social-desirability and common-method biases. Non-probability sampling limits generalizability. AI-enabled retail is also heterogeneous: recommendation engines, chatbots and visual search may affect consumers differently. Future work could use longitudinal surveys, experiments, platform behavioural data, interviews or comparisons across languages, regions and retail categories. Researchers should also examine privacy concern, perceived algorithmic fairness and human-AI service recovery as possible extensions.

VII. CONCLUSION

This paper proposes an India-focused model of AI-enabled online retail and consumer experience, retaining the core conceptual structure of the supplied model while setting out a new research context, hypotheses, questionnaire framework and PLS-SEM analysis plan. Customer engagement and perceived value are proposed as parallel mediators, with consumer trust as a moderator. The model may help explain not only whether AI-enabled retail is associated with consumer experience, but also the mechanisms and conditions involved. Because primary data were not provided, the paper makes no claim that the hypotheses have been empirically confirmed. The final findings and interpretations must be completed after collecting and analysing genuine survey data.

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