

The Determinants of Augmented Reality Adoption for Non-Users in E-Commerce: A Systematic Review of Decision-Making Factors

Albannai, Omar Abdulla¹ and Khalizul , Khalid²

¹Student of Management and Economics, Universiti Pendidikan Sultan Idris (UPSI), Tanjung Malim, Perak, Malaysia

²Faculty of Management and Economics, Universiti Pendidikan Sultan Idris (UPSI), Tanjung Malim, Perak, Malaysia

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ABSTRACT

Augmented Reality (AR) is a technology which transforms the e-commerce industry in which it offers retailers a powerful tool to close the gap between physical and online shopping. However, while the technology is rapidly evolving, understanding the factors that can convince a non-user to adopt AR for the first time remains a significant challenge. This study aims to fulfil and close that gap by identifying the specific factors which eventually drive the intention to use AR among to the consumers. This research employs a systematic literature review following PRISMA guidelines. It analyses fifteen quantitative studies sourced from Scopus and Google Scholar and studies two established theoretical models which are the Stimulus-Organism-Response (S-O-R) framework and the Technology Acceptance Model (TAM). The analysis identifies Interactivity and Spatial Presence as technological "Stimuli" that attract user interest. However, these features solely are not enough, hence, the study highlights and add the Self-Efficacy and Trust as additional determinants which act as critical factors to determine whether a non-user will actually engage with AR while shopping. The study concludes by proposing a unified conceptual framework which offer practical insights for developers and marketers to push non-users to use AR which indeed must not only be immersive but also intuitive and secure.

Keywords: Augmented Reality, E-Commerce, Non-Users, TAM, S-O-R, Trust, Self-Efficacy.

1. Introduction

This article highlights the importance and the value of Extended Reality to the market and retailers. It narrows down Extended Reality to focus on Augmented Reality (AR) as it is the core subject of the article. AR technologies are essential tools in today's market and could have either

positive or negative impact toward the intention to use AR technologies in the e-commerce industry for online shopping.

Technology has significantly impacted human life, altering how we communicate and interact with one another, enhancing our ability to solve problems, changing how academic materials are researched, written, and organized, opening new job opportunities in all industries, and raising the standard of living for an enormous number of people. In the era of technology, benefiting from technology was considered a main factor of success (Marwala & Hurwitz, 2017).

AR is an interactive tool that melds the real world with virtual elements, enhancing the original environment (Smink et al., 2019). AR is not designed to replace reality but rather to augment it with a visual display visible to the user (Yi-Cheon Yim & Chu, 2017). Nikhashemi et al. (2021) noted that research on AR should elucidate and define the specific attributes of AR to be employed in subsequent applications. "This immersive experience not only enhances customer engagement but also increases purchase intention and reduces product returns, addressing key challenges in the e-commerce industry". "Research has shown that AR apps positively influence consumer behavior, such as increased purchase intent, loyalty, and social sharing. Word-of-mouth (WOM) plays a significant role. That is because customer will most probably share their positive experience with AR which in result to amplifying the product's reach.

AR has emerged as an important technology in both business and retail sectors and provided new ways to engage customers and enhance their shopping experience (Gabriel et al., 2023). A common application of AR in retail is the virtual try-on experience, enabling customers to engage with models of objects in real-time (Gabriel et al., 2023). AR enables buyers to imagine how products such as clothing, jewellery, or cosmetics will appear on them without physically trying them on (Gabriel et al., 2023). This immersive experience is facilitated by recording live photos through the user's camera, which are subsequently augmented with 3D models and presented smoothly on their device screen. The capacity to replicate product utilization in a tailored context enhances consumer engagement, mitigates buy reluctance, and consequently boosts sales while elevating overall customer pleasure.

Modern lifestyles and consumer behaviors have been significantly influenced by smart technologies, including mobile applications and smart devices, which have led to a global transformation in the business environment (Nikhashemi et al., 2021). One of the sectors that has been most significantly affected is global retail (Nikhashemi et al., 2021). For example, in 2019, 25 percent of all e-commerce transactions in the United States were conducted using mobile applications and smart devices (Nikhashemi et al., 2021). The rapid expansion of the use of smart mobile devices for purchasing has resulted in South China becoming the largest smart consumer market in East Asian markets (Nikhashemi et al., 2021). During the global transition to

"smart lifestyles" in both consumer and business markets, the retail industry has promptly integrated smart retailing into its business strategies (Nikhashemi et al., 2021).

In smart retail field, the use of mobile applications as a new technology and channel to understand their requirements and needs has grown obviously (Rauschnabel et al., 2019). By merging modern technologies such as AR, both smart retail and mobile applications can offer customers a very unique and innovative experience (Nikhashemi et al., 2021).

These technological advancements are enablers of innovation and improvements in customers' quality of life (Nikhashemi et al., 2021). Creating distinctive experiences in retail contexts, AR applications integrate the real world with the virtual (Hilken & Keeling, 2017). Therefore, mobile AR applications provide consumers with engaging and pleasurable experiences that are available at all times, thereby promoting favorable attitude and behavioral responses (van Esch et al., 2019).

Using AR to overlay computer-generated images in the actual world is beneficial (Garg et al., 2021). The representation technique may be consolidated by using AR to apply to several applications (Garg et al., 2021). Compared to traditional marketing communication, current trends show that experiential marketing is a more successful marketing technique (Alotaibi, 2021). Everything people used to do in their everyday lives shifted to a new modern world, affecting all aspects of existence (Butu et al., 2020).

From a commercial standpoint, certain companies struggled, while others that are known for internet-based activities like online shopping and online delivery witnessed no operational issues throughout the epidemic in 2020 (Habil et al., 2022). Positively, the epidemic made it possible for businesses to stay in contact with their target market and encourage involvement of their customers (Habil et al., 2022).

