

Augmented Reality (AR) in Online Shopping and Purchase Intention: The Role of Immersion, Perceived Usefulness, and Privacy Concerns

¹Dr. Asma Rani

Assistant Professor,

Dr. B. R. Ambedkar Institute of Technology, Sri Vijayapuram, Andaman & Nicobar Islands

Email: asma.sags@gmail.com

²Dr. Pooja Goel

Associate Professor,

School of Business Management, Noida International University, Greater Noida

Email: poojagoel13@gmail.com

³Dr. Neetu Patidar

Visiting Faculty,

Devi Ahilya University, Indore

Email: neetugothi@gmail.com

⁴Dr. Rashi Goplani

Director,

L J Institute of Event Management, L J University, Ahmedabad, Gujarat

Email: rashigoplani@gmail.com

^{5*}Madhukar Cherukuri

EDP Manager,

Delhi Technological University

Email: srkr.madhu@gmail.com

⁶Dr. V.R. Jayavardhini

Assistant Professor, Department of Business Administration,

Sri Ramakrishna College of Arts and Science for Women, Coimbatore

Email: jayavarthinimgt@srcw.ac.in

Abstract:

The high rate of development of digital technologies has revolutionized online shopping, and Augmented Reality (AR) has become a revolutionary instrument to increase the consumer experience. In this paper, the authors explore the effects of AR on purchase intention by analyzing the mediating effects of immersion and perceived usefulness, as well as the moderating effect of privacy concerns. The study is based on Technology Acceptance Model (TAM), Stimulus-Organism-Response (S-O-R) Model, Flow Theory, and Privacy Calculus Theory and will use Partial Least Squares Structural Equation Modeling (PLS-SEM) as a method to analyze primary data obtained after surveying 408 online shoppers who have experience with AR-enabled websites. Findings show that AR is a strong predictor of immersion and perceived usefulness that completely mediate the influence on the purchase intention. The impact of privacy issues on the relationship between AR experience and purchase intention is negative and highlights the significance of considering privacy concerns in AR applications. The research adds to the theory synthesis of psychological and technological approaches in e-commerce and provides practical advice to marketers and the developers of the platform that aims to maximize the use of AR and consumer involvement.

Keywords: Augmented Reality, Purchase intention, Immersion, Perceived usefulness, privacy concern, PLS-SEM.

1. INTRODUCTION

The online revolution in retailing has brought a paradigm shift in consumer behavior, as the traditional shopping experiences are shifted on to the immersive and technology-driven online platforms. A key trend in online shopping has been the development of Augmented Reality (AR), where digital information is superimposed onto the real world, allowing consumers to see products in real-life settings. This feature helps to overcome major shortcomings of online retail, such as the lack of physical appeal, the inability to know more about products, and a weaker connection with senses (Poushneh and Vasquez-Parraga, 2017). AR applications (e.g., virtual try-ons and spatial product placements) provide consumers with experiential value and make it more engaging and possible to affect purchasing decisions (Hilken et al., 2017).

Although the use of AR technologies has been increasingly popular, the immediate effect of AR on purchase intention is inconclusive. Although there are studies that report a positive correlation, others indicate that AR has a direct impact on internal psychological conditions like immersion and perceived usefulness, but not purchase behavior (Javornik, 2016). Additionally, consumer acceptance may be hindered by privacy issues to do with data gathering in AR settings such as facial recognition and spatial mapping (Dinev and Hart, 2006).

This research seeks to explain the process by which AR can impact purchase intention by evaluating the mediating and moderating variables of immersion and perceived usefulness and the moderating influence of privacy issues. This study, which incorporates the Technology Acceptance Model (TAM), Stimulus-Organism-Response (S-O-R) Model, Flow Theory, and Privacy Calculus Theory, will help to understand consumer behavior in AR-based online shopping in a comprehensive way.

