
**THE INFLUENCE OF AUGMENTED REALITY ON PURCHASE
INTENTION IN E-COMMERCE**

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Article Received: 5 February 2026, Article Revised: 25 February 2026, Published on: 18 March 2026

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DOI: <https://doi-doi.org/101555/ijarp.6351>

ABSTRACT

This study investigates the impact of augmented reality (AR) on purchase intention within the Indian e-commerce sector using the Stimulus–Organism–Response (S-O-R) framework. The research examines how AR features—innovativeness, interactivity, system quality, and reality congruence—act as stimuli that shape organism, consist with perceived usefulness, perceived ease of use, and perceived enjoyment, which then influence purchase intention. Data were collected from 386 online shoppers with prior AR experience and analysed using structural equation modelling (PLS-SEM). The findings reveal that all AR features significantly affect consumers' perceptions. Innovativeness strongly enhances perceived ease of use, while system quality significantly improves perceived usefulness. Reality congruence and interactivity positively influence perceived enjoyment. Among the organism variables, perceived enjoyment emerges as the strongest predictor of purchase intention, followed by perceived usefulness and perceived ease of use. Mediation analysis confirms that AR features influence purchase intention primarily through these psychological constructs rather than through direct effects. The study contributes to the growing literature on AR in e-commerce

by empirically validating the S-O-R framework in an emerging market context. Practically, the results suggest that businesses should focus on creating reliable, interactive, and emotionally engaging AR experiences to strengthen consumer purchase intention.

KEYWORDS: Augmented Reality, Purchase Intention, S-O-R Framework, Perceived Enjoyment, Indian E-commerce

INTRODUCTION

The rapid expansion of digital commerce has fundamentally changed how consumers search for, evaluate, and purchase products. Online retail platforms now offer convenience, extensive product variety, and easy price comparison. Nevertheless, they still lack one essential element present in physical retail—the ability to directly experience products. Among the technologies attempting to address this limitation, augmented reality (AR) has emerged as one of the most promising. AR allows consumers to superimpose virtual product images onto their real-world environment in real time. Through this capability, shoppers can virtually try on apparel, visualize furniture inside their homes, or closely examine product features as though they were physically present in a store.

To minimise the sensory gap that exists in online shopping, AR helps overcome common e-commerce challenges such as product uncertainty, low confidence in decision-making, and high product return rates (Saffar, 2025). This concern is particularly important as global e-commerce revenues are projected to exceed USD 8 trillion by 2027. Despite this growth, online retailers continue to face consumer hesitation and frequent returns, largely because customers cannot physically inspect products before purchasing. In this context, AR offers a practical solution. Industry evidence suggests that consumers who interact with AR features show stronger purchase tendencies and are less likely to return products. Some platforms have reported up to a 40% increase in user engagement and a 25% reduction in return rates after integrating AR applications. These encouraging outcomes have drawn significant attention from both practitioners and researchers interested in understanding the role of AR in consumer decision-making.

Although academic interest in AR has increased, existing literature remains fragmented. Many studies focus on individual AR characteristics such as interactivity or system vividness, without explaining how multiple features simultaneously influence consumer perceptions and behaviour. Moreover, while several researchers have examined AR adoption using the Technology Acceptance Model (TAM), relatively few studies have systematically analysed

how AR feature characteristics lead to purchase intention within a single integrated framework. As a result, the psychological process through which AR affects consumer behaviour remains insufficiently explained.

To provide a clearer understanding, this study adopts the Stimulus-Organism-Response (S-O-R) framework proposed by Mehrabian and Russell (1974). The S-O-R model explains how environmental stimuli influence individuals' internal psychological states, which subsequently shape behavioural responses (Mehrabian & Russell, 1974). In the context of AR shopping, AR features act as environmental stimuli, consumers' perceptions and experiences represent the organism, and purchase intention becomes the behavioural response. Specifically, perceived usefulness, perceived ease of use, and perceived enjoyment reflect the cognitive and emotional reactions formed when consumers interact with AR applications (Holdack et al., 2022; Hu & Lee, 2025). This theoretical approach offers a coherent explanation of how technological features translate into consumer behaviour.

Accordingly, the study examines four important AR features: interactivity, system quality, perceived informativeness, and reality congruence (Naveen et al., 2025). These characteristics represent how effectively the AR application allows users to engage with products, how smoothly the system operates, how clearly it communicates product information, and how closely the virtual product matches its real-world appearance. These features are expected to shape consumers' perceptions of usefulness, ease of use, and enjoyment, which ultimately influence their intention to purchase products online.