It is worth mentioning that users who are using AR-based user interfaces can purchase goods online through a browser or a mobile application (Afrin et al., 2022). Only a few mobile applications take advantage of AR (Afrin et al., 2022). When buying online, the usability and user experience of AR were not thoroughly investigated. Studies showed that customers who use AR-based shopping have better user experience and usability compared to the basic m-commerce feature (Afrin et al., 2022; Moriuchi et al., 2020).

AR has emerged as a highly promising digital technology, generating significant interest among both academics and practitioners (Jarrah & Alkhasawneh, 2023). AR technology has the potential to benefit a wide range of applications in real-world, scenarios, individual lives areas and challenges occurred. (Jarrah & Alkhasawneh, 2023). The aforementioned technology is expected to persist and progress beyond what was previously thought possible (Jarrah &

Alkhasawneh, 2023) . In numerous domains, technology has the potential to provide unparalleled transformative and technological insights (Jarrah & Alkhasawneh, 2023).

This research aims to close the current gap in knowledge by systematically reviewing the key factors that influence non-users to adopt Augmented Reality (AR) in e-commerce. By analyzing existing studies, this paper provides a clear understanding of what drives consumer adoption, offering practical insights for online retailers, marketers, and researchers. Specifically, this study answers the following research questions:

1. What key AR characteristics (specifically self-efficacy, trust, spatial presence, and interactivity) encourage non-users to use AR for online shopping?
2. Which theoretical frameworks (such as TAM and SOR) are most commonly used to explain the link between AR features and consumer adoption?
3. What are the main barriers and psychological drivers that affect a non-user's decision to use AR in retail?

Through this systematic review, the study contributes to both academic theory and industry practice by offering a structured look at how cognitive and environmental factors shape the early adoption of AR in the digital marketplace.

2. Method

2.1 Research Design

This study uses a systematic literature review in which it examines the augmented reality features along with consumer decision making to use AR in online shopping. This method has been chosen because it provides the opportunity to gather and summarize the primary research in this field to answer specific questions accurately. PRISMA 2020 checklist, the standard guide for conducting this type of research has been followed, in order to ensure accurate review. We chose this method because it allows us to gather and summarize the latest primary research to answer specific questions accurately (Page et al., 2021; Bamiro et al., 2024a).

Search Strategy and Data Source

The literature search process started with a selection of the most appropriate database to gather information form in order to ensure a high-quality review. The primary sources chose was Scopus for this systematic evaluation as it is widely recognized as a comprehensive database for indexed scientific and academic publications. According to Rosario and Raimundo (2024),

Scopus is noted to cover wide range of journals across different fields which make it well suited for multidisciplinary research that combines technology and marketing.

Scopus is one of the largest abstract and citation databases for peer-reviewed literature that hosts millions of records and thousands of international journals (Page et al. 2021; Salisu et al., 2025). Furthermore, it has the capability to provide multiple way of searching such as basic and advanced ones which enables researchers to refine results using specific parameters like document type, author, and subject area (Bamiro et al., 2024b; Idris et al., 2024). Despite that Scopus is a bit bias toward English-language sources, it provides global publications all around the world, which was essential for the criteria of this study.

In addition to Scopus, Google Scholar was utilized as a supplementary source. This ensured that relevant scholarly articles related to the research questions, which might not be indexed in Scopus, were not overlooked. However, it is acknowledged that the review is constrained by the exclusion of other scientific databases, as the study adhered to specific methodological requirements.

To locate the relevant literature, a keyword-based search strategy was employed using a combination of terms related to the study's variables and theories. The search terms included: "Augmented Reality," "XR," "E-commerce," and "Online Shopping," combined with variable-specific terms such as "Trust," "Self-Efficacy," "Spatial Presence," and "Interactivity." Theoretical keywords such as "TAM" and "SOR Framework" were also included.

To refine the search results effectively, Boolean operators (e.g., AND, OR) were used to construct search strings (e.g., "Augmented Reality AND Trust"). Finally, filters were applied to include only English-language publications to ensure consistency in the analysis.

2.2 Inclusion and Exclusion Criteria

To ensure the review remained focused on high-quality and relevant literature, specific boundaries were established for selecting the articles.

2.2.1 Inclusion Criteria:

This review focused exclusively on quantitative empirical studies. This was selected because the study aims to measure the specific relationships between variables, for example, how factors like Trust or Interactivity influence a non-user decision to user AR. We selected research that used surveys and statistical analysis like structural equation modelling because of the tangible evidence these methods provided related to adoptions and influences.

The scope included studies that examine general consumers and online shoppers, regardless of their prior experience with the technology. This broad approach allows us to understand the universal appeal of AR features across the entire market, rather than limiting the findings to a specific niche group. We prioritized articles published in peer-reviewed journals that utilized the TAM or SOR frameworks to explain these behavioral patterns.

2.2.2 Exclusion Criteria:

The research which was excluded mainly focuses on technical nature of AR such as studies focusing on software engineering, and algorithm development, unless they clearly included specific consumer behavioral data. Qualitative studies (interviews) and mixed-method papers were also excluded, as they do not provide the statistical correlations needed for this specific analysis.

Furthermore, papers published in non-academic outlets, such as industry magazines, blogs, or white papers, were omitted to maintain rigor. Finally, studies discussing AR in unrelated fields (e.g., medical surgery, education, or gaming) were filtered out, along with duplicate records and non-English publications.

2.3 Data Extraction and Synthesis

The selected studies were reviewed and organized carefully in order to capture the most significant information. First of all, we looked at the basic characteristics of each paper, such as the author(s), publication year, research method (quantitative), and the country where the study took place.

Next, we identified the specific factors that influence a consumer's decision to use AR and focused on:

- Psychological Factors: such as Trust and Self-Efficacy.
- Experiential Factors: such as Interactivity and Spatial Presence.