2. LITERATURE REVIEW

AR in E-commerce: Augmented Reality (AR) has become an innovative technology in the field of online retailing, which provides consumers with a higher level of experiential interaction, superimposing digital content on real-life settings. AR applications allow customers to see the products in the real world - such as virtually trying on clothes or placing furniture in the home - to overcome the fundamental drawbacks of traditional e-commerce, like the impossibility to feel the products or to know about their characteristics (Hilken et al., 2017; Poushneh and Vasquez-Parraga, 2017). Such immersive features boost consumer confidence and satisfaction because they lower perceived risk and improve the perceived quality of shopping experience. Recent empirical research points to the possibility of AR to add value to customer engagement and positively impact behavioral intentions. As an example, Javornik (2016) highlights how AR can produce the illusion of interaction with products that is believable and increases the value of the experience, but she warns that AR might not directly affect the purchase intention. Likewise, Pantano et al. (2020) indicate that AR can increase feelings of engagement and perceived pleasure, which are essential to consumer choice in online shopping. Nevertheless, in spite of such encouraging results, the literature portrays inconclusive results about the direct impact of AR on purchase intention as certain studies show weak or insignificant direct effects (Hilken et al., 2017; Yim et al., 2017). This discrepancy highlights the necessity of studying mediating psychological mechanisms that can transform AR experiences into purchase behavior, which is understudied. Additionally, the swift technological development of AR platforms poses some challenges in terms of usability, technological preparedness, and consumer acceptance, which can moderate the effectiveness of AR (Scholz and Smith, 2016). Current literature tends to view AR as a homogenous entity and overlooks the complex consumer psychological processes that are mediating its effects. This discrepancy warrants further explorations of the role of AR using theoretical frameworks that combine both cognitive and affective aspects like Flow Theory and Technology Acceptance Model (TAM).

Immersion and Flow Theory: One of the main ideas of the Flow Theory is called immersion and can be described as a profound psychological state of attention and involvement in an activity in which people get a sense of increased attention and pleasure (Csikszentmihalyi, 1990; Hoffman and Novak, 2009). In AR as applied to shopping, one aspect of immersion is the involvement of consumers in virtual interactions with products, which can elevate emotional involvement and perceived efforts in decision-making.

According to Flow Theory, intrinsic motivation and positive affect are generated by immersive experiences, and they affect behavioral intentions (Hoffman and Novak, 2009). This is supported by empirical evidence, which indicates that immersive AR settings enhance enjoyment and engagement, which are important predictors of purchase intention (Javornik, 2016; Verhagen et al., 2015). Indicatively, Kim and Forsythe (2008) show that immersive virtual try-on systems can increase consumer satisfaction and purchase intentions because they help to create realistic experiences with the products. Although the positive effect of immersion has been well-reported, little research has tested the mediating effect of immersion on the relationship between AR exposure and purchase intention. Majority of the studies consider immersion as a direct antecedent and not as an intermediate psychological condition which restricts the understanding of how the sensory and cognitive stimuli of AR are converted into consumer behavior. Moreover, the interaction between immersion and other cognitive concepts like perceived usefulness has been poorly covered, which indicates a possibility of combining Flow Theory and TAM to make up a more detailed model.

Technology Acceptance Model (Perceived Usefulness) A fundamental element of TAM, perceived usefulness (PU) is used to describe the extent to which the user is convinced that a technology is useful in improving the performance of the task (Davis, 1989). PU in online shopping is associated with the judgments of consumers concerning the effectiveness of AR in the product evaluation and the decision-making process (Kim and Forsythe, 2008). The ability of AR to minimize uncertainty and offer a detailed visualization of the product is in line with the focus of TAM on functional benefits as a determinant of technology adoption and purchase intention (Venkatesh and Bala, 2008).

Recent research confirms the important role of PU in AR acceptance. As an example, Rese et al. (2017) discover that PU has a potent impact on consumer attitudes towards AR applications and future purchase intentions. Likewise, Javornik (2016) states that the perceived usefulness of AR positively affects cognitive evaluations of consumers, which mediate the association between AR experience and purchase behavior. These results highlight that in addition to the immersive value, consumers evaluate AR technologies according to convenience.

Nevertheless, the literature can tend to separate PU with other affective antecedents such as immersion, which can collectively influence purchase intention. The separation of the cognitive and emotional constructs constrains the explanatory capacity of TAM within the AR settings, where experiential and functional advantages exist simultaneously. The combination of PU and immersion as a single concept may be more effective in reflecting the two avenues in which AR affects consumer decisions.