The Technology Acceptance Model explains why people choose to use a new technology. According to this model, two main factors matter: whether the technology is useful and whether it is easy to use (Davis, 1989). In AR shopping, usefulness means helping customers understand product details such as colour, size, or appearance more clearly, while ease of use means they can operate it without difficulty. However, AR is not just practical; it is also enjoyable. Because of this, researchers added another factor called perceived enjoyment, which refers to how fun and interesting the technology feels while using it. Studies show that AR makes online shopping interactive and entertaining, not just functional. In India especially, enjoyment and usefulness together strongly influence whether consumers are willing to adopt AR shopping.

In AR shopping, the AR features themselves are the stimulus, the consumer's perceptions and emotions are the organism, and purchase intention is the response. In simple terms, AR does not directly make people buy products; instead, it changes how they feel and think about the product, and those feelings lead to the buying decision.

Certain AR characteristics strongly shape these perceptions. Features such as interactivity, system quality, informativeness, and realistic display help consumers examine products closely. When shoppers can rotate, zoom, or try a product virtually, they understand it better and feel that the technology is helpful. A clear and responsive interface also makes the system easy to use, reducing effort and confusion. If customers find the system simple, they are more likely to continue shopping rather than leave the website.

AR also creates emotional reactions. Seeing products come to life on the screen creates excitement, curiosity, and enjoyment. These positive feelings improve attitudes toward both the product and the shopping platform. When shopping becomes enjoyable, consumers tend to spend more time exploring products and are more willing to purchase them.

When consumers believe AR helps them evaluate products accurately, they feel more confident, which increases their willingness to buy. Similarly, if the technology is easy to use, they are less likely to abandon the purchase process. Enjoyment also plays an important role because positive emotions encourage favourable buying decisions. Therefore, AR influences purchase intention indirectly. It works by improving perceptions of usefulness, ease of use, and enjoyment, and these psychological responses finally lead to the consumer's decision to purchase.

From the literature review the following hypotheses were formulated,

H1a: Interactivity positively influences perceived usefulness.

H1b: System quality positively influences perceived usefulness.

H1c: Informativeness positively influences perceived usefulness.

H1d: Reality congruence positively influences perceived usefulness.

H2a: Interactivity positively influences perceived ease of use.

H2b: System quality positively influences perceived ease of use.

H2c: Informativeness positively influences perceived ease of use.

H2d: Reality congruence positively influences perceived ease of use.

H3a: Interactivity positively influences perceived enjoyment.

H3b: System quality positively influences perceived enjoyment.

H3c: Informativeness positively influences perceived enjoyment.

H3d: Reality congruence positively influences perceived enjoyment.

H4a: Perceived usefulness mediates the relationship between interactivity and purchase intention.

H4b: Perceived usefulness mediates the relationship between system quality and purchase intention.

H4c: Perceived usefulness mediates the relationship between informativeness and purchase intention.

H4d: Perceived usefulness mediates the relationship between reality congruence and purchase intention.

H5a: Perceived ease of use mediates the relationship between interactivity and purchase intention.

H5b: Perceived ease of use mediates the relationship between system quality and purchase intention.

H5c: Perceived ease of use mediates the relationship between informativeness and purchase intention.

H5d: Perceived ease of use mediates the relationship between reality congruence and purchase intention.

H6a: Perceived enjoyment mediates the relationship between interactivity and purchase intention.

H6b: Perceived enjoyment mediates the relationship between system quality and purchase intention.

H6c: Perceived enjoyment mediates the relationship between informativeness and purchase intention.

H6d: Perceived enjoyment mediates the relationship between reality congruence and purchase intention.

Based on hypothetical relationship the following conceptual model were proposed;