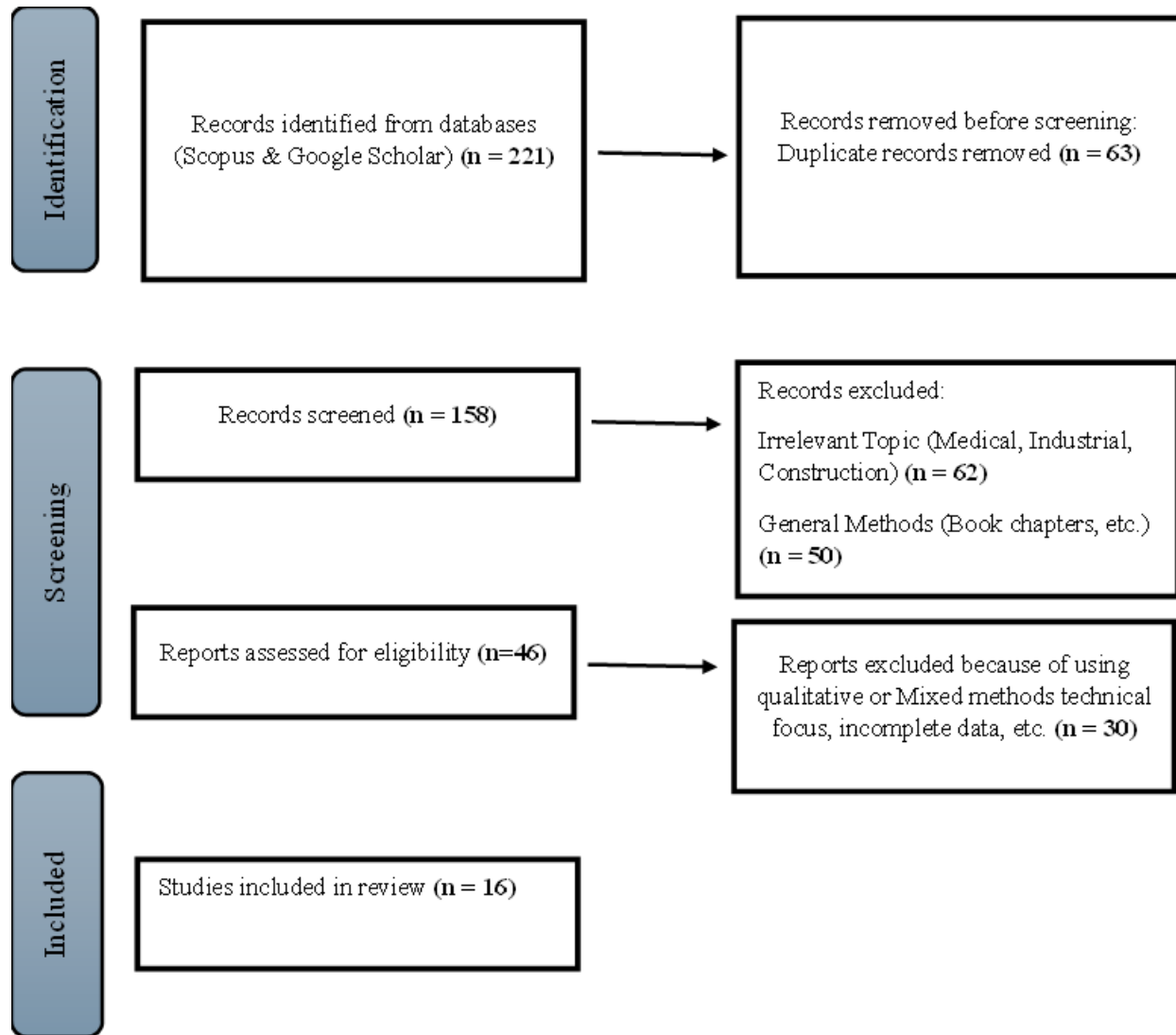
We also recorded which theoretical models were used to explain these behaviors. The most common frameworks noted were the Technology Acceptance Model (TAM) and the Stimulus-Organism-Response (SOR) model.

Finally, we analyzed the results of each study to understand the "big picture." We looked at their final conclusions, any limitations they mentioned, and their suggestions for future research. The data was then brought together using a thematic analysis, where we grouped similar findings

(e.g., "studies that proved Trust is essential") to see the consistent patterns in how consumers react to Augmented Reality.

3. Results

Figure 1: PRISMA flow chart



As illustrated above in Figure 1, the initial search done in both Scopus and Google Scholar produced a broad range of potential studies. It should be noted that all search results were imported directly into Mendeley Reference Manager for organization and deduplication. Due to the consolidation of records within the software, a distinct breakdown of the initial article count specifically between Scopus and Google Scholar could not be separately quantified.

To ensure that the review focused exclusively on consumer decision-making and the factors influencing the adoption of Augmented Reality in e-commerce for non-user, we strictly applied the inclusion and exclusion criteria outlined in the methodology section.

Because some article titles were general or lacked specific details, identifying relevant content required a careful screening process. We thoroughly examined the abstracts to pinpoint papers that directly addressed our research questions, removing those that did not fit the specific scope of AR retail adoption. Following the removal of duplicates via Mendeley and a manual check, we conducted a two-stage screening process, first evaluating titles and abstracts, followed by a full-text review. Eventually, 15 articles satisfied all the requirements and were carefully selected as the basis for this systematic review. Figure 1 provides the PRISMA flow diagram detailing the selection process.