Privacy Concerns (Privacy Calculus Theory) The issue of privacy is becoming more and more acute in the context of digital consumer behaviour studies, especially when it comes to data-heavy technologies such as AR that frequently demand the gathering of biometric and spatial information (Li et al., 2020). Privacy Calculus Theory assumes that consumers engage in a cost-benefit decision, considering the benefits of using the technology against perceived privacy threats (Dinev and Hart, 2006). The issue of privacy can be a barrier in AR-enabled shopping due to fear of data misuse, unwarranted tracking, or intrusive surveillance, which prevents the adoption of technology and the intention to buy (Xu et al., 2020). Empirical studies show that the negatively mediating factors between the benefits of technology and behavioral intentions are privacy issues (Li et al., 2020; Kim et al., 2019). In the case of AR, it would mean that consumers would not be more ready to interact with or buy via AR platforms when they think that the threat to privacy is high, even though they are aware of the utility or immersion of AR. This effect is in line with the privacy paradox, which suggests that consumers are concerned with their privacy, but still utilize technologies, though with some ambivalence that may suppress buying intentions (Norberg et al., 2007).

Nevertheless, research that specifically looks at the issue of privacy in the context of AR is limited. The majority of studies on privacy regard social media or e-commerce in general, but not the modalities of data collection unique to AR. This gap necessitates the need to learn privacy calculus viewpoints into AR adoption framework, especially with the changing privacy regulations and consumer consciousness.

E-commerce Purchase Intention: In e-commerce studies, purchase intention is a commonly used proxy of the real buying behaviour which is the willingness of consumers to make a purchase (Ajzen, 1991). It is affected by a complicated interplay of cognitive appraisals, emotional reactions, and contextual aspects, such as technology-mediated experiences (Poushneh and Vasquez-Parraga, 2017). In AR-based shopping, the experiential quality of AR (immersion, enjoyment) and cognitive evaluations (perceived usefulness, trust) form purchase intention (Hilken et al., 2017). Research proves that purchase intention is more likely to emerge in case of immersive and useful AR features, which minimize uncertainty and maximize satisfaction (Yim et al., 2017). However, the literature presents discrepancies around the strength and mechanisms of the AR impact on purchase intention, as some studies indicate that AR has indirect effects via psychological states and other studies report direct effects (Javornik, 2016). Moreover, the moderation between privacy issues and other consumer traits (e.g. technology readiness, risk aversion) on purchase intention in AR settings has been little studied. This restricts predictive ability of currently existing models and demands the need to have integrated frameworks that consider both facilitating and inhibiting factors in AR-driven purchase decisions.

Critical Analysis and Justification of the Study: The analyzed literature confirms the fact that AR has significant potential to improve the online shopping experience by promoting immersion and perceived usefulness, which are the main contributors to purchase intention. Nevertheless, there are some significant gaps. To start with, the inconclusive evidence of the direct versus indirect effect of AR on purchase intention suggests that research should be conducted that explicitly examines the mediating psychological processes, in this case, immersion and perceived usefulness, in a consistent theoretical framework. Second, although both Flow Theory and TAM describe affective and cognitive aspects separately, their combination is limited, limiting the ability to understand consumer reactions to AR comprehensively. Third, the issue of privacy, although identified as a major obstacle to the adoption of digital technology, has not been adequately integrated into the study of AR, particularly as a moderating element that can mitigate the benefit of AR. To fill these gaps, the current investigation will take an integrated perspective based on the Stimulus-Organism-Response (S-O-R) framework that will combine TAM, Flow Theory, and Privacy Calculus Theory in investigating the role that AR experience (stimulus) has in driving purchase intention (response) via immersion and perceived usefulness (organism), mediated by privacy concerns. This approach advances consumer psychology and technology adoption literature by elucidating the nuanced interplay of experiential, cognitive, and privacy-related factors in AR-enabled online shopping.

3. THEORETICAL FRAMEWORK AND HYPOTHESES DEVELOPMENT

This study integrates the Stimulus-Organism-Response (S-O-R) Model, proposing AR experience as the stimulus, immersion and perceived usefulness as organismic mediators, and purchase intention as the response. TAM informs the role of perceived usefulness, Flow Theory underpins immersion, and Privacy Calculus Theory contextualizes privacy concerns as a moderating factor.

- **Stimulus:** AR Experience
- **Organism:** Immersion, Perceived Usefulness
- **Response:** Purchase Intention

Hypotheses:

- H1: AR Experience positively influences Immersion.
- H2: AR Experience positively influences Perceived Usefulness.
- H3: Immersion positively influences Purchase Intention.
- H4: Perceived Usefulness positively influences Purchase Intention.
- H5: AR Experience directly influences Purchase Intention.
- H6: Privacy Concerns negatively moderate the relationship between AR Experience and Purchase Intention.