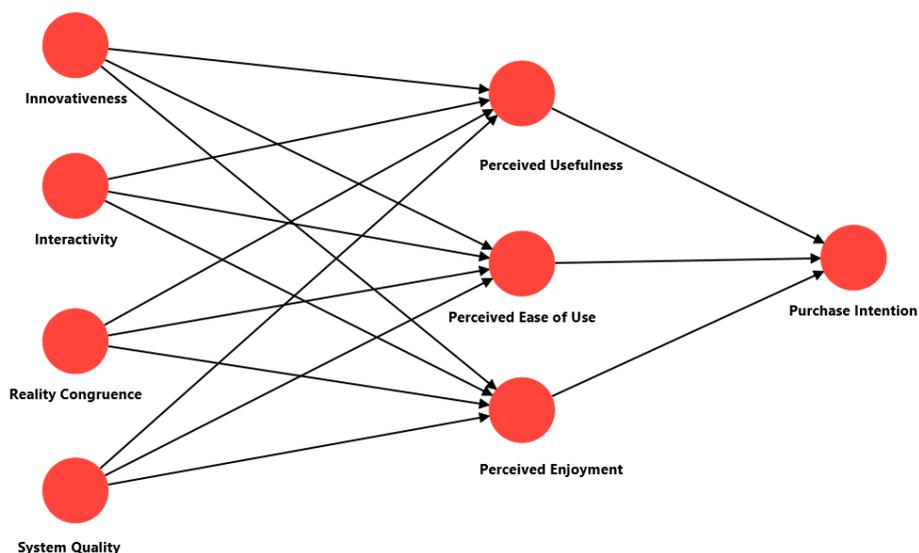


Figure 1: Proposed conceptual model.

MATERIALS AND METHODS

This study used a quantitative, cross-sectional research design to explore how augmented reality (AR) features affect consumers' intention to buy when shopping online. The target group included online shoppers who had previous experience with AR applications like virtual try-on or product visualization tools. Using purposive sampling, we collected data from 386 respondents in Kerala. This method ensured that only people familiar with AR shopping environments took part in the survey, which improved the relevance of responses.

We developed a structured questionnaire based on validated scales. The survey assessed AR features, including interactivity, system quality, informativeness, and reality congruence, along with perceived usefulness, perceived ease of use, perceived enjoyment, and purchase intention. Participants gave their responses on a five-point Likert scale, ranging from strongly disagree to strongly agree. We distributed the questionnaire online through digital platforms.

Data were analysed using Smart PLS software. Partial Least Squares Structural Equation Modeling (PLS-SEM) was applied to examine both the measurement model and the structural model (Ringle et al., 2024). We evaluated reliability and validity through indicator reliability, composite reliability, average variance extracted, and discriminant validity. Finally, path coefficients and mediation effects were measured to test the proposed hypotheses.

RESULTS

Table 1. Demographic Statistics.

	Category	Frequency	Percentage (%)
Gender	Male	212	54.9
	Female	174	45.1
Age	18–25 years	168	43.5
	26–35 years	124	32.1
	36–45 years	64	16.6
	Above 45 years	30	7.8
Educational Qualification	Higher Secondary	58	15
	Undergraduate	182	47.2
	Postgraduate	122	31.6
	Doctorate/Professional	24	6.2
Occupation	Student	56	14.5
	Private Employee	228	59.1
	Government Employee	42	10.9
	Self-employed/Business	38	9.8
	Others	22	5.7
Monthly Income	Below ₹20,000	146	37.8
	₹20,001–₹40,000	112	29

	₹40,001–₹60,000	72	18.7
	Above ₹60,000	56	14.5
Online Shopping Frequency	Weekly	74	19.2
	Once a month	156	40.4
	Once in 6 months	108	28
	Rarely	48	12.4
Experience Using AR in Online Shopping	Less than 6 months	98	25.4
	6 months – 1 year	124	32.1
	1–2 years	106	27.5
	More than 2 years	58	15

The respondents are mostly young adults, with over three-fourths between 18 and 35 years, and slightly more males than females. Most are undergraduates working in private jobs and earning below ₹40,000 per month. They generally shop online once a month and have moderate experience using AR in online shopping, typically between six months and two years.

Table 2. Reliability Analysis.

	Cronbach's alpha	Composite reliability		AVE
		rho_a	rho_c	
Innovativeness	0.896	0.897	0.923	0.706
Interactivity	0.889	0.890	0.923	0.750
Perceived Ease of Use	0.854	0.856	0.902	0.696
Perceived Enjoyment	0.882	0.882	0.919	0.739
Perceived Usefulness	0.870	0.871	0.911	0.720
Purchase Intention	0.895	0.896	0.927	0.761
Reality Congruence	0.874	0.875	0.913	0.725
System Quality	0.861	0.862	0.905	0.705

The results in table 2 show that all the measurement scales are reliable and consistent. The Cronbach’s alpha and composite reliability values are well above the acceptable level, meaning the items within each construct work well together. Additionally, the AVE values exceed 0.50, indicating that the constructs capture sufficient variance from their indicators (Hair et al., 2021).