Table 1 provides a breakdown of the 15 studies we analyzed. As outlined, 13 articles were published in peer-reviewed journals, while the remaining three came from academic conference proceedings. Most of this research relies on well-known theories like the Stimulus-Organism-Response (S-O-R) model and the Technology Acceptance Model (TAM) to explain what drives adoption. For example, studies by Habil et al. (2022) and Smink et al. (2020) use the S-O-R framework to show that experiential factors—like feeling "present" in the digital environment or having a personalized experience—are key to engaging users. On the other hand, researchers like Beurer-Züllig et al. (2022) and Toraman (2023) use TAM to highlight that building trust and reducing perceived risk are essential for purchase decisions. We also found that specific features like interactivity and vividness play a major role in creating an immersive experience, while broader psychological factors, such as self-efficacy and competitive pressure, significantly influence whether consumers and businesses decide to adopt these technologies.

Table 1: Data Extraction Table

No.	Author(s) & Year	Theoretical Framework	Key Variables / Factors Studied	Context / Focus
1	Habil et al. (2022)	S-O-R Paradigm	Experiential Value, Hedonic Value, Continued Intention, Perceived Support	AR Makeup Apps (Taiwan) Usage Customer
2	Beurer-Züllig et al. (2022)	TAM	Trust, Perceived Risk, Intention	Purchasing E-Commerce Purchasing

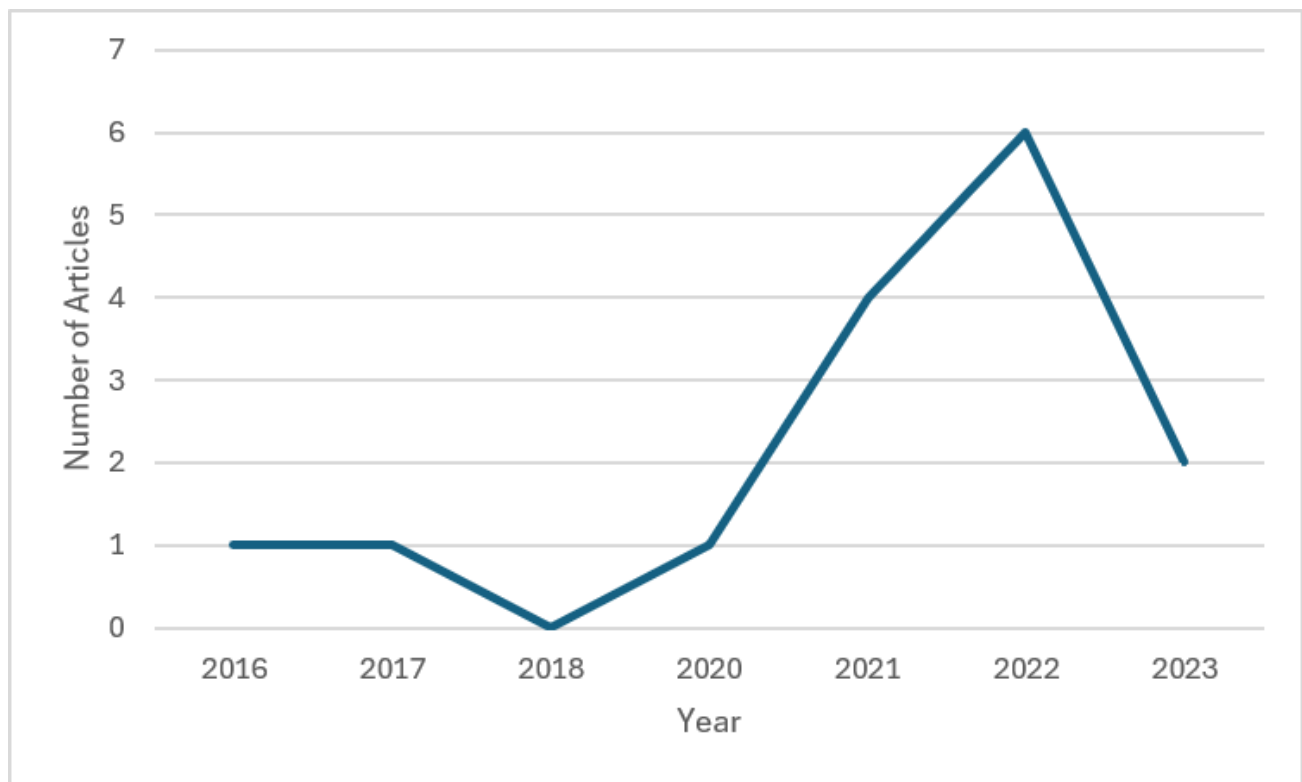
3	Chen et al. (2022)	Extended Customer Experience	Interactivity, Vividness, Novelty, Perceived Usefulness, Customer Engagement	AR Marketing Activities
4	Habil et al. (2022)	S-O-R Model	Spatial Presence, Intrusiveness, Personalization, Flow Experience	Digital Consumer Response (Post-COVID)
5	Smink et al. (2020)	S-O-R	Spatial Presence, Personalization, Brand Responses	AR Shopping Apps
6	Han et al. (2023)	S-O-R Experience Economy	Telepresence, Interactivity, Time Distortion, Enjoyment	VR Shopping / SCM
7	Nguyen (2022)	T-O-E Framework	Organizational Innovativeness, Pressure (Barriers to Adoption)	Attitude, Competition (Vietnam)
8	Kowalczyk et al. (2021)	S-O-R	Interactivity, Vividness, Website Quality, Need for Touch (NFT)	E-Commerce Website Quality
9	Kumar et al. (2016)	T-O-E Framework	Technology Management Advantage	Competence, Top Support, Relative
10	Nikhashemi et al. (2021)	Symmetric Approach	Continuous Intention, Utilitarian & Hedonic Benefits, Psychological Inspiration	Smart Retailing
11	Kowalczyk et al. (2021)	Consumer Response Model	Immersion, Interactivity, Informativeness, Congruence	Enjoyment, Product Reality
12	Alam et al. (2021)	Extended TAM	Self-Efficacy, Social Influence, Knowledge	Perceived Cost, Technological (Malaysia)

13	Toraman (2023)	TAM	Trust, Compatibility, Enjoyment, Perceived Usefulness	Metaverse / E-Commerce
14	Rese et al. (2017)	Modified TAM	Hedonic Quality, Utilitarian Quality, User Satisfaction	AR Apps (Marker-based vs. Markerless)
15	Cho & Yu (2022)	TAM / Flow Theory	Spatial Presence, Continuous Usage Intention	AR Games (Cross-cultural)

3.1 Yearly Publication of Reviewed Articles

The initial search strategy conducted on Scopus and Google Scholar did not impose any specific limitations on the year of publication. However, the effective timeline for this analysis begins in 2016, marking the year of the earliest study included in this systematic review.