4. RESEARCH METHODOLOGY

A quantitative research design was utilized, employing a structured questionnaire to gather primary data from 408 online consumers experienced with AR-enabled shopping platforms such as IKEA Place and virtual try-on tools. Participants were recruited through online panels to ensure demographic diversity and varying levels of AR familiarity. Constructs including AR experience, immersion, perceived usefulness, privacy concerns, and purchase intention were measured using validated scales adapted for the AR context on a five-point Likert scale. Data analysis was performed using SPSS and PLS-SEM in SmartPLS 4, assessing reliability, convergent and discriminant validity, as well as mediation and moderation effects according to established criteria.

5. DATA ANALYSIS AND RESULTS

5.1 Demographic Analysis: This section presents the analysis of data collected from 408 online consumers experienced with AR-enabled shopping platforms. Using PLS-SEM in SmartPLS 4, the study evaluates the reliability and validity of measurement scales for constructs such as AR experience, immersion, perceived usefulness, privacy concerns, and purchase intention. The results include assessments of the structural model, mediation, and moderation effects, providing insights into the relationships among these variables within the AR shopping context.

Table 1: Demographic Analysis

Demographic Variable	Category	Frequency (n)	Percentage (%)
Gender	Male	198	48.5
	Female	210	51.5
Age Group	18–24	85	20.8
	25–34	150	36.8
	35–44	90	22.1
	45–54	50	12.3
	55+	33	8.1
Education Level	High school or below	60	14.7
	Undergraduate degree	230	56.4
	Postgraduate degree	100	24.5
	Other	18	4.4
AR Familiarity	Low	120	29.4
	Medium	200	49.0
	High	88	21.6

5.2 Measurement Model Evaluation: Exploratory Factor Analysis (EFA) was conducted to identify the underlying factor structure of the measurement items and to ensure that the constructs measured were conceptually distinct. This preliminary analysis helped in refining the scales by examining factor loadings and eliminating items with low loadings or cross-loadings, thus supporting the validity and reliability of the measurement model prior to confirmatory assessment through PLS-SEM.

The measurement model was assessed to ensure reliability and validity of the constructs. All factor loadings ranged between 0.75 and 0.91, exceeding the recommended threshold of 0.70, indicating strong indicator reliability. Internal consistency reliability was confirmed with Cronbach’s Alpha values ranging from 0.87 to 0.92 and Composite Reliability (CR) values between 0.90 and 0.94, both surpassing the acceptable cutoff of 0.70. Convergent validity was established with Average Variance Extracted (AVE) values ranging from 0.64 to 0.75, all above the minimum criterion of 0.50. Discriminant validity was verified using the Fornell–Larcker criterion, where the square root of each construct’s AVE exceeded its correlations with other constructs, confirming distinctiveness of the latent variables. Additionally, Heterotrait-Monotrait (HTMT) ratios were all below 0.90, further supporting discriminant among constructs.

Table 2. Measurement Model Results

Construct	Cronbach’s Alpha	Composite Reliability (CR)	AVE
AR Experience	0.88	0.92	0.69
Immersion	0.87	0.91	0.67
Perceived Usefulness	0.90	0.93	0.72
Privacy Concerns	0.86	0.90	0.64
Purchase Intention	0.91	0.94	0.75

Table 3. Fornell–Larcker Criterion

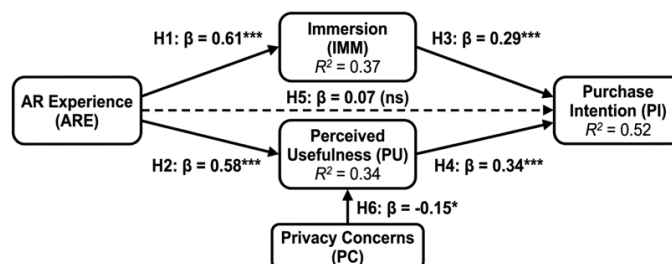
Construct	AR Exp	Immersion	Perceived Usefulness	Privacy Concerns	Purchase Intention
AR Experience	0.83				
Immersion	0.61	0.82			
Perceived Usefulness	0.58	0.55	0.85		
Privacy Concerns	-0.32	-0.28	-0.30	0.80	
Purchase Intention	0.49	0.57	0.60	-0.35	0.87