Table 3. HTMT Ratio.

	INN	INT	PEOU	PENJ	PU	PI	RC	SQ
Innovativeness								
Interactivity	0.527							
Perceived Ease of Use	0.603	0.474						
Perceived Enjoyment	0.536	0.519	0.525					
Perceived Usefulness	0.497	0.430	0.501	0.457				
Purchase Intention	0.578	0.528	0.558	0.623	0.568			

Reality Congruence	0.564	0.552	0.541	0.579	0.508	0.571		
System Quality	0.550	0.491	0.517	0.485	0.542	0.525	0.583	

Note: INN – Innovativeness, INT – Interactivity, PEOU – Perceived Ease of Use, PENJ – Perceived Enjoyment, PU – Perceived Usefulness, PI – Purchase Intention, RC – Reality Congruence, SQ – System Quality

From table 3, it is identified that all HTMT values fall below the conservative threshold of 0.85, confirming adequate discriminant validity (Hair et al., 2021). This indicates that each construct is empirically distinct and measures a unique concept within the structural model.

Table 4. Fornell Larcker Criterion.

	INN	INT	PEOU	PENJ	PU	PI	RC	SQ
Innovativeness	0.840							
Interactivity	0.472	0.866						
Perceived Ease of Use	0.529	0.413	0.834					
Perceived Enjoyment	0.478	0.461	0.456	0.860				
Perceived Usefulness	0.441	0.380	0.434	0.401	0.848			
Purchase Intention	0.520	0.472	0.488	0.554	0.502	0.872		
Reality Congruence	0.501	0.488	0.469	0.509	0.444	0.505	0.852	
System Quality	0.485	0.431	0.445	0.424	0.471	0.461	0.506	0.840

Note: INN – Innovativeness, INT – Interactivity, PEOU – Perceived Ease of Use, PENJ – Perceived Enjoyment, PU – Perceived Usefulness, PI – Purchase Intention, RC – Reality Congruence, SQ – System Quality

The Fornell–Larcker results in table 4 confirm good discriminant validity in the model. The square root of AVE values (shown on the diagonal) is higher than the correlations with other constructs in their respective rows and columns. This indicates that each construct shares more variance with its own indicators than with other constructs.

Table 5. VIF (Inner Model).

	VIF
Innovativeness -> Perceived Ease of Use	1.572
Innovativeness -> Perceived Enjoyment	1.572
Innovativeness -> Perceived Usefulness	1.572
Innovativeness -> Purchase Intention	1.744
Interactivity -> Perceived Ease of Use	1.485
Interactivity -> Perceived Enjoyment	1.485
Interactivity -> Perceived Usefulness	1.485
Interactivity -> Purchase Intention	1.540
Perceived Ease of Use -> Purchase Intention	1.624
Perceived Enjoyment -> Purchase Intention	1.614

Perceived Usefulness -> Purchase Intention	1.441
Reality Congruence -> Perceived Ease of Use	1.633
Reality Congruence -> Perceived Enjoyment	1.633
Reality Congruence -> Perceived Usefulness	1.633
Reality Congruence -> Purchase Intention	1.724
System Quality -> Perceived Ease of Use	1.531
System Quality -> Perceived Enjoyment	1.531
System Quality -> Perceived Usefulness	1.531

Table 5 presents the Variance Inflation Factor (VIF) values for the structural (inner) model. All VIF values range between 1.441 and 1.744, which are well below the commonly accepted threshold of 3 (Hair et al., 2021). This indicates that there is no multicollinearity issue among the predictor constructs.

Table 6. R² Result.

	R-square	R-square adjusted
Perceived Ease of Use	0.364	0.357
Perceived Enjoyment	0.364	0.357
Perceived Usefulness	0.315	0.307
Purchase Intention	0.476	0.468

Table 6 shows how well the model explains the key variables. The results indicate that the AR features explain about 36% of perceived ease of use and perceived enjoyment, and around 32% of perceived usefulness. Importantly, nearly 48% of purchase intention is explained by the model, which suggests a moderate and meaningful level of predictive power. The adjusted R² values are very close to the original R² values, showing that the model is stable and not overfitted.