Figure 2: Yearly Publication of Reviewed Articles



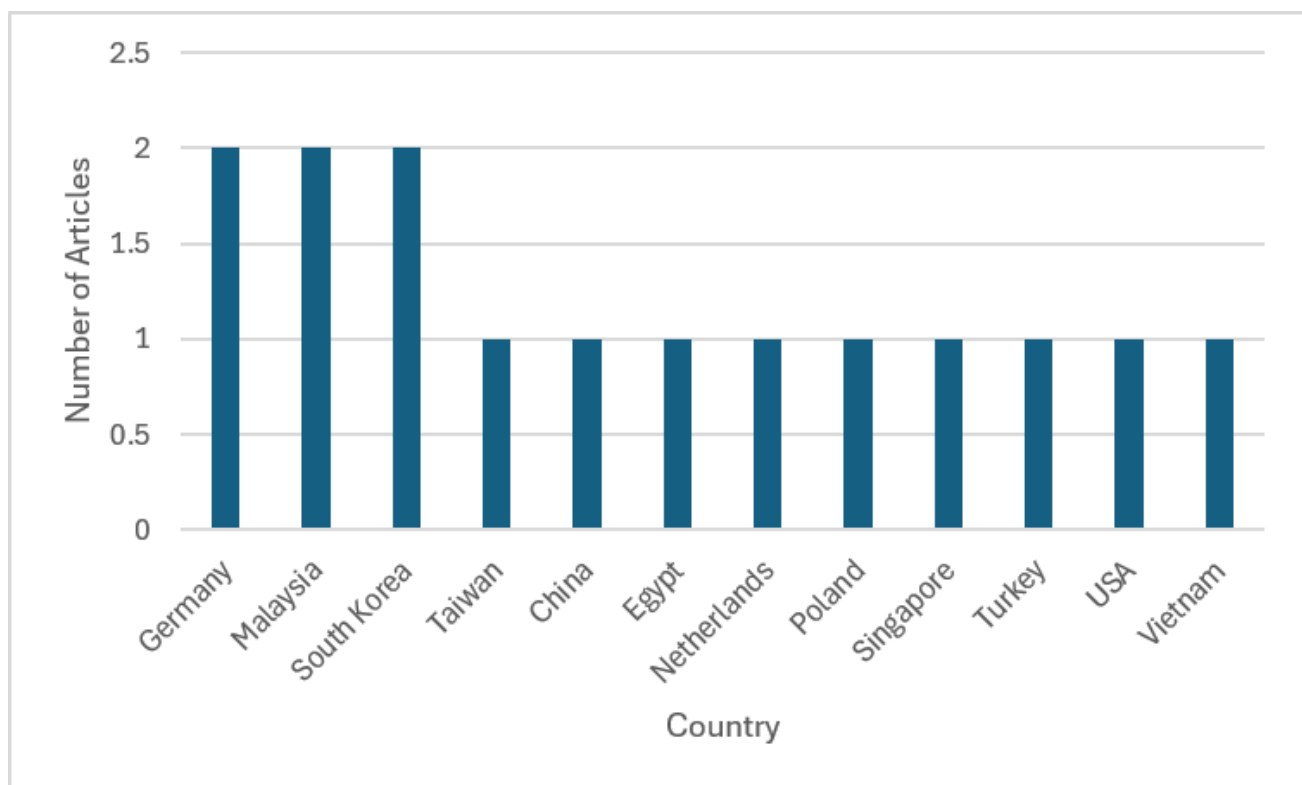
3.2 Distribution of Reviewed Articles by Methodology:

Based on the studies which have been evaluated, 100% of the papers (15 articles) use quantitative methods. However, the theoretical framework that is used in each differs between TAM, SOR, and some other frameworks.

3.3 Authors Affiliation by Country

The selected studies represent a diverse global perspective, with research conducted in Asia (Taiwan, South Korea, China, Malaysia, Singapore, Vietnam), Europe (Germany, Netherlands, Poland, Turkey), North America (USA), and Africa (Egypt). This geographic variety ensures that the review captures cross-cultural differences in consumer behavior and technology adoption.