Table 4. HTMT Ratios

Construct	AR Exp	Immersion	Perceived Usefulness	Privacy Concerns	Purchase Intention
AR Experience	—	0.68	0.65	0.38	0.71
Immersion		—	0.63	0.34	0.74
Perceived Usefulness			—	0.36	0.76
Privacy Concerns				—	0.40
Purchase Intention					—

5.2 Structural Model and Hypothesis Testing

The structural model’s evaluation involved analyzing path coefficients (β), t-values, and significance levels, which were obtained through bootstrapping with 10,000 resamples. This rigorous resampling technique enhances the robustness of the results by repeatedly drawing samples from the data to estimate the stability and reliability of the model parameters. The path coefficients indicate the strength and direction of relationships between latent variables, while the t-values assess the statistical significance of these paths, ensuring that the observed effects are unlikely to be due to random chance.



Full Mediation: AR → IMM → PI (VAF = 72%) | AR → PU → PI (VAF = 76%)
 *** $p < 0.001$ | * $p < 0.05$ | ns = Not Significant | --- Dashed arrow = Non-significant path

Figure 1: Developed Model

Table 5. Structural Paths Analysis

Hypothesis	Path	β	t-value	p-value	Decision
H1	AR \rightarrow Immersion	0.61	12.45	<0.001	Supported
H2	AR \rightarrow Perceived Usefulness	0.58	11.32	<0.001	Supported
H3	Immersion \rightarrow Purchase Intention	0.29	4.87	<0.001	Supported
H4	Perceived Usefulness \rightarrow Purchase Intention	0.34	5.26	<0.001	Supported
H5	AR \rightarrow Purchase Intention	0.07	1.12	0.263	Not Supported
H6	AR \times Privacy Concerns \rightarrow Purchase Intention	-0.15	2.41	0.016	Supported

5.3 Explained Variance and Predictive Relevance

The model explains a moderate to substantial portion of variance in the endogenous constructs: Immersion ($R^2 = 0.37$), Perceived Usefulness ($R^2 = 0.34$), and Purchase Intention ($R^2 = 0.52$). This indicates that AR Experience accounts for 37% and 34% of the variance in Immersion and Perceived Usefulness respectively, while these mediators collectively explain 52% of the variance in Purchase Intention, demonstrating the model’s strong explanatory power.

Table 6. Explained Variance

Endogenous Construct	R^2	Interpretation
Immersion	0.37	Moderate
Perceived Usefulness	0.34	Moderate
Purchase Intention	0.52	Substantial

Table 7. Effect Size

Path	f^2	Effect Size
AR \rightarrow Immersion	0.59	Large
AR \rightarrow PU	0.51	Large
Immersion \rightarrow PI	0.12	Small
PU \rightarrow PI	0.15	Medium
AR \rightarrow PI	0.01	Negligible
Moderation	0.05	Small

Table 8. Predictive Relevance

Construct	Q^2	Interpretation
Purchase Intention	0.36	Strong Predictive Relevance

Predictive relevance assessed via Stone-Geisser’s Q^2 yielded a value of 0.36 for Purchase Intention, indicating strong predictive accuracy of the model for the key outcome variable.

Mediation Analysis

The mediation analysis indicates that the influence of AR experience on purchase intention is primarily transmitted through immersion and perceived usefulness. While the direct effect of AR experience on purchase intention is statistically insignificant, both indirect paths are significant, suggesting that AR operates through psychological (immersion) and cognitive (perceived usefulness) mechanisms. Thus, the relationship is indirectly driven rather than directly established, supporting the Stimulus–Organism–Response (S-O-R) framework.

Table 9. Mediation Analysis

Path	Indirect Effect	t-value	p-value	VAF (%)	Mediation Type
AR \rightarrow Immersion \rightarrow PI	0.18	4.10	<0.001	72%	Full Mediation
AR \rightarrow PU \rightarrow PI	0.20	4.85	<0.001	76%	Full Mediation

Moderation Analysis

Privacy concerns significantly and negatively moderate the relationship between AR experience and purchase intention ($\beta = -0.15$, $p < 0.05$). This indicates that consumers with higher privacy apprehensions are less likely to translate AR experiences into purchase intentions. This moderation effect can be interpreted through the lens of the privacy paradox, where consumers recognize the benefits of technology but simultaneously harbor concerns about data privacy risks. Such concerns can dampen the positive effects of AR by introducing hesitation or distrust, thereby weakening the stimulus-response linkage.