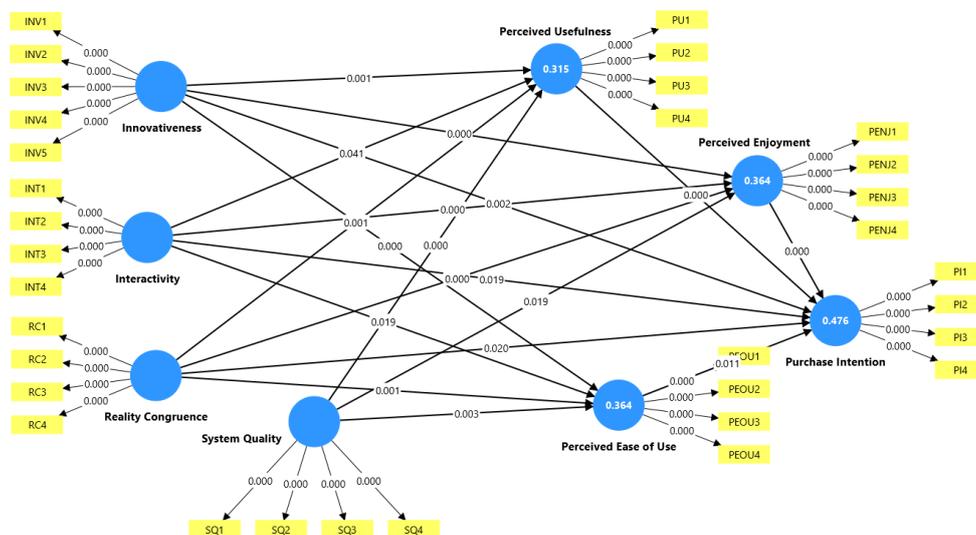


Figure 2: Structural model analysis.

Table 7. Path analysis.

	Path Coefficient (β)	Standard deviation	T statistics	P values
Innovativeness -> Perceived Ease of Use	0.311	0.059	5.239	0.000
Innovativeness -> Perceived Enjoyment	0.205	0.058	3.519	0.000
Innovativeness -> Perceived Usefulness	0.185	0.060	3.100	0.001
Innovativeness -> Purchase Intention	0.146	0.051	2.845	0.002
Interactivity -> Perceived Ease of Use	0.112	0.054	2.073	0.019
Interactivity -> Perceived Enjoyment	0.190	0.056	3.413	0.000
Interactivity -> Perceived Usefulness	0.099	0.057	1.742	0.041
Interactivity -> Purchase Intention	0.114	0.055	2.066	0.019
Perceived Ease of Use -> Purchase Intention	0.115	0.050	2.291	0.011
Perceived Enjoyment -> Purchase Intention	0.243	0.050	4.827	0.000
Perceived Usefulness -> Purchase Intention	0.198	0.049	4.077	0.000
Reality Congruence -> Perceived Ease of Use	0.180	0.057	3.185	0.001
Reality Congruence -> Perceived Enjoyment	0.256	0.058	4.375	0.000
Reality Congruence -> Perceived Usefulness	0.177	0.059	2.981	0.001
Reality Congruence -> Purchase Intention	0.111	0.054	2.052	0.020
System Quality -> Perceived Ease of Use	0.154	0.057	2.725	0.003
System Quality -> Perceived Enjoyment	0.113	0.055	2.065	0.019
System Quality -> Perceived Usefulness	0.249	0.056	4.415	0.000

Table 7 shows that all proposed relationships are positive and statistically significant, supporting the hypotheses. Innovativeness has a strong impact on perceived ease of use ($\beta = 0.311$) and also significantly influences perceived enjoyment, usefulness, and purchase intention. Interactivity and reality congruence positively affect all three perception variables and purchase intention, with reality congruence strongly influencing enjoyment ($\beta = 0.256$). System quality significantly enhances perceived usefulness ($\beta = 0.249$). Among the

mediators, perceived enjoyment ($\beta = 0.243$) has the strongest effect on purchase intention, followed by perceived usefulness ($\beta = 0.198$) and perceived ease of use ($\beta = 0.115$).

Table 8. Specific indirect effect.