Figure 3: Authors Affiliation by Country



3.4 Distribution of Articles by Country and Region

The geographical distribution of the selected studies, as shown in Table 2, demonstrates a strong concentration of research in Asia (9 articles), followed by Europe (5 articles). This indicates that Asian markets are currently leading the empirical investigation into Augmented Reality adoption

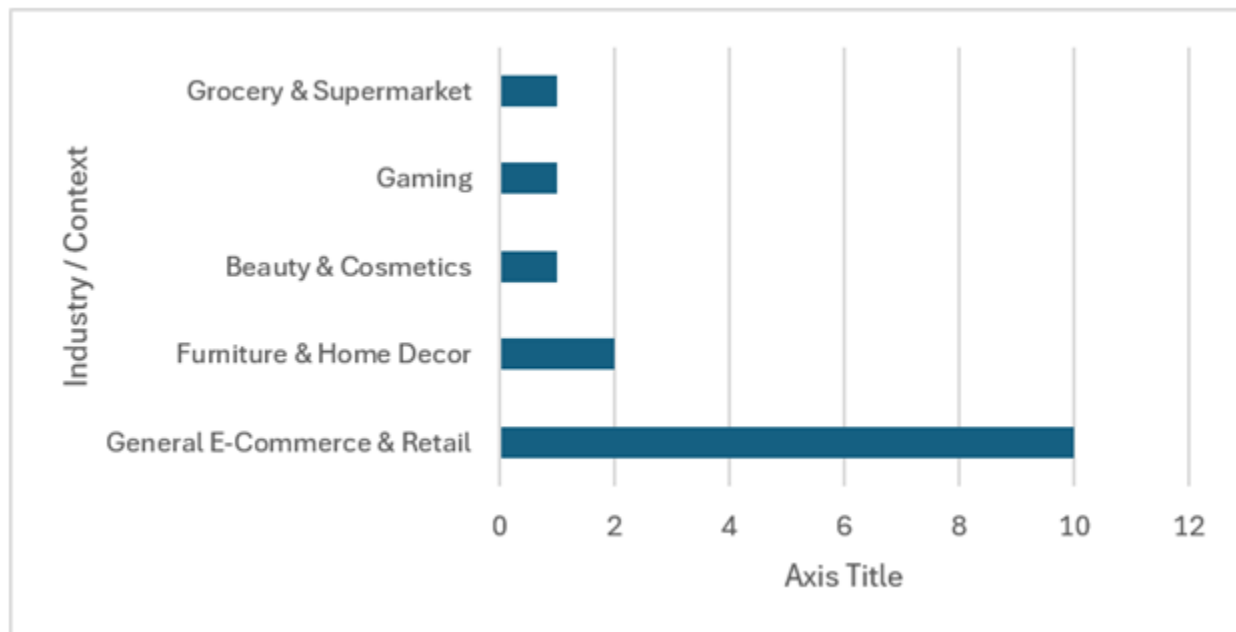
in retail, with significant contributions from Taiwan and Malaysia. Meanwhile, North America and Africa are represented by single studies, suggesting a more search to be conducted in that specific area.

Table 2: Geographical distribution of articles

Region	Country	Number of Articles
Asia	Taiwan	1
	Malaysia	2
	China	1
	South Korea	1
	Singapore	1
	Vietnam	1
	China & South Korea (Cross-cultural)	1
Europe	Germany	2
	Netherlands	1
	Poland	1
	Turkey	1
North America	USA	1
Africa	Egypt	1
Total		15

3.5 Distribution of Articles by Industry

As mentioned in Figure 4, most of the reviewed studies (63%) focused on General E-Commerce and Retail in which it investigates both consumer adoption and the organizational decision to implement AR in online stores. Moreover, Furniture & Home Decor appears in two studies, where we can realize individual studies dedicated to Beauty (Virtual Try-On), Grocery, and AR Gaming.

Figure 4: Distribution of articles by industry / context

3.6 Frameworks and Theories

Using well-established theoretical frameworks, the reviewed research examined the determinants of augmented reality adoption in which it focuses primarily on consumer behavior and, to a lesser extent, organizational decision-making. Table 3 illustrates how these frameworks offered structured methods for examining the variables affecting these choices.

With seven studies utilizing it, the Stimulus-Organism-Response (S-O-R) paradigm was the most widely used framework found. This implies that consumer decisions regarding AR are significantly influenced by environmental stimuli (such as interactivity and vividness) which trigger internal cognitive and affective states, ultimately leading to behavioral responses like purchase intention. According to Kowalczyk et al. (2021) and Smink et al. (2020), the S-O-R framework aids in explaining how the immersive features of AR applications serve as stimuli that enhance the user's sense of presence and enjoyment.

Other frameworks employed in the reviewed studies include the Technology Acceptance Model (TAM), which analyzes how perceived usefulness and perceived ease of use shape consumers' intention to adopt AR technologies (Toraman, 2023; Rese et al., 2017). While S-O-R focuses on the experiential aspect, TAM provides a robust explanation for the utilitarian drivers of adoption. In addition, Technology-Organization-Environment (TOE) framework was used in studies where it was focusing on the retailer's perspective and examined how internal resources and external

competitive pressures influence a firm's decision to implement AR solutions (Nguyen, 2022; Kumar et al., 2016). Furthermore, Flow Theory was applied to understand the state of deep engagement and immersion users experience during AR interactions, which is critical for positive brand outcomes (Cho & Yu, 2022).

Together, these frameworks illustrate the multi-dimensional nature of decision-making in AR adoption. They support the idea that attributes such as trust, usefulness, and other psychological and environmental factors can shape the adoption of consumer adopted to use new technologies.

Table 3: Frameworks and Theories employed in the Articles Reviewed

Framework / Theory	Number of Articles	References
Stimulus-Organism-Response (S-O-R) Model	7	Hsu et al. (2021); Smink et al. (2020); Kim et al. (2022); Habil et al. (2022); Han et al. (2023); Kowalczyk et al. (2021); Nikhashemi et al. (2021)
Technology Acceptance Model (TAM) & Extensions	5	Beurer-Züllig et al. (2022); Toraman (2023); Alam et al. (2021); Rese et al. (2017); Cho & Yu (2022)
Technology-Organization-Environment (TOE) Framework	2	Nguyen (2022); Kumar et al. (2016)
Flow Theory	2	Cho & Yu (2022); Habil et al. (2022) (Used in conjunction with TAM/SOR)
Total	15	(Note: Some studies integrated multiple theories)

4. Discussion

This study focused and reviewed 15 quantitative articles in order to understand the reason that makes consumers, especially those who are not yet users of AR, willing to adopt augmented reality in online shopping. By analysing the studies deeply using Technology Acceptance Model and the Stimulus-Organism-Response framework, we found that adoption depends on three main things: the features of the technology, which are AR characteristics (Stimulus), the beliefs and mediations factors (Organism), and the intention to use (Response).