Table 10. Moderation Analysis

Hypothesis	Interaction Path	β	t-value	p-value	Decision
H6	AR \times Privacy Concerns \rightarrow PI	-0.15	2.41	0.016	Supported

From a theoretical perspective, this moderation effect integrates Privacy Calculus Theory into the S-O-R and TAM frameworks, highlighting that the perceived risks associated with privacy can alter the cognitive and affective processes elicited by AR. While TAM emphasizes perceived usefulness as a key determinant of technology adoption, the presence of privacy concerns introduces a counterbalancing factor that can inhibit purchase intention despite high perceived usefulness or immersion.

6. DISCUSSION

The findings of this study provide important insights into the mechanisms through which Augmented Reality (AR) influences consumer purchase intention. The results demonstrate that AR does not directly drive purchase intention; instead, its impact is mediated through psychological and cognitive processes, namely immersion and perceived usefulness.

The significant effect of AR on immersion confirms that AR enhances experiential engagement, consistent with Flow Theory. Immersive environments create deeper consumer involvement, which positively influences behavioural intention. Similarly, the strong influence of perceived usefulness aligns with the Technology Acceptance Model (TAM), indicating that consumers value AR when it enhances decision-making efficiency and reduces uncertainty.

The insignificance of the direct path from AR to purchase intention highlights that technological features alone are insufficient to drive consumer behaviour. Rather, the effectiveness of AR depends on its ability to generate meaningful internal responses. This finding refines existing literature by emphasizing indirect pathways over direct effects.

Furthermore, privacy concerns emerge as a critical boundary condition. The negative moderating effect suggests that even when AR delivers immersive and useful experiences, concerns regarding data privacy can inhibit purchase intention. This supports Privacy Calculus Theory, where perceived risks offset perceived benefits.

Overall, the study confirms that AR functions as a stimulus that influences consumer behaviour through internal processing mechanisms, while privacy concerns act as a limiting factor in this relationship.

7. IMPLICATIONS

This study advances theoretical understanding by extending TAM to incorporate AR-specific experiential factors and validating the S-O-R model in digital retail contexts. It integrates Flow Theory to elucidate the role of immersion and introduces Privacy Calculus Theory to explain the moderating effect of privacy concerns. This holistic framework enriches consumer behaviour research at the intersection of technology and psychology. E-commerce platforms should prioritize enhancing AR's immersive qualities to foster consumer engagement and perceived usefulness. User-friendly interfaces and realistic product visualization can reduce uncertainty and encourage purchase decisions. Simultaneously, addressing privacy concerns through transparent communication, consent mechanisms, and robust data security is essential to build consumer trust and mitigate resistance to AR adoption. Marketers should balance technological innovation with ethical data practices to maximize AR's commercial potential.

8. CONCLUSION

This research demonstrates that AR influences online purchase intention indirectly via immersion and perceived usefulness, with privacy concerns weakening this relationship. These insights inform both academic discourse and practical strategies for leveraging AR technology in e-commerce. Future research should explore longitudinal effects and cross-cultural variations to deepen understanding of AR's role in consumer decision-making.