	Path Coefficient (β)	Standard deviation	T statistics	P values
Innovativeness -> Perceived Usefulness -> Purchase Intention	0.037	0.015	2.458	0.007
Innovativeness -> Perceived Enjoyment -> Purchase Intention	0.050	0.018	2.735	0.003
Interactivity -> Perceived Usefulness -> Purchase Intention	0.020	0.013	1.552	0.060
Innovativeness -> Perceived Ease of Use -> Purchase Intention	0.036	0.018	2.036	0.021
Interactivity -> Perceived Enjoyment -> Purchase Intention	0.046	0.017	2.740	0.003
Interactivity -> Perceived Ease of Use -> Purchase Intention	0.013	0.009	1.466	0.071
Reality Congruence -> Perceived Usefulness -> Purchase Intention	0.035	0.015	2.340	0.010
Reality Congruence -> Perceived Enjoyment -> Purchase Intention	0.062	0.019	3.212	0.001
System Quality -> Perceived Usefulness -> Purchase Intention	0.049	0.017	2.978	0.001
Reality Congruence -> Perceived Ease of Use -> Purchase Intention	0.021	0.012	1.771	0.038
System Quality -> Perceived Enjoyment -> Purchase Intention	0.027	0.015	1.856	0.032
System Quality -> Perceived Ease of Use -> Purchase Intention	0.018	0.011	1.637	0.051

The mediation analysis indicates that most indirect effects are positive and statistically significant. Innovativeness significantly influences purchase intention through perceived usefulness ($\beta = 0.037$, $p = 0.007$), perceived enjoyment ($\beta = 0.050$, $p = 0.003$), and perceived ease of use ($\beta = 0.036$, $p = 0.021$). Interactivity significantly affects purchase intention via perceived enjoyment ($\beta = 0.046$, $p = 0.003$), but its mediation through perceived usefulness ($p = 0.060$) and perceived ease of use ($p = 0.071$) is not significant. Reality congruence shows strong mediation through perceived enjoyment ($\beta = 0.062$, $p = 0.001$) and usefulness ($\beta = 0.035$, $p = 0.010$). System quality significantly influences purchase intention mainly through perceived usefulness ($\beta = 0.049$, $p = 0.001$).

DISCUSSION

The findings of this study clearly show that augmented reality (AR) features play an important role in shaping online purchase intention among Indian consumers. The results support the Stimulus–Organism–Response (S-O-R) framework, confirming that AR features first influence consumers' perceptions and feelings, which then lead to buying decisions. In simple terms, consumers do not purchase just because AR is available; they purchase because AR makes the shopping experience useful, easy, and enjoyable.

Among the AR features, innovativeness strongly influenced perceived ease of use and also had a meaningful impact on usefulness, enjoyment, and purchase intention. This suggests that Indian consumers appreciate advanced and modern shopping technologies, especially when they make the process smoother. Interactivity mainly enhanced perceived enjoyment, showing that engaging and responsive features make shopping more fun and immersive. Reality congruence had a strong effect on enjoyment, indicating that when AR visuals closely match real products, customers feel more confident and emotionally connected. System quality significantly improved perceived usefulness, highlighting the importance of smooth performance, speed, and reliability.

When examining the factors that directly influence purchase intention, perceived enjoyment emerged as the strongest predictor. This means that emotional experience plays a major role in driving buying decisions. Perceived usefulness and perceived ease of use also significantly influenced purchase intention, but their effects were slightly weaker compared to enjoyment. This shows that Indian consumers value both functional benefits and enjoyable experiences while shopping online.

The mediation results further confirm that AR features affect purchase intention mainly through these psychological perceptions. In other words, AR works best when it enhances how useful, easy, and enjoyable the shopping experience feels. Overall, the study highlights that successful AR implementation in Indian e-commerce must focus not only on technology but also on creating meaningful and engaging customer experiences.

CONCLUSION

This study examined the impact of augmented reality (AR) features on online purchase intention using the Stimulus–Organism–Response (S-O-R) framework in the Indian e-commerce context. The findings confirm that AR features such as innovativeness, interactivity, system quality, and reality congruence significantly influence consumers'

cognitive and emotional responses—namely perceived usefulness, perceived ease of use, and perceived enjoyment. These internal evaluations, in turn, drive purchase intention.

Among the mediating variables, perceived enjoyment emerged as the strongest predictor of purchase intention, followed by perceived usefulness and perceived ease of use. This indicates that while functional benefits remain important, emotional engagement plays a more dominant role in encouraging online purchases through AR platforms. The mediation analysis further revealed that AR features primarily affect purchase intention indirectly through these psychological mechanisms, validating the S-O-R theoretical chain.

Overall, the study highlights that AR technology must go beyond novelty and focus on delivering realistic, reliable, and engaging experiences. For practitioners, the results suggest that investing in high-quality AR design and immersive user experiences can significantly enhance consumer purchase decisions in the competitive Indian digital marketplace.

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