4.1 Key Factors Influencing the Intention to Use

To answer the first research question regarding which characteristics encourage intention to use AR, our analysis identified four critical factors which are: Interactivity, Spatial Presence, Self-Efficacy, and Trust. The power of giving the feeling that “you are there” and visualizing whatever you are being for a non-user becomes essential for them to be interested in using AR, however, the technology must offer an experience that feels real and controllable.

Spatial Presence refers to the feeling of the virtual object "being there" in the real world. Research by Smink et al. (2020) and Habil et al. (2022) shows that when AR creates a realistic

illusion (high spatial presence), it grabs the user's attention. For a new user, this realism is the "Stimulus" that makes the shopping experience exciting and useful.

Interactivity is not enough to just see the product; users want to control it. Studies by Kowalczyk et al. (2021) and Chen et al. (2022) confirm that the ability to move, scale, or rotate a virtual object is essential. When a non-user sees they can interact with a product digitally just like they would in a physical store, they are more likely to find the tool useful.

The Importance of Confidence and Safety which we refer here to self-efficacy and Trust, indicate that even if the technology looks great, a non-user will not adopt it if they feel incapable or unsafe.

Self-Efficacy is simply the user's belief in their own ability to use the technology. Alam et al. (2021) found that this is a major predictor of "Ease of Use". If a non-user thinks AR is too complicated or "tech-heavy," they will avoid it. Therefore, feeling confident (high self-efficacy) is a requirement for adoption.

Because AR often requires access to a camera and personal data, Trust is the safety gatekeeper. Beurer-Züllig et al. (2022) and Toraman (2023) highlight that users must trust the app creates accurate visuals and protects their privacy. Without trust, the risks outweigh the benefits, and the non-user will refuse to engage.

4.2 Frequency Analysis of Key Research Variables

To test if our framework works, we had counted the frequency appearance of each single variable in the 15 studies that we had conducted. Since the same variables had appeared several times (as shown in Table 4), we can be confident these factors truly drive consumer behavior.

Table 3: Frequency Analysis of Key Research Variables

Variable	Frequency	Author(s)
Interactivity	6	Chen et al. (2022); Han et al. (2023); Hsu et al. (2021); Nikhashemi et al. (2021); Kowalczyk et al. (2021); Rese et al. (2017)
Spatial Presence	3	Habil et al. (2022); Smink et al. (2020); Cho & Yu (2022)
Trust	2	Beurer-Züllig et al. (2022); Toraman (2023)
Self-Efficacy	1	Alam et al. (2021)
Perceived Usefulness & Ease of Use	2	Beurer-Züllig et al. (2022); Alam et al. (2021)

While conducting our analysis to the studies, we reveal to the fact that the chosen variables which are: interactivity, spatial Presence, self-efficacy, and trust, are among the most recurrence determinants in the domain of AR studies. The analysis reveals that the variables chosen for this study.

- **Technological Dominance:** Interactivity variable appears in 6 of the reviewed studies, which highlight us that the ability to manipulate virtual objects is the primary "Stimulus" differentiating AR from standard e-commerce. Spatial Presence is also a dominant factor (4 articles) which also confirms us that the user's sense of "being there" is essential for adoption.
- **The Role of TAM Mediators:** The mediating variables of Perceived Usefulness (PU) and Perceived Ease of Use (PEOU) are foundational, appearing in studies by Beurer-Züllig et al. (2022), Alam et al. (2021). Their consistent presence validates their role as the primary psychological bridge between the technology and the user's intention.
- **Critical Gatekeepers:** While Trust (3 articles) and Self-Efficacy (2 articles) appear less frequently than technological features, the literature identifies them as critical "gatekeepers." Studies such as Alam et al. (2021) and Toraman (2023) specifically isolate these factors to explain why technologically superior apps still fail to gain adoption if the user lacks digital confidence or security assurance.

The consistent reappearance of these specific variables across the reviewed quantitative studies demonstrates the powerfulness and validity of the proposed conceptual framework. In addition, the positive relationship of those factors in each article is another point that support the powerfulness of the variables being used. By integrating the most dominant technological drivers (Interactivity, Spatial Presence) with the essential psychological safeguards (Trust, Self-Efficacy), the proposed model captures the complete spectrum of the non-user's decision-making process. This multi-dimensional approach ensures that the framework is not only theoretically grounded in established models like TAM and S-O-R but is also empirically supported by the most current research in the field.