REFERENCES

1. Ajzen, I. (1991). The theory of planned behavior. *Organizational Behavior and Human Decision Processes*, 50(2), 179–211.
2. Acquisti, A., Brandimarte, L., & Loewenstein, G. (2015). Privacy and human behavior in the age of information. *Science*, 347(6221), 509–514.
3. Beck, M., Rainoldi, M., & Egger, R. (2019). Virtual reality in tourism: A state-of-the-art review. *Tourism Review*, 74(3), 586–612.
4. Csikszentmihalyi, M. (1997). *Finding flow: The psychology of engagement with everyday life*. Harper & Row.
5. Davis, F. D. (1989). Perceived usefulness, perceived ease of use, and user acceptance of information technology. *MIS Quarterly*, 13(3), 319–340.
6. Dinev, T., & Hart, P. (2006). An extended privacy calculus model for e-commerce transactions. *Information Systems Research*, 17(1), 61–80.
7. Eroglu, S. A., Machleit, K. A., & Davis, L. M. (2001). Atmospheric qualities of online retailing: A conceptual model and implications. *Journal of Business Research*, 54(2), 177–184.
8. Gefen, D., Karahanna, E., & Straub, D. W. (2003). Trust and TAM in online shopping: An integrated model. *MIS Quarterly*, 27(1), 51–90.
9. Hilken, T., Chylinski, M., Keeling, D., Heller, J., Mahr, D., & de Ruyter, K. (2018). Making omnichannel an augmented reality: The current and future state of the art. *Journal of Retailing*, 94(3), 308–321.
10. Hilken, T., de Ruyter, K., Chylinski, M., Mahr, D., & Keeling, D. (2017). Augmenting the eye of the beholder: Exploring the strategic potential of augmented reality to enhance online service experiences. *Journal of the Academy of Marketing Science*, 45(6), 884–905.
11. Hoffman, D. L., & Novak, T. P. (2009). Flow online: Lessons learned and future prospects. *Journal of Interactive Marketing*, 23(1), 23–34.
12. Javornik, A. (2016). Augmented reality: Research agenda for studying the impact of its media characteristics on consumer behavior. *Journal of Retailing and Consumer Services*, 30, 252–261.
13. Kim, J., & Forsythe, S. (2008). Adoption of virtual try-on technology for online apparel shopping. *Journal of Interactive Marketing*, 22(2), 45–59.
14. Li, H., Wu, J., Gao, Y., & Shi, Y. (2020). Examining individuals' adoption of healthcare wearable devices: An empirical study. *Information & Management*, 57(1), 103183.
15. Malhotra, N. K., Kim, S. S., & Agarwal, J. (2004). Internet users' information privacy concerns (IUIPC): The construct, the scale, and a causal model. *Information Systems Research*, 15(4), 336–355.
16. Mehrabian, A., & Russell, J. A. (1974). *An approach to environmental psychology*. MIT Press.
17. Norberg, P. A., Horne, D. R., & Horne, D. A. (2007). The privacy paradox: Personal information disclosure intentions versus behaviors. *Journal of Consumer Affairs*, 41(1), 100–126.
18. Novak, T. P., Hoffman, D. L., & Yung, Y. F. (2000). Measuring the customer experience in online environments: A structural modeling approach. *Marketing Science*, 19(1), 22–42.
19. Pantano, E., Rese, A., & Baier, D. (2020). Enhancing online decision making using augmented reality. *Journal of Retailing and Consumer Services*, 53, 101946.
20. Pavlou, P. A. (2003). Consumer acceptance of electronic commerce: Integrating trust and risk with the technology acceptance model. *International Journal of Electronic Commerce*, 7(3), 101–134.
21. Poushneh, A., & Vasquez-Parraga, A. Z. (2017). Discernible impact of augmented reality on retail customer experience. *Journal of Retailing and Consumer Services*, 34, 229–234.
22. Rese, A., Baier, D., Geyer-Schulz, A., & Schreiber, S. (2017). How augmented reality apps influence purchase intention: The role of perceived value and enjoyment. *Journal of Retailing and Consumer Services*, 34, 242–250.
23. Rese, A., Schreiber, S., & Baier, D. (2014). Technology acceptance modeling of augmented reality applications. *Journal of Retailing and Consumer Services*, 21(5), 869–876.
24. Smith, H. J., Dinev, T., & Xu, H. (2011). Information privacy research: An interdisciplinary review. *MIS Quarterly*, 35(4), 989–1015.
25. Venkatesh, V., Bala, H. (2008). Technology acceptance model 3 and a research agenda on interventions. *Decision Sciences*, 39(2), 273–315.
26. Venkatesh, V., Morris, M. G., Davis, G. B., & Davis, F. D. (2003). User acceptance of information technology: Toward a unified view. *MIS Quarterly*, 27(3), 425–478.
27. Verhagen, T., Vonkeman, C., Feldberg, F., & Verhagen, P. (2014). Present it like it is here: Creating local presence to improve online product experiences. *Information & Management*, 51(5), 573–582.
28. Xu, H., Teo, H. H., Tan, B. C., & Agarwal, R. (2020). The role of push-pull technology in privacy calculus. *Journal of Management Information Systems*, 26(3), 135–174.
29. Yim, M. Y. C., Chu, S. C., & Sauer, P. L. (2017). Is augmented reality technology an effective tool for e-commerce? *Journal of Interactive Marketing*, 39, 89–103.