4.3 Challenges and Barriers to Adoption

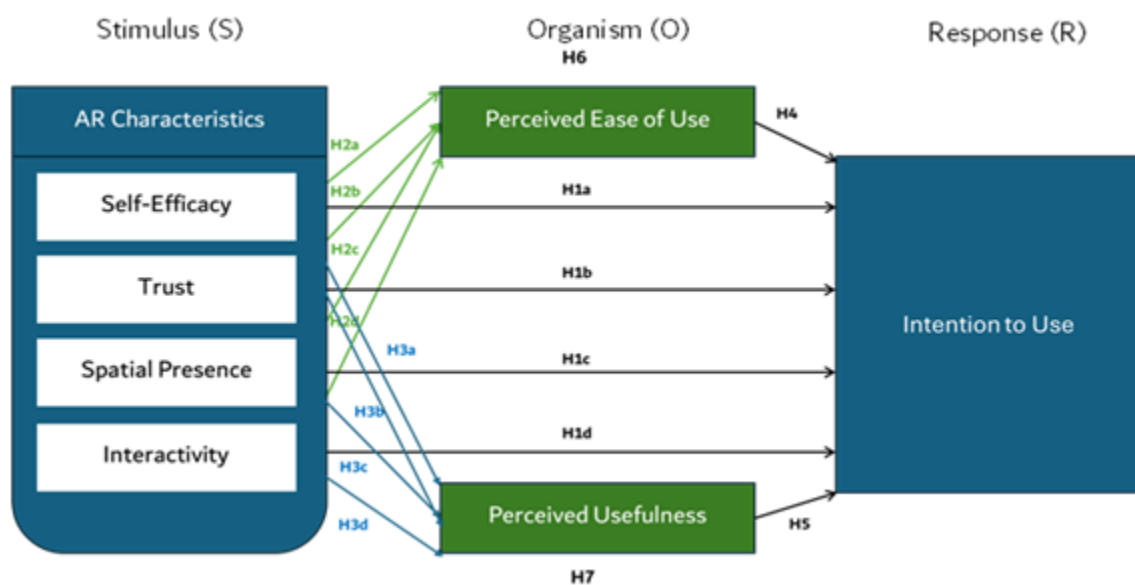
This systematic review also highlights the reason behind some non-users might hesitate to adopt AR in their online shopping.

- **Complexity of the application:** If the interface is not intuitive enough to handle the customer's confidence of an individual, it can lower his/her self-efficacy. It is because non-users usually fear that they have lack of technical skills to use AR properly.

- Trust Gap: According to Smink et al. (2020), customers have tension for anything related to their personal information, hence a high relationship between personalizations and privacy. Non-users may worry that using the augmented reality feature in their online shopping exposes too much personal data which in result will create a barrier of mistrust.

4.4 Proposed Conceptual Framework

Figure 5: Conceptual Framework



This study proposes a framework (Figure 5) that unified both TAM and S-O-R to illustrate the adoption process. This framework explains the journey of a non-user in three simple steps:

The Stimulus: The process begins with the AR features. Interactivity and Spatial Presence act as the external triggers that catch the user's interest.

The Organism: These triggers are processed through the user's internal beliefs. The user asks: "Am I capable of using this?" (Self-Efficacy) and "Is this safe?" (Trust). These beliefs determine if the user finds the system "Useful" and "Easy to Use."

The Response: If the user feels capable, safe, and engaged, the result is a positive Intention to Use the technology for shopping. In addition, studies which used TAM added some other models to support and end up with valuable conclusions. (Fussell & Truong, 2022) used TAM factors along with some other variables from other models but concluded that TAM variables had the strongest relationship and influences in the intention to use and adopt technologies. TAM not

only supports the structure of the conceptual framework but also helps clarify the factors influencing AR adoption in the context of UAE e-commerce.

5. Conclusion

In the rapidly evolving digital landscape, Augmented Reality (AR) has emerged as a strategic solution for retailers seeking to enhance customer engagement, reduce return rates, and bridge the gap between physical and online shopping. However, its successful adoption depends significantly on the decision-making process of potential consumers (non-users), as they navigate technological, individual, and environmental factors. Understanding the key attributes that influence these decisions is crucial for ensuring widespread acceptance.

This systematic review has explored the role of non-users in AR adoption, analyzing the critical decision-making factors that shape their intention to use. A comprehensive search of the Scopus database was conducted to identify high-quality articles relevant to the research questions, supplemented by a search on Google Scholar to ensure comprehensive coverage. Using a strict set of inclusion and exclusion criteria specifically focusing on quantitative empirical studies a total of 15 articles was finally included in this review.

5.1 Practical Implications of Study

From a practical perspective, this study provides valuable guidance for e-commerce managers, marketers, and app developers by offering insights into how to facilitate AR adoption among new audiences. By identifying key decision-making factors, retailers can develop user-centric strategies. Recognizing the role of Self-Efficacy, developers should prioritize intuitive interfaces and tutorials to lower the entry barrier for non-users. Organizations must mitigate risk by implementing transparent data policies. Addressing security concerns explicitly can help overcome the "Trust Gap" identified in the review. To trigger the correct "Stimulus," investment should focus on Spatial Presence (visual quality) rather than just novelty. The study emphasizes that for AR to be a viable shopping tool, it must accurately reflect reality to reduce purchase uncertainty.

5.2 Theoretical Implication

The study also contributes to theoretical advancements in the field of digital marketing and technology adoption. It extends existing theories by integrating the TAM with S-O-R framework. It fills a gap in the literature by shifting the focus from the post-adoption behavior of experienced users to the pre-adoption psychology of non-users. By positioning Interactivity and Spatial Presence as "Stimuli" that trigger "Organism" states (Self-Efficacy and Trust), the study provides a more comprehensive understanding of the cognitive process behind AR adoption. The findings

open new avenues for exploration, particularly in understanding how individual traits (like self-efficacy) moderate the impact of technological features. Eventually, this study strengthens the theoretical discourse on e-commerce.

5.3 Limitations of Study and Suggestion for Future Research

One major limitation that can be taken into consideration that the literature review of this study focuses was restricted to Scopus and Google Scholar databases. Although these are reliable sources, the exclusion of other databases (such as Web of Science) may have limited the comprehensiveness of the reviewed articles. Future research should broaden its scope by incorporating additional databases to ensure a more diverse range of studies.

Additionally, this study strictly focused on quantitative articles to ensure statistical rigor. While this provides strong empirical evidence, it may miss the nuanced, subjective insights that qualitative interviews could offer regarding *why* non-users feel a lack of trust. Future research could employ a mixed-methods approach, combining surveys with user interviews, to gain a deeper understanding of the emotional barriers to adoption. Furthermore, as most reviewed studies were cross-sectional, future research should consider longitudinal studies to observe how "Intention to Use" evolves into actual "Behavior" over time.

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